**Examining the psychological characteristics of developing excellence profiles of male English youth soccer players: Differences and commonalities across ages and performance levels**

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**ABSTRACT**

The aim of this study was to investigate differences in PCDEs across different age groups (U13, U14, U15, U16 and youth team (YT)) and categories of participation (categories 1, 2 and 3 at academy level, and grassroots (GR)) in male English youth soccer players (*n* = 375). Data was gathered using the PCDE questionnaire version 2 (PCDEQ2). Differences between age groups and categories of participation analysed using the Kruskal-Wallis *H* test. Across categories of participation highest differences in PCDEs were reported in perfectionistic tendencies (*d* = .64, p = <0.01, self-directed control and management (*d* = .63, p = <0.01) and adverse response to failure (d = .58, p = <0.01) with category one players reporting the highest scores. Across age groups, highest differences were also demonstrated in perfectionistic tendencies (d = .57, p = <0.01) and adverse response to failure (d = .49, p = <0.01) with youth team players reporting the highest scores. YT and category one players also demonstrated the highest scores in use of imagery and active preparation (IAP), with category one players also demonstrating the highest and lowest score on use of active coping strategies and presentation of clinical indicators, respectively. The findings of the current study have important implications for key stakeholders involved in the planning and monitoring of a players talent development environment. Careful consideration should be given to identifying and developing players’ psychological characteristics to ensure positive impacts are nurtured throughout their journey.

***Lay summary***

This study explored the differences and similarities in PCDEs between different ages and categories of participation in male English youth soccer players. Differences were particularly evident between categories of participation in self-directed control and management, adverse response to failure and perfectionistic tendencies, where higher categories of participation and older age groups demonstrated the highest scores in these factors. Across age groups, the highest differences were also demonstrated in perfectionistic tendencies with the oldest age group (i.e., youth team players) reporting the highest scores. Monitoring of these factors by coaches, parents and other important stakeholders could help facilitate positive psychosocial skills, characteristics and behaviours in players facilitating effective talent development.

**IMPLICATIONS FOR PRACTICE**

* An adverse response to failure may have a dual-effect on players and may not necessarily be negative. It could, in fact, facilitate deeper reflection that could benefit players’ development in the long-term by facilitating more honest self-evaluation.
* When using the PCDEQ2 practitioners should be aware of the potential ‘dual-effect’ nature of perfectionism, and therefore carefully distinguish between adaptive (i.e., perfectionistic strivings) and maladaptive (i.e., perfectionistic concerns) characteristics, if possible.
* Key stakeholders (e.g., parents and coaches) should be made aware of their own impact on players’ actions and wellbeing through educational workshops delivered by specialists into PCDEs, such as sport psychologists.

**Examining the psychological characteristics of developing excellence profiles of male English youth soccer players: Differences and commonalities across age groups and performance levels**

**INTRODUCTION**

In soccer, talent identification and development systems (TIDS) exist to produce elite players (Bergkamp et al., 2019). The ultimate aim of these systems is to select and then develop players who will, *in the future*, outperform those players who are either not selected for academy programmes or de-selected somewhere along the pathway (Larkin & Reeves, 2018). Traditional talent development models have often been criticised due to adopting too narrow a focus on individual elements of performance rather than adopting a more holistic approach (Collins et al., 2018; Gulbin et al., 2013; Till & Baker, 2020). In 2012 the Elite Player Performance Plan (EPPP) was introduced by the English Premier League with the intention of increasing the number of home-grown players in the English league’s top four divisions by adopting a holistic multi-disciplinary approach to talent development, facilitated through increased contact time and specialist coaching (Premier League, 2011). Within the EPPP there are three phases: (1) Foundation (U9 to U11), (2) Youth Development (U12 to U16) and (3) Professional Development (U17 to U23) with contact time and amount of funding allocated by academy status (i.e., category one being the ‘most elite’ and allocated the most). These phases are within categories of participation (COP) from 1 to 4 (or grassroots)The holistic multi-disciplinary approach to talent development emphasizes growing importance on player psychosocial development to harness the necessary skills required to meet the challenges and emotions experienced on the talent development journey (Gledhill et al., 2017; Larkin & Reeves, 2018; MacNamara & Collins as cited in Baker, 2017), in addition to developing the necessary psychosocial skills required for achieving success in everyday life events, which become increasingly important if the players are released (Rongen et al., 2018). This can be considered particularly important for youth English academy football players where only a very small amount (around 5%) of boys will go on to play professional football (Roe & Parker, 2016).

