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A Test of the 2 × 2 Model of Perfectionistic Pressure in Youth Sport

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Abstract

Perfectionistic pressure from coaches and parents is likely to contribute to the development of perfectionism in youth athletes. However, if and how perfectionistic pressure from coaches and parents interact to predict the development of perfectionism is unknown. With this in mind, the present study tested a new model – the 2 × 2 Model of Perfectionistic Pressure – that focuses on the different combinations of perfectionistic pressure youth athletes can experience. Four within-person combinations of perfectionistic pressure are identified and compared: Pure coach pressure (high coach pressure/low parental pressure), pure parental pressure (low coach pressure/high parental pressure), mixed pressure (high coach pressure/high parental pressure), and low pressure (low coach pressure/low parental pressure). To test the model, a sample of 210 youth athletes (*M* age = 14.68 years) completed measures of perfectionistic strivings, perfectionistic concerns, coach pressure to be perfect, and parental pressure to be perfect. Moderated hierarchical regression and simple slopes analyses revealed that mixed pressure was related to the highest levels of both perfectionistic strivings and perfectionistic concerns. The findings provide initial evidence for the new model and suggests it will be useful in studying the development of perfectionism and other outcomes in sport.

Keywords: perfectionistic strivings, perfectionistic concerns, coach pressure, parental pressure, youth athletes

Introduction

Perfectionism affects the quality of athletes' experiences in sport – with some athletes more prone to negative performance, motivation, and wellbeing issues as a result (Mallinson-Howard, Hill, & Hall, 2019). While researchers have made steady progress in understanding the consequences of athletes being more or less perfectionistic, surprisingly, we know much less about how perfectionism develops in sport (Hill et al., 2020). Work outside of the sport domain has emphasised parental pressure in the development of perfectionism (Domocus & Damian, 2018)). However, reflecting the unique features of sport, coach pressure, too, is believed to similarly important in the development of perfectionism (Dunn et al., 2006). In the present study we sought to recognise the importance of both parents and coaches by integrating them into a new model – the 2 × 2 Model of Perfectionistic Pressure – and testing how parental and coach pressure combine to give rise to perfectionism in youth athletes.

Perfectionism

Perfectionism is a multidimensional personality characteristic that comprises excessively high personal standards accompanied by overly critical evaluations of behaviour (Frost et al., 1990). The multiple dimensions of perfectionism have been conceptualised and measured in many ways in sport (see Hill et al., 2018). However, researchers typically agree that perfectionism can be captured by two higher-order dimensions (Stoeber & Otto, 2006). The first higher-order dimension is perfectionistic strivings (PS), which captures the self-oriented, high standards, and striving for perfection elements of perfectionism. The second higher-order dimension is perfectionistic concerns (PC), which captures the socially prescribed, concern over mistakes, and negative reactions to imperfection elements of perfectionism (Stoeber & Madigan, 2016).

The distinction between PS and PC is important when examining the consequences of perfectionism in sport. This is because the two can have different effects (Hill et al., 2018).

Perfectionistic strivings have been linked to better sports performance but include sub-dimensions that are associated with a range of problems under conditions of achievement difficulty or stress (e.g., Curran & Hill, 2018). Perfectionistic concerns, by contrast, appear to be less mixed in regards to their correlates and effects with little evidence of any benefits and links with numerous debilitating consequences for athletes (Hill et al., 2018). Of note for the current study, much of the research examining perfectionism in sport has focused on youth athletes and indicates links to a range of important outcomes of sport participation, including many that are undesirable such as anxiety, burnout, and dropout (e.g., Mallinson-Howard et al., 2019).

