

## Exploring the '5Cs' of Positive Youth Development in Sport

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*The emerging field of youth development has been associated with indicators of Positive Youth Development (PYD) known as the 5Cs (competence, confidence, connection, character and caring). The 5Cs model (Lerner et al., 2005) describes PYD as the culmination of the Cs, whereby higher scores on each of the Cs contributes to a resultant higher score for PYD. Researchers have suggested sport is a salient context for developing the 5Cs. However, there is no specific evidence for the existence of the 5Cs among young people who play sport. The purpose of this study was to examine the latent dimensionality of PYD in sport. Two hundred and fifty eight youth sport participants (59 males, 199 females; Mean age = 13.77 years, SD = 1.23; range 12-16 years) attending summer sport camps at a Canadian university completed a 30-item instrument that was adapted from Phelps et al.'s (2009) 78-item measure of the 5Cs of PYD. Confirmatory factor analyses failed to provide support for the 5Cs model identified in previous research (i.e., Lerner et al. and Phelps et al.). Instead, exploratory factor analyses indicated that PYD in sport might be comprised of two factors that reflect pro-social values and confidence/competence. It is proposed that the 5Cs did not emerge in this study because (a) each C may not be uniquely identified by the current sample due to their stage of ontogeny, and (b) some of the Cs are so similar in nature (i.e., so highly correlated) that they are perceived as similar constructs. Implications of this study suggest that, in a sporting context, PYD might best be represented by pro-social values and confidence/competence rather than the 5Cs.*

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Sport may provide a context in which youth have opportunities to learn life skills and other positive attributes that help them thrive away from the field of play (Danish & Nellen, 1997; Jones & Lavallee, 2009). The acquisition of such competencies, assets, values, and life skills is the essence of *Positive Youth Development* (PYD). PYD is a strength-based conception of development that can be defined as "the engagement in pro-social behaviors and avoidance of health compromising behaviors and future jeopardizing behaviors" (Roth, Brooks-Gunn, Murray, & Foster, 1998, p. 426). There is a belief that through playing sport youth can learn competencies, assets, values, and life skills that will have a positive influence on their overall development. However, whereas sport psychologists have written quite extensively about the potential for PYD through sport (see Holt, 2008, for a review), to advance the literature in this area research is needed to examine the empirical validity of PYD within sport contexts.

One of the most prominent conceptualizations of PYD is Lerner et al.'s (2005) '5Cs' model (whereby the Cs represent the constructs of competence, confidence, connection, character, and caring/compassion). Little (1993) originally proposed a 4Cs model of PYD, with the four constructs being *competence, confidence, (positive social) connection, and character*. Following Little's original work, other developmental psychologists proposed the fifth 'C' – *caring* (or *compassion*: Eccles & Gootman, 2002; Lerner, 2004; Roth & Brooks-Gunn, 2003). The 5Cs is the most prominent model in the emerging vocabulary of PYD (King et al., 2005) and has been recognized as a useful framework for assessing PYD in sport (see Fraser-Thomas & Côté, 2005).

Fraser-Thomas and Côté (2005) put forward an integrated model of PYD for sport and suggested that future research is required to examine which features of youth sport settings are "most consistently associated with successful sport programs that foster the 5Cs" (p. 34). It could be argued that such a statement assumes the existence of the 5Cs in sport settings. However, to date, no empirical evidence supporting this existence of the 5Cs in sport has actually been provided in the extant literature. By establishing the empirical validity of the 5Cs in sport, researchers will be better able to examine correlates, determinants, and contextual factors that influence PYD in sport settings. The current study addresses this gap in the literature.

Lerner et al.'s (2005) 5Cs model describes PYD as the culmination of *competence, confidence, connection, character, and caring/compassion*. According to Lerner et al., competence represents a positive view of one's actions in domain specific areas. Confidence is an internal sense of overall positive self-worth and self-efficacy and one's global self-regard, as opposed to domain specific beliefs. Connection refers to positive bonds with people and institutions. Character reflects an individual's respect for societal and cultural rules. Finally,

caring/compassion encompass a person's sense of sympathy and empathy for others. Therefore, scholars and practitioners regard PYD as a linear combination of the 5Cs, whereby higher scores on each of the Cs contributes to a resultant higher score for PYD.