To date, however, much of the emphasis on ‘measuring’ the current performance and development of academy soccer players has centered around more quantifiable data such as testing of physical, technical and tactical attributes (Koopman et al., 2020), whilst somewhat neglecting the psychosocial skills required. Indeed, Till and Baker (2020) advocated an evidence-based ‘biopsychosocial’ approach as a possible solution to optimizing talent development, emphasizing particular importance on developing psychosocial characteristics within younger age groups where these characteristics may not yet have emerged and may be critical to future success (Collins & MacNamara, 2012; Gledhill et al., 2017; Sarmento et al., 2018). Accordingly, Collins and MacNamara (as cited in Baker, 2017) have called for more understanding and assessment of key psychological characteristics to provide balance to the large body of literature focusing on technical, tactical and physical factors.

MacNamara et al. (2010a; 2010b) developed psychological characteristics of developing excellent (PCDEs) and later a questionnaire to assess these characteristics (MacNamara & Collins, 2011) currently practitioners are utilizing the second version of the PCDE questionnaire (PCDEQ2) devised by Hill et al. (2019). This questionnaire comprises seven PCDE factors, including: (1) Adverse response to failure (ARF), (2) Imagery and active preparation (IAP), (3) Self-directed control and management (SDCM), (4) Perfectionistic tendencies (PT), (5) Seeking and using social support (SUSS), (6) Active coping (AC) and (7) Clinical indicators (CI). The authors discovered that ARF, SDCM SUSS, AC and CI discriminated between those athletes deemed by coaches to have a low and high likelihood of developing to the elite level (Hill et al., 2019). Despite these findings and the potential importance of the PCDEs, very little research has explored PCDE profiles in academy soccer (Kelly et al., 2018; Saward et al., 2019). Contrary to Hill et al. (2019), Kelly et al. (2018) did not find any association between PCDEs, and low and high performers as measured by the original version of the questionnaire (PCDEQ). However, it is important to note that Kelly et al. (2018) looked at current performance rather than potential development and may therefore have missed important psychosocial skills that were gestating within the players, to potentially emerge at a later point. Saward et al. (2019) also used the first version of the PCDEQ across a 20-month period to examine how PCDEs may be associated with future playing standard. These authors discovered several age-related changes in PCDE factors that may influence career progression and be characteristic of category 1 and 2 scholars across the under-12 to under-16 age groups. Factors that were found to indicate membership of higher category status were the ability to cope with performance and developmental pressures and evaluating performances and working on weaknesses. Interestingly, imagery use (during practice and competition) appeared to decrease with age, whereas coping with performance and developmental pressures appeared to increase.

With this in mind, it should be noted that MacNamara et al. (2010b) describe the journey to elite level as being a dynamic and individualised non-linear pathway (i.e., different for every athlete, ever-changing and with many ups and downs). Collins and MacNamara (2012: 907) describe this journey as the “rocky road to the top”, suggesting that an amount of structured challenge is necessary within the development pathway in order to develop PCDEs alongside physical, technical and tactical attributes. These challenges could include, for example, playing up or down an age groups, being de-deselected for individual games or playing out of position. According to Van Yperen (2009) these could also occur naturally such as parental divorce, having a larger number of siblings and being from certain ethnic backgrounds. Crucially, players would also need to be supported by appropriate stakeholders (e.g., parents and academy staff) to facilitate development through these challenges, perhaps in a periodized manner (Hill et al., 2019, Taylor & Collins, 2020). In order for support requirements to be identified and effectively dealt with, some knowledge into the differences and commonalities across ages and COP would be necessary. This could then ensure that the correct level and amount of support is provided according to player’s individual needs.

Accordingly, the purpose of this study was to examine differences and commonalities in the seven PCDE factor scores across age groups and performance levels in male youth soccer players.It was hypothesized that older players and those at higher levels of participation would have significantly different scores across the seven PCDE factors.

**Methodology**

***Study design***

A cross-sectional research design was used to investigate differences and commonalities in PCDE profiles across different age groups and performance levels in male English youth soccer academy players. PCDE profiles were obtained from players between October 2019 and April 2020, which is during the competitive playing period. The sample of players was purposefully selected from the foundation, youth and professional development phases, and across all different levels of participation (i.e., academy categories 1 to 3 and grassroots). Players were selected if they fulfilled the criteria of playing in an age group between under-13 and under-18 (on 1st September in that selection year). Ethical approval was granted from the author’s institutional ethics committee, with voluntary informed or parental assent (participants under the age of 16) attained prior to participation. After seeking approval from relevant club officials, PCDEQ2 questionnaires were either e-mailed to prospective participants for completion using the online platform Survey Monkey or were completed under the supervision of the researcher. Participants were informed about the general purpose of the study and told that their identities would be kept strictly confidential and that all the items in the questionnaires should be answered as honestly as possible. The questionnaire was administered and took between 15 and 30 minutes to complete.

***Participants***

Three hundred and seventy five male English youth soccer players (age: 12 to 18) participated in the study. Table 1 provides a breakdown of number of participants per age group and COP.