Development of Perfectionism

Several theoretical models have been proposed to explain the development of perfectionism. The most comprehensive and well-tested model has been provided by Flett et al. (2002). Their model emphasises the role of early socialisation experiences and includes different socialising agents (e.g., parents, siblings, peers), of which, parents are the most prominent. One way in which parents are thought to increase perfectionism in their children is via excessive achievement expectations, known as the Social Expectations Model. In this developmental model, children whose parents have excessive achievement expectations and engage in harsh criticism when expectations are not met (i.e., apply parental pressure) are at risk of developing perfectionism. In this case, perfectionism is a response to external pressures and an attempt to win parental approval and love, and avoid disapproval and rejection, that comes to be viewed as conditional on achievement (Frost et al., 1990).

There is support for the social expectations model both outside and inside sport. For example, outside sport, Damian, Stoeber, Negru and Băban (2013) found that perceptions of excessive parental expectations predicted increased perfectionistic concerns in adolescents over time. Inside sport, and again in support of the model. Most notably for our study, studies

have shown that parental expectations and parental criticism, and combinations of the two (viz. parental pressure), are consistently positively related to PS and PC in youth athletes (e.g., Sapieja et al., 2011). As such, research so far is indicative of the important role that social expectations, and particularly parental pressure, plays in the development of perfectionism in youth sport.

Coach pressure was recently suggested to be a valuable addition to Flett and colleagues' (2002) model when seeking to understand the development of perfectionism in sport (see Appleton & Curran, 2016). This reflects the importance of coaches in the sports domain and builds on the longstanding notion that coaches, too, can be a source of excessive perfectionistic expectations and criticism (see Dunn et al., 2006). In support of this idea, there is consistent evidence that, much like parental pressure, coach pressure correlates positively with PS and PC in junior athletes (e.g., Madigan et. al. 2019). In addition, there is even evidence that coach pressure may be more important than parental pressure in the development of perfectionism, with only coach pressure predicting increases in perfectionism in youth athletes over time when the two are compared (see Madigan et al. 2019).

Adolescence is, of course, a key period of formative development for athletes and as such is the ideal setting to examine the development of perfectionism. Developmental changes in this period include beginning and progressing through puberty, neurodevelopmental changes, and identity formation (Branje et al., 2021; Dahl et al., 2018; Larsen & Luna, 2018). Exposure to perfectionistic pressure from social agents during this period is likely to be influential in a number of ways, but particularly to the way in which junior athletes construct a sense of self. Greater exposure to perfectionistic pressure by young people, generally, has been suggested to increase the likelihood of internalizing irrational ideals and unrealistic notions of the "perfectible self" (Curran & Hill, 2018, p.12). In a similar way, through exposure to external pressures to be perfect during this period, junior

athletes may come to tie their self-worth to lofty sporting achievements and cement both the importance of pursuing perfect (PS) and concerns of imperfection (PC) in who they are and how they view the world.

The 2 × 2 Model of Perfectionistic Pressure

Despite strong evidence of the importance of parental and coach pressure in the development of perfectionism in sport, one notable limitation of research so far is that the two have been examined independently. That is, the approach has been to focus on the separate effects (via bivariate correlations) or unique effects (via multiple regression) of parental and coach pressure. These approaches are useful to ascertain if the two predict perfectionism in youth athletes, to what degree, and the unique relationships associated with each one. However, these approaches cannot tell us if the two sources of pressure combine or interact to give rise to different levels of perfectionism. In other words, whether the effect of parental pressure on the development of perfectionism is determined by the presence or absence of coach pressure, or vice versa. With this in mind, here we propose a new model to sport perfectionism research that focuses on different combinations of parental and coach pressure and their association with athlete perfectionism.

The 2 × 2 Model of Perfectionistic Pressure is based on the 2 × 2 Model of Perfectionism (Gaudreau & Thompson, 2010). The latter focuses on the effects of within-person combinations of perfectionism and the use of a priori hypotheses and regression-based analyses to compare effects (see Hill et al., 2020, for a review). In our model, we substitute dimensions of perfectionism (PS and PC) with dimensions of perfectionistic pressure (coach pressure and parental pressure; see Figure 1). As such, we differentiate between four subtypes of youth athlete - those that experience *pure coach pressure* (high coach pressure/low parental pressure), *pure parental pressure* (low coach pressure/high parental pressure), *mixed pressure* (high coach pressure/high parental pressure), and *low pressure* (low coach

pressure/low parental pressure) – and seek to compare the different effects of these combinations, particularly in regards to resulting levels of perfectionism.