Despite the widespread influence of the 5Cs on the field of developmental psychology, Lerner et al. (2005) were concerned that there was a lack of empirical evidence supporting the existence of the 5Cs among young people. Researchers and practitioners originally relied upon literature reviews and anecdotal evidence (based on work with young people) to generate the conceptualization of the 5Cs. However, the absence of an empirically tested structural model and associated measurement models meant there could be no certain evaluation of the effectiveness of programs or policies aimed at promoting positive development. Consequently, Lerner and colleagues sought empirical evidence to support PYD and the corresponding 5Cs.

The first major examination of the 5Cs of PYD was Lerner et al.'s (2005) longitudinal investigation of US youth. The first wave of data collection involved exploration of PYD indicators in a sample of 1700 5th grade students drawn from 57 schools and four after-school youth programs across the US. The aim of this wave of data collection was to establish empirical evidence to support the existence of the 5Cs of PYD (and of PYD itself). In addition to examining the empirical validity of the 5Cs model, Lerner et al. also sought to obtain evidence for the theoretically anticipated relationships between PYD and positive youth contributions (i.e., contributing positively to self, family, community, and the society) and reduced engagement in high risk behaviors (e.g., drug and alcohol use). Furthermore, Lerner and colleagues' study tested whether youth development programs (e.g., 4-H clubs, Boys and Girls clubs, Scouts, and the YMCA) were associated with PYD and corresponding indicators of contribution and risk behaviors.

The measurement model used in Lerner et al.'s (2005) study integrated fifteen instruments that served as indicators for each of the 5Cs. Lerner and colleagues identified these measures through an extensive literature search. Lerner's research team then piloted the measures with 339 youth from cities and towns in the US. Following the pilot study the survey was re-evaluated and restructured to produce the initial measurement model that was then tested with a larger sample of youth ( $N = 1,700$ ). Lerner and colleagues' 5Cs measurement model comprised 19 manifest indicators, five first-order latent factors (one for each of the 5Cs), and one second-order factor (representing PYD: Phelps, Zimmerman, Warren, Jelacic, von Eye, & Lerner, 2009). The set of manifest indicators included (but were not limited to) measures of positive identity and self-worth (to represent confidence), academic and social competence (to represent competence), personal values and social conscience (to represent character), sympathy for disadvantaged and for those in pain (to represent caring/compassion), and connection to family and community (to represent connection). Lerner et al. used confirmatory

factor analyses to test four models, with three models receiving modifications (including the correlation of residual errors within and between factors) to produce the final fitting model. The final model supported the 5Cs and a hierarchical construct that reflected PYD; the model provided an excellent fit for the data ( $\chi^2 [134] = 552, p < .01$ ; RMSEA = 0.043; GFI = 0.97; CFI = 0.99; NNFI = 0.98).

Although the goodness of fit indices obtained by Lerner et al. (2005) suggested an excellent fitting model, readers should note the presence of moderate to high inter-factor correlations. For example, inter-factor correlations between competence and confidence, competence and connection, competence and character, confidence and connection, confidence and character, and connection and character ranged from .63 to .75. These correlations indicate substantial amount of conceptual overlap among factors that led Lerner and his colleagues to acknowledge that some of the Cs may represent the same latent construct and that additional higher order factors may exist. Lerner et al. concluded that their findings required cross validation with independent samples. Hence, the current research was designed to add to the literature by examining the existence and empirical validity of the 5Cs in sport.

Phelps et al. (2009) recently re-examined the 5Cs model reported by Lerner et al. (2005) among large samples of Grade 5, 6, and 7 youth. It should be noted that the Phelps et al. study could not be classified as a cross-validation study because all of the Grade 5 and many of the Grade 6 and 7 participants had taken part in the original Lerner et al. study. Phelps et al. used a subset of items taken from the original Lerner et al. study to measure PYD. Phelps et al. conducted separate maximum likelihood CFAs on the Grade 5, 6, and 7 data sets. Analyses resulted in good fitting models for each grade, with strong support for the 5Cs and a second-order factor that reflected PYD. Phelps et al. (p. 581) concluded that "there is continuity in the structure of PYD across early adolescence" (among the age groups studied) and that the instrument they designed to measure PYD provides researchers "with a valid means to assess PYD in early adolescence." Unfortunately, Phelps et al. did not provide the inter-factor correlations that were associated with any of their models so the degree of conceptual overlap among the factors (i.e., the 5Cs) cannot be determined, and participants were primarily sampled from classroom (and occasional after-school) settings. As such, the generalizability of the latent structure of PYD reported by Phelps et al. (and Lerner et al., 2005) in the domain of sport is still undetermined. Overcoming this gap in the literature (and examining the extent to which the 5Cs provide a valid framework for assessing PYD in sport) will facilitate future research by providing investigators with empirically validated models against which the potential benefits of PYD through sport can be examined.