**Table 1.** Numbers per age group and category

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Age Group | Category 1 | Category 2 | Category 3 | Grassroots (GR) | Total  |
| U13 | 15 | 17 | 26 | 20 | 79 |
| U14 | 16 | 12 | 33 | 20 | 81 |
| U15 | 31 | 11 | 28 | 21 | 91 |
| U16 | 26 | 4 | 23 | 12 | 65 |
| YT | 25 | 18 | 9 | 8 | 59 |
| Total  | 113 | 62 | 119 | 81 | **375** |

***Psychological characteristics of developing excellence questionnaire version 2 (PCDEQ2)***

The PCDEQ2 questionnaire (Hill et al., 2019) was used, having been either electronically distributed to potential participants or completed by paper version in the presence of the researcher. The survey consisted of 88 statement items, with similarity responses marked on a 6-point Likert scale from 1 (“very unlike me”) to 6 (“very like me”). A combination of positively framed (n = 72) and negatively framed (n = 16) items were used in an attempt to minimise response bias (Field, 2018) and acquiescence bias (Hagger & Smith as cited in Horn & Smith, 2019). Table 2 highlights the seven PCDE factors being measured. According to Hill et al. (2019) the reliability of the whole PCDEQ2 questionnaire at initial development was 0.879 demonstrating very good internal consistency.

**Table 2.** Subscales and Sample Items

|  |  |
| --- | --- |
| **Factors/subscales** | **Sample Items** |
| Adverse response to failure (ARF - linked to fear of failure)  | “When things are going wrong for me, my future seems uncertain” |
| Imagery and active preparation (IAP - for managing arousal and practising skilled performance) | “I include imagery in my preparation” |
| Self-directed control and management (SDCM - related to self-regulation in development) | “I often act without thinking through all the alternatives” |
| Perfectionistic tendencies (PT - including perfectionism, anxiety, fear of failure, obsessive passion, and realistic performance evaluation) | “The people around me expect me to be perfect at everything I do” |
| Seeking and using social support (SUSS - use of effective support networks in Talent Development) | “I often seek advice from different people” |
| Active coping (AC -proactive deployment of coping mechanisms) | “When we need to work hard I am first in the queue” |
| Clinical Indicators (CI - of mental health factors such as anxiety, depression and eating disorders) | “After eating, I sometimes feel guilty about its effect on my body shape” |

***Data Analysis***

Descriptive statistics are reported using the median score. As the PCDEQ2 is an ordinal Likert scale, two Kruskal-Wallis *H* (non-parametric) tests were used to examine whether significant differences existed across age groups (U13, U14, U15, U16 and Youth Team (YT)) and categories (categories one, two, three and Grassroots (GR)) of participation (Pallant, 2016). When significant differences were observed across age groups and categories of participation, post-hoc analysis was completed using pairwise inter-group comparisons. Significance level was established at p < 0.05 (Field, 2018). Cohen’s *d* was calculated by transformation of partial eta squared to obtain the magnitude of differences through the effect size calculator for non-parametric tests ([www.psychometrica.de/effect\_size.html](http://www.psychometrica.de/effect_size.html)) and interpreted using the scale from Cohen (1998) as: 0 – 0.2 = trivial; 0.2-0.5 = small; 0.5-0.8 = moderate; > 0.8 = large.

**Results**

***Analysis of Psychological Characteristics of Developing Excellence between Age Groups***

The median scores for all PCDE factors by age group are illustrated in table 3, which also reports significant differences and effect size differences between age groups for all PCDE factors. A statistically significant difference was found between age groups on: ARF (*H* 4 = 24.21, p = .000); IAP (*H* 4 = 21.31, p = .000); and PT(*H* 4 = 30.60, p = .000) factors but not in SDCM (*H* 4 = 1.38, p = .849); SUSS (*H* 4 = 6.94, p = .139); AC (*H* 4 = 1.54, p = .819); and CI (*H* 4 = 3.22, p = .523).

**Table 3.** Median values and differences across age groups and psychological characteristics of developing excellence factors