In deriving hypotheses for the model, we draw on the social expectations model of the development of perfectionism (Flett et al., 2002) and the notion that athletes are more likely to develop higher levels of perfectionism (both PS and PC) when pressure is perceived from multiple social agents (i.e., parents and coaches). In addition, we also assert that the effects of parental and coach pressure are not simply additive in regard to the development of perfectionism. Rather, we propose that they act upon each other in a manner that magnifies perfectionistic messages (see Holmes, 2002). If this effect is evident, we can expect to find that a combination of the high levels of both pressures to be associated with the highest levels of perfectionism for athletes. As with the original 2 × 2 model, we encapsulate this thinking in four hypotheses: hypothesis 1 states that *pure coach pressure* will be associated with higher levels of PS and PC than *low pressure*; hypothesis 2 states *pure parental pressure* will be associated with higher levels of PS and PC than *low pressure*; hypothesis 3 states that *mixed pressure* will be associated with higher levels of PS and PC than *pure parental pressure*; finally, hypothesis 4 states that *mixed pressure* will be associated with higher levels of PS and PC than *pure coach pressure*.

Present Study

The purpose of the present study is to provide an initial test of the 2 × 2 Model of Perfectionistic Pressure in youth athletes. In doing so, we build on existing work examining the development of perfectionism in youth sport (e.g., Madigan et al., 2019) and provide a first test of the four hypotheses of the model (hypothesis 1 to 4 above).

Method

Participants

Participants were 210 competitive youth athletes (103 males; 100 females; 7 did not report their gender; *M* age = 14.68 years, *SD* = 1.40 years) recruited from schools and sports teams across the United Kingdom. No A-priori power analyses were conducted, instead, sample size was determined heuristically based on prior work in this area (Lakens, 2021). Previously published work testing the 2 × 2 model of perfectionism in sport has utilized samples of varying sizes with ~200 typical (e.g., Crocker et al., 2014). Note also that benchmarking of effects and sample sizes in studies in this area indicates interaction effects of ΔR2 <.10 to .046 and required samples of 152 to 256 to detect those effects (see Hill, 2021). Participants competed in a range of sports, the most common being track and field (*n* = 68), soccer (*n* = 31) and rowing (*n* = 15). The highest level that athletes had participated in was international (*n* = 4), national (*n* = 32), county (*n* = 78) and club (*n* = 75). On average, participants had been playing their sport for 5.21 years (*SD* = 3.07 years).

Procedure

The study was approved by the university ethics committee. The first author made contact with local community sport organizations and schools and provided information to gatekeepers (e.g., coaches and teachers) who in turn decided if recruitment could take place at their organization. If they provided permission, parental/guardian information sheets were then provided and an opt-out consent process used for any participants below the age of 18 years. Parents/guardians were given one week to return an opt-out form and participants were excluded from the study if it was returned. A participant information sheets was also provided and written informed consent was obtained from all participants prior to participation. Paper-and-pencil measures were distributed during a training session in the presence of the first author who was on hand to answer any questions that participants had. Questionnaires were collected from the participants once they were completed.

Measures

PS and PC were measured with the Multidimensional Inventory of Perfectionism in Sport (MIPS; Stoeber et al., 2007). Two subscales from the MIPS were used; Striving for Perfection (5 items; e.g. “I strive to be as perfect as possible”), and Negative Reactions to Imperfection (5 items; e.g. “I feel extremely stressed if everything does not go perfectly”). Evidence suggests that Striving for Perfection and Negative Reactions to Imperfection scores are reliable and valid indicators of PS and PC (e.g., Madigan et al., 2016; Stoeber & Madigan, 2016; Gotwals et al., 2012).