There are several reasons why it is important to examine the latent structure of PYD (and the associated 5Cs) in sport. Sport is a unique achievement context that likely involves differ-

ent levels of emotional involvement than the school settings or after-school clubs that Lerner et al. (2005) and Phelps et al. (2009) studied. Lerner and his colleagues recognized that after-school clubs (e.g., 4-H, Scouts, YMCA / YWCA) have mission statements that specifically emphasize PYD. In contrast, leaders of sport programs may not give the goals of PYD formal recognition (MacDonald & Côté, 2007) and may emphasize beating one's opponent (Hansen, Larson, & Dworkin, 2003).

There may also be aspects of sport participation that both contribute to and detract from PYD (Larson, 2000) that may differ from the settings studied by Lerner et al. (2005) and Phelps et al. (2009). Larson and colleagues (Hansen et al., 2003; Larson, Hansen, & Moneta, 2006) conducted a series of studies examining internal and social/interpersonal domains of learning experiences that may be associated with youth development. Hansen et al. found that sport participation was positively associated with experiences related to identity work and emotional development in a sample of 450 students from grades 9, 11, and 12 (55.8% female, 44.2% male) in a small US city. However, Hansen et al. also found that sports were associated with experiences related to negative peer interactions and inappropriate adult behavior. Similarly, Larson et al. (2006) found that sport stood out as providing more experiences related to the development of initiative but was also associated with heightened levels of stress.

Lerner et al. (2005) sampled children from schools and four after-school youth programs (4-H clubs, scouts, Boys and Girls clubs, the YMCA) and used a generic measure to examine participation in sport (rather than specifically focusing on sport participation per se). As such, they were unable to explain what participation in these clubs entailed and how they were different or similar to one another (apart from having an explicit youth development mission). Each organized activity may have targeted selected Cs, but this focus may be dependent on the types of activities that characterize participation (e.g., community work, interactions with peers, prolonged interaction with non-familial adults). Therefore, in addition to studying diverse samples of youth, scholars should also establish the degree to which the 5Cs operate (or exist) in specific activity domains. By studying sport as a specific activity domain, the current research can make a unique contribution to the literature by demonstrating which PYD outcomes young people can obtain through sport (i.e., specific Cs). Moreover, scholars and practitioners can use knowledge of PYD outcomes in sport to support or supplement existing knowledge surrounding the latent dimensions of PYD across different contexts.

Given that sport appears to be associated with unique positive and negative outcomes and experiences for youth, and the ambivalent support for the factor structure of the 5Cs, the authors designed the current study to add to the extant literature by examining the latent structure of PYD within the specific context of sport. More specifically, research exploring the latent structure of PYD (and the empirical validity of the 5Cs) within sport would contribute to

the field of PYD by supplementing research that has examined PYD in other settings (e.g., Lerner et al., 2005). To this end, the purpose of this study was to evaluate the latent dimensionality of PYD (and the applicability of the 5Cs) in a sport setting. This is consistent with Lerner et al.'s suggestion for future research to confirm (or refine) the conceptualization of PYD.