|  |  |  |
| --- | --- | --- |
| **Age groups** | **Files (n)** | **Psychological characteristics of developing excellence (PCDEs)** |
| **ARF** | **IAP** | **SDCM** | **PT** | **SUSS** | **AC** | **CI** |
| U13 | 79 | 2.71 d | 3.60 d, e | 4.43 | 3.10 d, e | 4.44 | 4.40 | 2.33 |
| U14 | 81 | 2.60 d, e | 3.83 e | 4.50 | 3.20 d, e | 4.33 | 4.50 | 2.22 |
| U15 | 91 | 2.79 e | 3.53 d, e | 4.64 | 3.10 d, e | 4.56 | 4.50 | 2.11 |
| U16 | 65 | 3.07 a, b, c | 4.00 a, c | 4.57 | 3.55 a, b, c | 4.06 | 4.40 | 2.17 |
| YT | 25 | 3.33 a, b, c | 4.20 a, b, c | 4.43 | 3.70 a, b, c | 4.33 | 4.60 | 2.33 |
| Age effect |  | .000 | .000 | .849 | .000 | .139 | .819 | .523 |
| Effect size | .49 | .48 | .18 | .57 | .18 | .08 | .09 |
| Descriptor | Small | Small | Trivial | Moderate | Trivial | Trivial | Trivial |
| *ARF* = Adverse response to failure, *IAP* = Imagery and active preparation, *SDCM* = Self-directed control and management, *PT* = Perfectionistic tendencies, *SUSS* = Seeking and using social support, *AC* = Active coping, *CI* = Clinical Indicators, a = different from U13 with P < .05ARF = Adverse response to failure, *IAP* = Imagery *and active preparation, SDCM = Self-directed control and management, PT = Perfectionistic tendencies, SUSS = Seeking and using social support, AC = Active coping, CI = Clinical Indicators, a = different from U13 with P < .05, b = different from U14 with P < .05, c = different from U15 with P < .05, d = different from U16 with P < .05, e = different from YT, b = different from U14 with P < .05, c = different from U15 with P < .05, d = different from U16 with P < .05, e = different from YT*from U14 with P < .05, c = different from U15 with P < .05, d = different from U16 with P < .05, e = different from YT |

Effect sizes between age groups were trivial for SDCM, SUSS, AC and CI; small for ARF and IAP; and moderate for PT. Out of all PCDEs PT had the largest effect size difference between age groups (*d* = .57). Both the U16 and YT had significantly higher ARF, IAP and PT values than the U13-U15 age groups. There were no significant differences between age groups on SDCM, SUSS, AC and CI.

***Analysis of psychological characteristics of developing excellence between categories of participation***

Table 4 shows median scores for all PCDE factors by category of participation as well as significant differences and effect size differences between categories of participation for all PCDE factors. A statistically significant difference existed between categories of participation on: ARF(*H* 3 = 31.31, p = .000); IAP (*H* 3 = 11.60, p = .009); SDCM (*H* 3 = 34.60, p = .000); PT (*H* 3 = 36.49, p = .000); AC (*H* 3 = 9.40, p = .024); and CI(*H* 3 = 17.43, p = .001), but not for SUSS (*H* 3 = .79, p = .853).

**Table 4.** Median values and differences across categories of participation and psychological characteristics of developing excellence factors

|  |  |  |
| --- | --- | --- |
| **Categories of participation** | **Files (n)** | **Psychological characteristics of developing excellence (PCDEs)** |
| **ARF** | **IAP** | **SDCM** | **PT** | **SUSS** | **AC** | **CI** |
| Category 1 | 113 | 3.10 c | 4.00 c, d | 4.71 d | 3.60 b, c, d | 4.44 | 4.60 d | 2.00 b, d |
| Category 2 | 63 | 3.00 c | 3.73 | 4.43 d | 3.45 a, d | 4.33 | 4.45 | 2.44 a |
| Category 3 | 118 | 2.45 a, b, c | 3.73 a | 4.64 d | 3.10 a | 4.44 | 4.50 | 2.11 d |
| Grassroots | 81 | 2.86 c | 3.70 a | 4.00 a, b, c | 3.00 a, b | 4.33 | 4.20 a | 2.56 a, c |
| Category Effect |  | .000 | .009 | .000 | .000 | .853 | .024 | .001 |
| Effect Sizes |  | .59 | .32 | .63 | .64 | .16 | 0.27 | .41 |
| Descriptor |  | Moderate | Small | Moderate | Moderate | Trivial | Small | Small |

*ARF* = Adverse response to failure, *IAP* = Imagery and active preparation, *SDCM* = Self-directed control and management, *PT* = Perfectionistic tendencies, *SUSS* = Seeking and using social support, *AC* = Active coping, *CI* = Clinical Indicators, a = different from category 1 with P < .05, b = different

Effect sizes were trivial for SUSS; small for IAP, AC and CI; and moderate for ARF, SDCM and PT (the latter had the largest effect size at *d =* .64). There were no significant differences between categories of participation between age groups on SUSS. GR had significantly lower SDCM values than all the other three categories. Category one had significantly higher PT scores than all the other three categories, and Cat 2 was significantly higher than GR.

**Discussion**

The measurement and development of PCDEs is a burgeoning area within contemporary sport science research and application. Currently, however, little research has investigated their use in elite academy soccer (Collins et al., 2018), especially when using the PCDEQ2 as an assessment tool. Therefore, the aim of this study was to examine whether differences exist in scores on the seven factors of the PCDEQ2 between age groups and categories of participation (COP) (i.e., category one, two and three academies and grassroots) in soccer. It was hypothesized that older soccer players and those at higher COP would have significantly different scores on the seven PCDE factors. The key finding of this study was that significant differences were found in some PCDE factors across age groups and COP. In agreement with our hypothesis older players (U16 and YT) had significantly higher PCDE scores than younger players (U13-U15) but only in ARF, IAP and PT. Interestingly, the highest effect size difference between the older and younger age groups was in PT (*d* = .57). When examining differences between COP, significant differences were evident in all PCDE factors apart from SUSS, with the largest effect size differences in ARF, SDCM and PT (*d* = .59, *d* = .63 and *d* = .64 respectively).