To capture the perceived pressure to be perfect coming from the coach and parents, a further two subscales from the MIPS were used: Coach Pressure to be Perfect (8-items; e.g., “My coach expects my performance to be perfect”), and Parental Pressure to be Perfect (8 items; e.g., “My parents expect my performance to be perfect”). Coach pressure to be perfect reflects athletes’ perceptions that their parents expect them to be perfect and criticize them if they fail to achieve. Parental pressure to be perfect is the same as coach pressure, except that it is parents who are perceived as expecting perfection and being critical. Participants responded to items from all four subscales of the MIPS using a scale from 1 (‘strongly disagree’) to 5 (‘strongly agree’). Scores were calculated as a mean of the items included in each subscale. Evidence suggests that scores on the MIPS are reliable and valid (e.g., Madigan, 2016; Dunn et al., 2016; Stoeber et al., 2009).

Analytical Strategy

To test our model, we followed the procedures of Gaudreau and Thompson (2010) and ran a series of moderated regression analyses. To do so, we centred our predictors (coach pressure and parental pressure) which were then included as predictors in Step 1. In Step 2, we added the interaction between coach and parental pressure. We ran one regression with PS as the dependent variable and one with PC as the dependent variable. We then used simple slope analyses to probe any interaction effects and to test our hypotheses. If no significant

interaction effect was found, we re-ran the regression analysis using uncentred variables and excluded the interaction term (Gaudreau, 2012). We then calculated effects sizes (Cohen's *d*) based on predicted values and used Gaudreau's (2012) compensatory model to test our hypotheses (effect size is calculated as the difference between predicted values for each subtype of pressure divided by the standard deviation of the outcome variable).

Results

Preliminary Analyses

We first inspected the data for missing values. Given that few item responses were missing (< 5%), missing responses were replaced with the mean of the item responses of the corresponding scale (ipsatized item replacement; Graham et al., 2003). Next, we computed Macdonald's omega for all variables (see Table 1) which were all satisfactory (> .70; Nunnally, 1970). Then, we screened each sample for univariate and multivariate outliers (Tabachnick & Fidel, 2007). No participant showed a Z score greater than +/-3.29 or a Mahalanobis distance larger than the critical value at the $p < .001$ level ($\chi^2_{[4]} = 18.47$). Descriptive statistics and bivariate correlations are displayed in Table 1 and moderated regression analyses are displayed in Table 2.

Moderated Regression Analyses

For PS, parental pressure was a significant positive predictor ($B = 0.27$, $p < .001$). In contrast, coach pressure was a nonsignificant positive predictor of PS ($B = .11$, $p = .16$). The two pressure dimensions showed a significant interaction effect ($B = 0.15$, $p = .045$). In this model parent and coach pressure, plus their interaction, accounted for 17% of the variance in PS: F (3, 206) = 14.053, $p < .001$.

For PC, both parental pressure and coach pressure were significant positive predictors ($B = 0.45$, $p < .001$; $B = .17$, $p = .041$). However, the interaction between the two dimensions was nonsignificant ($B = 0.07$, $p = .38$). F (3, 206) = 27.242, $p < .00$) As such, we re-ran the

regression for PC using uncentred variables and excluded the interaction term. Parental pressure emerged as a significant positive predictor of PC (B = 0.47, p < .001), as did coach pressure (B = 0.16, p = .047). In this model, parent and coach pressure accounted for 28.10% of variance in PC: F (2, 207) = 40.515, p < .001.

Simple Slopes Analysis

We conducted a simple slopes analysis and calculated effect sizes for the two perfectionism dimensions (see Figures 2 and 3). For PS, where there was an interaction effect, we found support for hypothesis 2 (d = -0.32), 3 (d = 0.49), and 4 (d = -0.85), but not hypothesis 1 (d = -0.05). For PC, where there was no interaction effect, hypothesis 1 (d = 0.29), 2 (d = -0.87), 3 (d = 0.29), and 4 (d = -0.87) were all supported.

Discussion

In the current study we proposed a new 2 × 2 Model of perfectionistic pressure in youth athletes. In doing so, we tested four hypotheses regarding differences between combinations of parent pressure and coach pressure (low pressure, pure parental pressure, pure coach pressure, and mixed pressure) in regards to levels of PS and PC. For both dimensions of perfectionism, we found support for hypothesis 2 (pure parental pressure was associated with higher levels of PS and PC than low pressure), hypothesis 3 (mixed pressure was associated with higher levels of PS and PC than pure parental pressure), and hypothesis 4 (mixed pressure was associated with higher levels of PS and PC than pure coach pressure). We also found support for hypothesis 1 (pure coach pressure was associated with higher levels of PS and PC than low pressure) in the case of PC but not for PS.

The 2 × 2 Model of Perfectionistic Pressure

The findings provide the first evidence to support use of the 2 × 2 Model of perfectionistic pressure in youth sport. The model integrates both parents and coaches as sources of pressure and is based on the tenets that (i) studying combinations of these two

sources offers a better means of differentiating between athletes based on their level of perfectionism and (ii) that high levels of perfectionistic pressure from multiple sources is more problematic than from any one source. The findings provide support for these tenets. Of especial note is that on most occasions we could differentiate between subtypes of perfectionistic pressure based on levels of perfectionism athletes exhibited (seven of eight tests) and that, in most cases, higher levels of perfectionism corresponded with higher levels of perfectionistic pressure from parents and coaches (again, seven of eight tests).

Regarding the four specific hypotheses we tested, for both PS and PC, support was found for hypotheses 3 and 4. These results clearly signal that, as expected, youth athletes report the highest levels of perfectionism when perfectionistic pressure is experienced as coming from *both* parents and coaches. The potential for messages from parents and coaches to act on one another is evident in previous research. In a study of the interaction between parent and coach autonomy-support on sport-related outcomes in youth athletes, for instance, Gaudreau et al. (2016) tested a protective-protective hypothesis (both acting on each to magnify the benefits) and a compensatory-protective hypothesis (high coach autonomy-support buffering low parent autonomy-support), and found support for the latter. Here, we have evidence for a "vulnerable-vulnerable hypothesis" – with multiple sources of perfectionistic pressure acting on one another to magnify possible harm. This finding holds particular importance as it demonstrates that youth athletes most at risk to perfectionism, and any negative effects, are likely to be those who perceive pressure from multiple social agents. Seemingly, it is a worst-case scenario where neither parents or coaches offer mitigation against the other.

The findings for hypothesis 1 and 2 are best viewed alongside one another as both include comparison to a low perfectionistic pressure subtype. Hypothesis 2 was supported for both PC and PS, signalling that high parental pressure (accompanied by low coach pressure)

was associated with higher perfectionism in youth athletes. By contrast, hypothesis 1 received mixed support in that high coach pressure (accompanied by low parent pressure) was associated with higher PC but not higher PS. With this pattern of differences in mind, it seems that pressure from parents and coaches both correspond with higher PC but it is parental pressure that determines youth athletes PS. This is perhaps a surprising finding as it is at odds with work of Madigan et al. (2019) who found that coach pressure (not parental pressure) uniquely predicted increases in PS over time. However, outside of perfectionism research, there are examples where parents, rather than coaches, have been found to me more important in youth sport. For instance, O'Rouke et al (2014) found when comparing perceptions of parent and coach motivational climates, only parent climates accounted for end of season self-esteem, anxiety and motivation regulation above coach climate. The finding here then serves as a reminder of the importance of parents in a youth sport context.