In the current study older players (U16 and YT) had significantly higher ARF, IAP and PT than younger players. Our results illustrated that ARF was highest in players participating in category one and two academies and more prevalent in older players. The close links between perfectionism and fear of failure (Hill et al, 2019) may suggest that an adverse response to failure could be a manifestation of perfectionistic tendencies, particularly as both ARF and PT showed a linear increase through the age groups (with the exception of the U14s) and in the highest COP (i.e., category one and two academies). This would suggest that as players progress through the system, there is a likelihood of ARF and PT increasing as they get closer to the professional phase (Noon et al., 2015). These factors could be particularly pertinent at higher COP, where progression could also lead to playing at a higher professional standard (i.e., playing in the English Premier League (EPL) rather than League Two). For example, the vast majority (90%) of EPL clubs also have a category one academy status (Crane, 2018). It is interesting to note that although higher ARF scores have previously been suggested to be due to “suboptimal interaction with developmental challenge” (Hill et al. 2019: 524), it is also important to recognize that both ARF and PT could have a “dual-effect” which may offer partial explanation for the current study’s outcome. This could possibly mean that higher scores in these factors could also lead to – or represent - positive psycho-behavioral characteristics (e.g., quality practice, goal-setting and self-reinforcement, focus and distraction control), in addition to the negative characteristics previously mentioned. Indeed, Taylor and Collins (2020) describe ‘emotional disturbances’ as being important factors to embed into the TD pathway to monitor and enhance psychosocial skills. These disturbances may be either positive (e.g., continued selection or attaining status within the squad) or negative (injury, increased scrutiny or struggling to adjust to the group dynamic), with the latter presumably eliciting an adverse response. Taylor and Collins (2021) claim that negative emotional states lead to athletes engaging in more *detailed* reflection (as opposed to positive states that provoke a more *general* type of reflection). This may again be evidence that an adverse response may not necessarily be detrimental and could in fact lead to more detailed self-evaluation and learning (and could even be a coping mechanism).

***Perfectionistic Tendencies***

Perfectionism is generally accepted as being multidimensional (Hill et al., 2018), consisting of perfectionistic strivings (adaptive, self-referenced and leading to setting of high standards) and perfectionistic concerns (maladaptive worries over making mistakes and feeling an imbalance between expected and actual performance (Madigan, 2016). Hill et al (2018) speculated that perfectionism may change with age as individuals develop over their lifespan. It is a distinct possibility that the importance of winning and outcome goals in general (e.g., competition for scarce places at the next age group) may increase throughout adolescence, which in turn leads to greater levels of PT and ARF, as found in the current study. Larkin et al. (2015) discovered that higher perfectionistic strivings in players seemed to facilitate more engagement in types of soccer practice (coach-led, individual practice, peer-led play, and indirect involvement), which ultimately lead to higher levels of performance. Therefore, if players can avoid the negative connotations of perfectionist concerns (such as burnout and dropout), this could be a helpful factor in advancing through age groups and reaching and/or staying at higher COP. It could also explain why those athletes that are unable to deal with this in a certain manner may be filtered out of the system as they get older or find their level further down the participation structure (at a lower COP) – a form of sporting ‘natural selection’. Alternatively, adverse responses may be a part of an elite players make-up and be necessary for them to progress to higher levels. Either way, player support/training on how to avoid the negative consequences of perfectionistic concerns would seem like a vital part of the process for player wellbeing and also to reduce the chance of type one (incorrectly selected/retained) or type two errors (incorrectly removed/de-selected) when making decisions on players’ futures (i.e., retain or release).