There are also several explanations for the difference in findings here and with Madigan et al. (2019). One explanation is the differences in ages between samples (present study *M* age ~ 15 years vs 17 years for Madigan et al., 2019). This alludes to the possible influence of different developmental stages. Parents may be more influential initially and later supplanted by coaches or peers over time for youth athletes. Recent research on perfectionism supports this possibility with perceptions of parental pressure decreasing from mid-adolescence but perceptions of coach pressure remaining comparatively higher into adulthood (Dunn et al., 2022). A related explanation is that the two samples differ in "eliteness" (or at least commitment to sport) and this influences the time spent with coaches and influence on identity formation. Commensurate with being older, the samples in Madigan et al (2019) were training approximately 10 hours a week, longer than we would expect for typical club and county athletes in our sample. Our sample will likely be spending comparatively more time receiving feedback and 'debriefing' from their parents in pre- and

post-sport setting (Elliot & Drummond, 2017). Studying and comparing perfectionism development from early-to-middle-to-late adolescence is required to better understand these nuances.

It may be the case that perfectionistic strivings and concerns develop differently, or at different rates, depending on context and the social agents present. Work examining the development of perfectionism outside of sport has provided some evidence for this showing, for example, how greater academic achievement may drive increases in perfectionistic strivings but not concerns (Damian et al., 2017). Comparison of same-sex (father-son and mother-daughter) versus primary caregiver (mother-son and daughter) hypotheses in the developmental research on perfectionism also suggests that whether it is maternal or paternal pressure could also be important. On this issue, a recent large meta-analysis showed that father perfectionism was a stronger predictor of perfectionism in sons than in daughters (see Smith et al., 2022). These hypotheses have been tested in sport on a few occasions and have produced mixed findings (e.g., Appleton et al., 2010). At the current time, there are too few studies that are designed in a manner to assess these possibilities and observe the development of perfectionism over time in sport.

Beyond the development of perfectionism, the model has the potential to explain differences between athletes in other outcomes. Outcomes that have previously been linked with perfectionism warrant first consideration. This includes athlete wellbeing (e.g., competitive anxiety, depressive symptoms, and burnout; Hill et al., 2018) and sport performance where coaches and parents again can be expected to influential. The model also has the potential to differentiate between athletes in regards to other outcomes not examined in previous perfectionism research in sport but linked to coaches and parents. These outcomes include key features of the athlete-parent and athlete-coach relationship (e.g., respect, trust, and warmth; Dorsch et al., 2016). Another concept related to perfectionism that may be an

interesting outcome is excellencism – that is the pursuit of excellence – and whether its developmental origins are similar or dissimilar to perfectionism (Gaudreau et al., 2022). Overall, although the model is in its infancy, our findings offer early support for its use in combining multiple sources of perfectionistic pressure and differentiating between junior athletes based on levels of resulting perfectionism, and possibly other differences.

Limitations and Other Future Research

The present study has several limitations. First, the findings may not generalise beyond the present sample. Different social, cultural, and organizational contexts have the potential to alter the sport experience and developmental processes (Dorsch et al., 2020). Future studies should therefore re-examine these relationships in different sports, and in different geographical areas, such as North America or Europe. Second, we did not account for the amount of time an athlete spends with their parents and coaches. It may be that the longer an athlete is exposed to a pressurising coach the more likely they are to internalise these behaviours. Therefore, exploring the effects of exposure duration to pressuring social agents on perfectionism may be a potential avenue for future research to consider. Third, the correlational design of the study limits our ability to infer causality. Here, if exposure to parent and coach pressure occurred before, during or after the development of the perfectionism is not known. It is necessary for future research to use longitudinal designs to establish temporal relations between the study variables (see e.g., Madigan et al., 2019). Finally, future work may also wish to examine potential differences in the perceptions of pressure from both an athlete and parent perspective. While the two are difficult to disaggregate, it is critical in regard to identifying underlying development mechanisms and guiding intervention work.

Conclusion

We provided the first test of the 2 × 2 Model of Perfectionistic Pressure and the development of perfectionism. A combination of high parental pressure and high coach pressure was associated with the highest levels of both PS and PC in junior athletes. We recommend the use of the new model in studying the development of perfectionism as well as understanding other outcomes associated with the pressure to be perfect from parents and coaches.

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Table 1.

Descriptive Statistics, Omegas, and Bivariate Correlations.

	1	2	3	4
1. Perfectionistic strivings				
2. Perfectionistic concerns	.62***			
3. Parental pressure to be perfect	.38***	.52***		
4. Coach pressure to be perfect	.28***	.39***	.56***	
M	3.38	2.83	2.06	2.37
SD	0.82	0.94	0.88	0.83
Omega	.82	.86	.94	.91

Note. $N = 210$. ***$p < .001$, two-tailed.

Table 2.

Moderated Regression Predicting Perfectionism Dimensions

	Perfectionistic strivings		Perfectionistic concerns	
	R^2	*B*	R^2	*B*
Step 1	.15***		.28***	
Parental pressure to be perfect		0.31***		0.47***
Coach pressure to be perfect		0.10		0.16*
Step 2	.17***		.28***	
Parental pressure to be perfect		0.27***		0.45***
Coach pressure to be perfect		0.11		0.17*
Interaction		0.15*		0.07

Note. $N = 210$. *$p < .05$. ***$p < .001$, two-tailed.

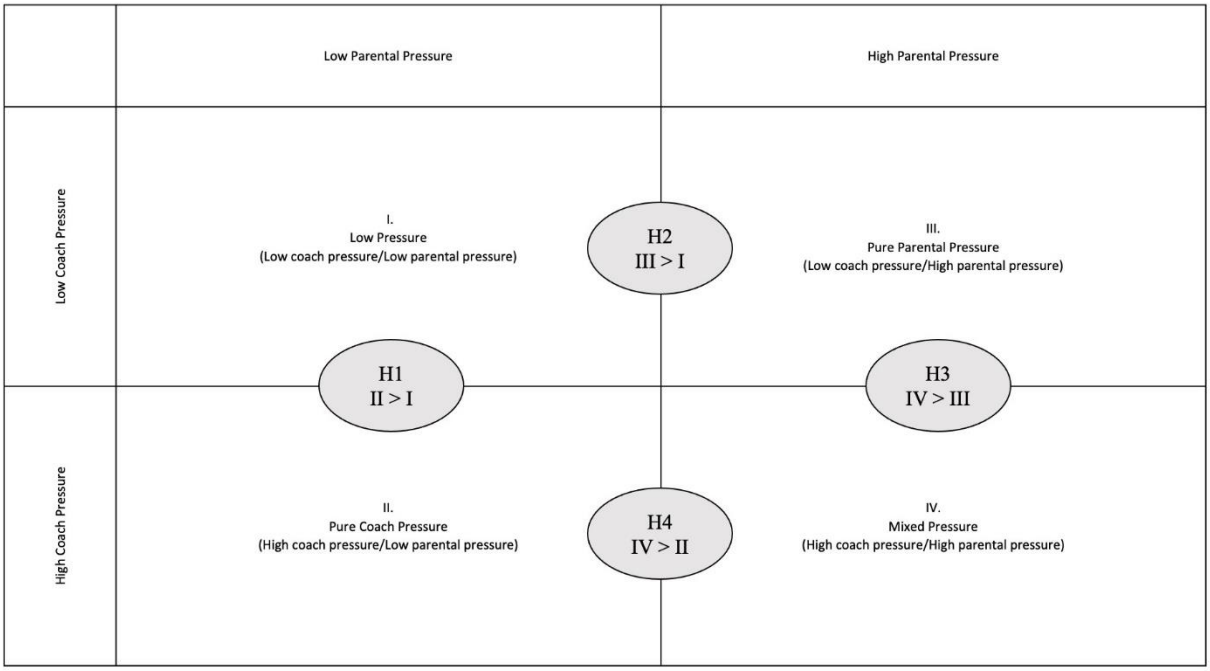

Figure 1. The 2 × 2 Model of perfectionistic pressure. H = hypothesis.