***Adverse Response to Failure***

It has been suggested that both ARF and PT can be affected by significant others, such as parents and coaches (Madigan, 2016, Sagar & Stoeber, 2009). Indeed, various researchers and applied practitioners (Collins et al., 2016; Madigan, 2016; Sagar & Stoeber, 2009) have identified “parental and coach pressure to be perfect” (Madigan, 2016: 49) as influencing perfectionistic concerns. This in turn has been linked with negative consequences such as avoidance behaviors, competitive anxiety and burnout. For example, Collins et al. (2016) claimed that athletes at the ‘super-elite level’ had parents who were more facilitative than those at the elite level, with the latter applying more pressure in the development period. Furthermore, Sagar and Stoeber (2009) found that perceived coach pressure predicted a heightened fear of experiencing shame and embarrassment in their participants when experiencing failure, in comparison to less demanding coaches. However, this enhanced perceived pressure also elicited more positive emotions after success (e.g., happiness, pride, satisfaction), perhaps again illustrating the potential “dual-effect” nature of an ARF mentioned previously. These findings provide further support that an ARF is not necessarily a bad thing and may be indicative of being part of an elite environment where high expectations are the ‘norm’, especially as it seems to be a more prevalent trait in older and higher category players. Coaches’ expectations and influence may become more intense as players approach the youth and first team environments (Collins & MacNamara as cited in Baker, 2017). This may also raise some important questions about the differences in coaching behaviors between COP. For example, are higher COP coaches more demanding in terms of the pressure they apply to players to win (Sagar & Stoeber, 2009)? Could this also be influenced by the additional contact time for players at higher COP? For instance, under current EFL guidelines (EFL, 2018) category one under-15 and above receive 46 weeks of coaching per year, compared to 40 weeks for category three. Is it also possible that higher category coaches have different attitudes, knowledge and experience to lower category and grassroots coaches? This could mean that players under their charge could receive different types of coaching, arguably to a higher standard (although measurement of what constitutes a higher standard could prove problematic depending on how coaching effectiveness is measured in this domain). It would also be interesting to ascertain whether higher COP academies have bigger budgets for coaches to access continuing professional development and the knowledge gained from multi-disciplinary performance teams? Our findings would imply that careful consideration should be given into how best to foster the psycho-behavioral skills required to deal with both negative and positive effects of ARF and PT. Key stakeholders (such as parents and academy staff) would need to be educated into how their input can be influential when designing appropriate and differentiated developmental challenges throughout the talent development pathway, especially at lower COP and younger age groups (Taylor & Collins, 2020). This could form the basis of future investigations, for example how best to optimize this process.

***Imagery and Active Preparation***

Imagery and other forms of active preparation such as, pre-competition and competition focus plans when used from an early age have been shown to enhance competition preparation, transitions to a different level, coping with injury, and self-evaluation of performance (MacNamara et al., 2010a; Orlick & Partington, 1988). The PCDE factor of imagery and active preparation (IAP) explores an athlete’s ability to use visualization for motor learning and arousal regulation purposes (Hill et al, 2019). In the current study significant differences were observed between age groups in IAP, with category one players appearing to visualize and actively prepare more than those in lower categories, including grassroots. When comparing elite and sub-elite athletes there is a link between use of psychological skills and level of performance (Elferink-Gemser et al., 2004). Additionally, top performers (i.e., Olympic and world champions) use more imagery and at a more demanding level (i.e., visualized themselves achieving champion status), as opposed to less successful athletes that set their sights lower (Orlick and Partington, 1988). The implications from this would be that IAP still be encouraged in players from higher COP, but also enhanced in those from lower COP and from an earlier age where time and budgets allow. One possible method may be to deliver workshops to players (and coaches and parents) to explain and encourage use of IAP from as young as possible, with regular monitoring of deployment of these skills.

***Self-directed Control and Management***

Development of the PCDE factor of self-directed control and management (SDCM) could lead to performing at a more elite level. It includes elements such as metacognition, grit, and delayed – rather than instant - gratification i.e., working hard for success in the long-term over the short-term (Toering & Jordet, 2015). In the current study there was no difference between age groups, however, similar to IAP, category one players had the highest scores. This would suggest that category one players have better ‘self-control’ and focus towards their long-term goals, vital for motivating players towards deliberate practice that may often be viewed as tedious and unenjoyable (Ericsson et al., 1993). Jonker et al. (2010) noted in their research that elite youth players have stronger self-regulatory skills than grassroots players. If this is the case, it may well follow that there could also be differences between levels of SDCM and COP. Accordingly, Larkin et al. (2015) observed that higher perfectionistic strivings may lead players to practice in ways which could enable them to progress to higher levels of participation. Toering and Jordet (2015) suggest that better self-control and focusing on the bigger picture (long-term goals and knowledge of the pathway) is vital in players’ willingness to do this extra training compared to their peers and could be a distinguishing factor between top elite players and those below them, possibly driven by PT and ARF. Players with higher self-regulation reflected more (thought to facilitate advancement to higher levels) and tried harder, even under challenging conditions, consequently learning more (possibly fueled by ‘emotional disruptions’ – Taylor & Collins, 2021). Coaches again appear to be important when exploring SDCM. How best to guide players to think autonomously rather than the coach being omnipotent and providing all the answers would be a beneficial move (Gledhill et al, 2017; Ryan & Deci, 2000). Practice design would need to account for coaching behaviors where players are given the chance to self-regulate. What Gledhill et al. (2017: 17) describe as “autonomy supportive coaching” (providing practices that are specific, appropriately challenging and more task/mastery-oriented) would allow players to engage more effectively with the program leading to a greater sense of enjoyment and perhaps less chance of dropout.