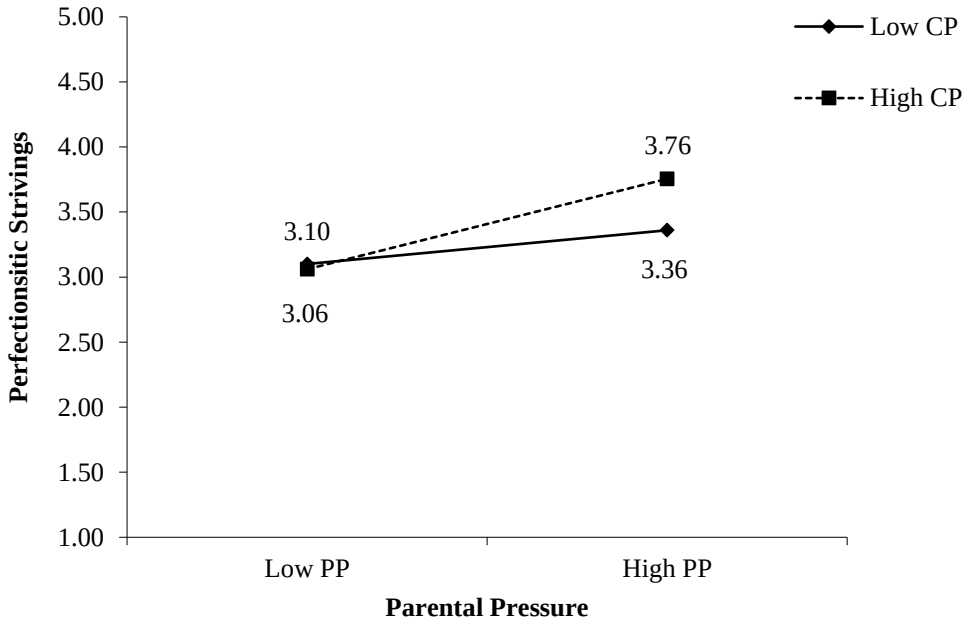

Figure 2. Perfectionistic strivings simple slopes using predicted variable values. *Note.* PP = Parental pressure. CP = Coach pressure.

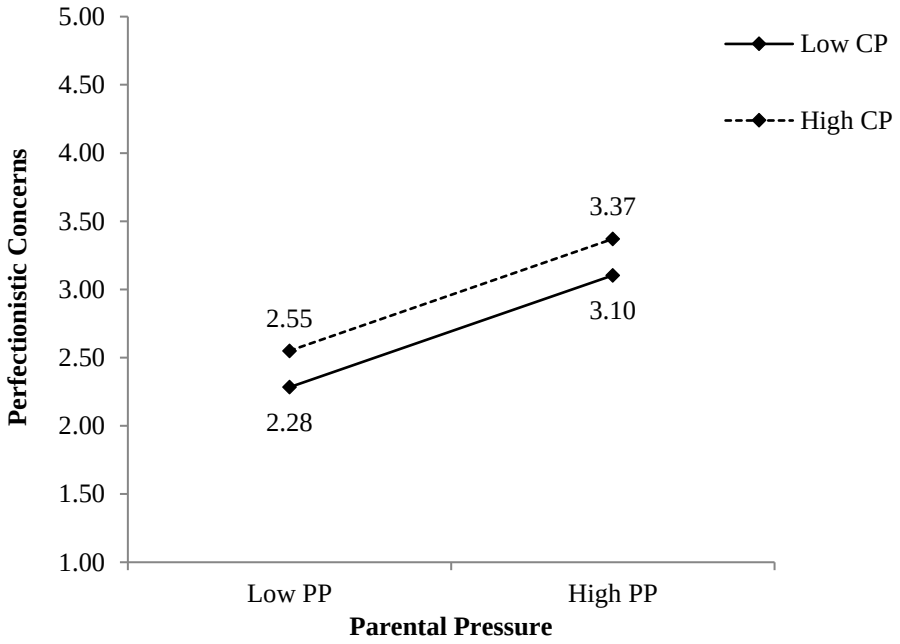

Figure 3.
Perfectionistic concerns simple slopes using predicted variable values. *Note.* PP = Parental pressure. CP = Coach pressure.