***Active coping and clinical issues***

The PCDE factors of AC and CI had small significant differences between COP, but no differences were found between age groups. With regards to AC the highest score was observed in category one players, however when comparing to other COP no significant differences were noted. Active coping is concerned with athletes proactively employing coping strategies that may help to mitigate against negative stress (Hill et al, 2019). Our findings would suggest that players across all category levels seek to deploy active coping mechanisms, and that this seems to be most prevalent in category one players, but not to a significant degree. When these testing situations do arise, they are seen as more of a challenge than a threat by ‘active copers’ (possibly those in higher COP) who also have more of a tendency to engage in approach - rather than avoidance - behaviors. Education for players into the benefits and workings of AC (e.g., Dweck’s Mindset approach, 2006) may be useful to improve their progress on the pathway. Hill et al (2016) found similar results in CI (mental health issues such as eating disorders, anxiety and depression) where athletes experiencing these issues tended to use avoidance rather than approach coping methods. Although there was only a small effect size difference between categories, category one players did have the lowest median score (2.00) which *may* initially suggest that they have less clinical issues than their lower category counterparts. Sothern and O’Gorman (2021) found that category one academy soccer players reported having to play through pain and injury due to the fear of de-selection, fueled by perceptions of how parents and coaches would react negatively if they did not. Impression management seemed to be an important factor towards these significant others. Indeed, as seen with other factors, the dynamic between players and key stakeholders appeared pivotal in how players attempted to conform to perceived standards. It appears that players became ‘actors’ in order to portray the behaviors they believed would gain approval from coaches and parents, trying to appear “mentally tough” (Sothern & O’Gorman, 2021: 8). Part of this facade was to avoid any discussion about their thoughts or feelings for fear of appearing weak. It could be that category one players are simply better at hiding their issues that their lower COP counterparts. Lack of awareness – or denial - of clinical issues could potentially not only derail the TD process but cause distress to players in their life outside of sport. *All* athletes could benefit from assessment of CI and appropriate intervention when required (e.g., counselling – Wilkinson, 2021), not least to improve their all-round wellbeing if we are to take a holistic and humanistic approach. A move away from the culture where players are encouraged to internalize emotions and self-manage their mental wellbeing (Noon et al, 2015) would also be beneficial. Further examination of how the “hyper-masculine” environment (Ong et al., 2018: 19) affects players across age groups and COP would be a useful step forward.

***Seeking and Using Social Support***

Finally, SUSS was the only factor which was non-significant across both age groups and COP suggesting players sought similar amounts of support from those around them. Social support reduces the potential negative impact of psychological distress (e.g., depression or anxiety), and facilitates a more positive mental adjustment when under pressure (Hill et al, 2019). When related to sport this can be expanded to include the network an athlete has around them on their Talent Development journey (an externalized version of AC), which they proactively utilize (Hill et al, 2019). Reticence to ask for support by players may be down to a number of elements such as bravado (Ong et al, 2018), or just other social skill deficits such as extreme shyness or social anxiety resulting in avoidance rather than approach strategies (MacNamara & Collins, 2015). It has been noted by Taylor & Stanton (2007) that genes and socio-economic status may be linked to perceived social support. The results from the current study may suggest that players are reasonably comfortable with seeking support but do not do it all the time (otherwise median scores would be closer to 6). This could be down to reluctance to seek assistance if their ‘supporters’ are not actually that supportive. This could provide a potential explanation as to why category one players (in particular) tend to hide their issues rather than seeking assistance. Otherwise, it might have been expected that category one players would have higher scores on SUSS if this was to correlate with ARF scores. Alternatively, it may be that category one players do not need to seek as much social support as they have the skills to cope with ARF. Van Yperen (2009: 326) found in his study that those players to reach elite level as adults were more adept at dealing with stressful situations “possibly by using their social resources more frequently and more flexibly”. The same may be true of the sample used in the current study, although further study with a larger sample is warranted. A facilitative style of support may be more beneficial than one that is overly judgmental (Collins et al, 2016). To reiterate a theme from this paper, educating key stakeholders into how to optimize their supporting behaviors should be an important – if not vital – element of the TD pathway.

**Limitations and Future Directions**

The current study has a number of limitations that should be noted. Firstly, the sample size was smaller than anticipated and was under-represented by category two and grassroots players. Therefore, a replication study with a larger and more balanced sample would be useful. It was also decided to combine the U17 and U18 age groups into a single ‘Youth Team’ group due to a particularly small subsample in these age groups (34 and 25 respectively). However, it was felt that a YT group would be more representative of what happens in academy soccer where the under-17 and under-18 age groups form the youth team/scholars which is the initial part of the professional development phase (PDP). Then there are the issues surrounding the measurement tool itself – the PCDEQ2. Although questionnaires can be useful in providing a large set of cross-sectional data, certain drawbacks are also evident and as a tool they seem to be waning in popularity amongst practitioners (Vealey et al., 2019). Generally speaking, tools such as these run the risk of self-report bias and perhaps social desirability (Hagger & Smith as cited in Horn & Smith, 2019). Miller et al., (2015) point out that much of the work conducted in TID/TD has been of a quantitative nature. This may be useful to provide evidence that an effect may exist but offers little as to the ‘why’. Therefore, future research should look to adopt a mixed methods approach with the PCDEQ2 used as part of a larger armory of assessment tools. For example, interviews with key stakeholders in the TD environment may well yield some useful insights into their beliefs around psychosocial factors and how these might be developed in a positive manner. Observation of player psycho-social behaviors could be used to either or both support and refute data from the PCDEQ2 to test its ecological validity. Interviews with the players themselves (who should – after all –be the most important people in the process) could also be useful to explore their beliefs around psychosocial development in TD pathways (building upon previous work by Rongen et al. (2020); Taylor & Collins, 2021; Willams & MacNamara, 2020).

Psychosocial concepts - such as PCDEs - are clearly very important but becoming too fixated on them as the ‘only’ measures of potential success at the expense of other areas (i.e., physical, technical and tactical) could be detrimental (Bergkamp et al, 2019), especially when measured using a single assessment tool such as the PCDEQ2. Although this questionnaire’s authors (Hill et al, 2019) do advocate the use of other methods – such as observation and discussion with athletes - for triangulation purposes, little is divulged about how this could be deployed. There has been a criticism of PCDEs from Gulbin et al (2013: 1321) who claimed that the PCDE approach “whilst advocating for a multidimensional and dynamic understanding of development is predominately uni-dimensional with over-emphasis on psychological skills & characteristics”. If a truly transdisciplinary approach is required, then it should surely consider data from all types of performance indicators. It may be useful to borrow some ideas that have been developed by the English Cricket Board in their current ‘multiple eyes, multiple times’ approach to TID and TD (Barney, 2015). This involves using a hybrid of scouting, testing and performance statistics across perceptual, physiological, psychological, developmental/demographic, and technical/skill. A similar approach has been advocated by Kelly et al. (2018) who completed a holistic study with academy soccer players using the original version of the PCDE questionnaire (MacNamara & Collins, 2011).

A specific drawback of the PCDEQ2 is that it does not distinguish between perfectionistic strivings (seen to be facilitative) and concerns (seen to be potentially debilitative). Stoeber and Janssen (2011) point out that these two elements of perfectionism are highly correlated, but also that there is still a need to differentiate between them as this affects how stakeholders may interact with players. It could be argued that the healthier *strivings* (associated with positive processes and outcomes including approach behaviors and positive affect) should be encouraged (Sagar & Stoeber, 2009), which presumably would improve a player’s longevity within TD programs. The more harmful *concerns* should be discouraged, but with the strong link between them it could be easy to mistake one for the other using the PCDEQ2 alone. Without this distinction it is hard for practitioners to decipher whether their actions would be helpful or a hindrance. Given the potential importance of ARF and PT identified in this study, further research is needed to develop an assessment approach that clearly defines what an adverse response to failure is and distinguishes between perfectionistic strivings and concerns Also, the limited research that has been conducted into academy soccer seems to center around higher COP; further investigation into other categories would be useful and across age groups.

**Conclusion**

This study was the first to examine the differences in the seven PCDE factor scores between different COP and age groups in youth soccer using the PCDEQ2. Significant differences were found across age groups and categories of participation. In agreement with our hypothesis older players (U16 and YT) had significantly higher PCDE scores than younger players (U13-U15) but only in ARF, IAP and PT. When examining differences between COP significant differences were evident in all PCDE factors apart from SUSS. Based on these findings, we suggest that further exploration is warranted specifically into the mechanisms behind ARF and PT leading to, or being indicative of, higher performance. Additionally, IAP should be encouraged in players from lower COP and at an earlier age. To improve SDCM, an appropriate psychosocial skills program (e.g., PCDEs) should be delivered from as young an age as appropriate regardless of COP, as well as educating key stakeholders into the concept and benefits of SDCM and how best to guide players to be independent learners. More open discussion around clinical issues (CI) and more engagement with emotions (negative and positive) should help to create a greater sense of wellbeing amongst players. This in turn may allow players to seek and use social support (SUSS) more effectively. Above all, possibly the biggest takeaway from this study is the need to engage with key stakeholders in order to probe their opinions and experiences in TID/TD in order to see what already seems to be working and what needs tweaking. This can then be allied to data collected from the PCDEQ2 to give a more holistic and ecologically valid picture. Ultimately, it is the players who should be the most important elements in TD, so any attempt to improve their chances of progression along with their wellbeing (whether they progress or not) should be actively encouraged.

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