## Method

### Participants

The sample consisted of 258 youth (59 males, 199 females;  $M$  age = 13.77 years,  $SD$  = 1.23; range 12-16 years) attending summer sport camps at a Canadian university. On average, camp participants reported playing their primary sport for 5.52 years ( $SD$  = 2.81). A total of 21 primary sports were identified: volleyball ( $n$  = 85), soccer ( $n$  = 66), basketball ( $n$  = 43), hockey ( $n$  = 19), ringette ( $n$  = 9), track and field ( $n$  = 7), dance ( $n$  = 7), tennis ( $n$  = 4), football ( $n$  = 2), cross country skiing ( $n$  = 2), swimming ( $n$  = 2), gymnastics ( $n$  = 2), baseball ( $n$  = 1), badminton ( $n$  = 1), boxing ( $n$  = 1), curling ( $n$  = 1), lacrosse ( $n$  = 1), rugby ( $n$  = 1), show jumping ( $n$  = 1), ski racing ( $n$  = 1), and softball ( $n$  = 1). One participant did not report his/her primary sport.

### Instrument

A total of 30 items were selected from Phelps et al.'s (2009) 78-item measure of PYD for inclusion in the PYD-Sport (with six items being chosen from each of the 5Cs measured by the Phelps et al. instrument). We elected to include only 30 items in the PYD-Sport (as opposed to the 78 items contained in Phelps et al.'s 2009 measure) for two reasons. First, factor analysts recommend that the number of items required to specify or define a factor should ideally range from 3 - 6 items per factor (see Fabrigar, Wegener, MacCallum & Stahan, 1999; Gorsuch, 2003; Velicer & Fava, 1998). Fewer than three items in a factor makes the factor very difficult to define and more than six items per factor increases the risk of minor (i.e., unimportant) factors emerging that adversely influence results (see Gorsuch, 2003, p. 163, for a detailed discussion). Second, reducing the number of items would greatly reduce the time required to complete the instrument thereby ensuring minimal disruptions to each participant's engagement in scheduled camp activities.

Twenty six of the 30 PYD-Sport items were modified slightly to either increase their relevance to sport (e.g., "I feel my friends are good friends" was modified to "My friends from sport are good friends") or to ensure that all items could be answered using the same response-option descriptors (e.g., "Telling the truth even when not easy" was modified to "I have learned how to tell the truth, even when it's not easy"). The latter modification was necessary because the measure of PYD employed by Phelps et al. uses seven different re-

sponse formats throughout the instrument (e.g., *not important vs. very important; not at all like me vs. very much like me; never true vs. always true*). The PYD-Sport was designed to work with a single 7-point response scale (i.e., 1 = *strongly disagree*; 7 = *strongly agree*). To enhance the contextual nature of the PYD-Sport, each inventory contained the following introductory statement for participants: "Based on your experiences playing your main sport please indicate how much you agree or disagree with the following statements by circling the most appropriate number." Higher scores on the 7-point scale following the reverse scoring of relevant items reflect more positive experiences and/or perceptions of PYD.

#### Procedure

The research team obtained approval to conduct the study from the institutional Research Ethics Board. Participation was voluntary and the research team obtained written informed consent from the parents/guardians of all participants prior to data collection. Children implied their assent by their completion of the questionnaires, but the research team emphasized that their participation was voluntary. The first author administered all of the questionnaires prior to the start of daily camp activities.

#### Data Analyses

Given that the items comprising the PYD-Sport were selected with the intention of measuring each of the 5Cs, an *a priori* 5-factor model was proposed. In other words, we hypothesized that the 30 items would represent the 5Cs of PYD (as specified by Lerner et al., [2005] and Phelps et al., [2009]), with each 'C' being measured by six items. The adequacy (or validity) of this model was tested by submitting the inter-item covariance matrix of PYD-Sport data to a maximum likelihood confirmatory factor analysis (CFA) using LISREL 8.2 (Joreskog & Sorbom, 1996). Model goodness of fit was evaluated using a combination of absolute fit ( $\chi^2$  test, Root Mean Square Error of Approximation [RMSEA], and Standardized Root Mean Square Residual [SRMR]) and comparative/incremental fit (Comparative Fit Index [CFI]) indices. A non-significant  $\chi^2$  test indicates a good fitting model. However, due to the overly sensitive nature of the  $\chi^2$  test (i.e., even good fitting models are often associated with significant  $\chi^2$  results), Hu and Bentler (1999) proposed their "combination rule" of model fit indices whereby evidence of a good fitting model is obtained when RMSEA is  $\leq .08$ , SRMR is  $\leq .06$ , and CFI is  $\geq .95$ .

In the event that a good-fitting model would not be obtained (and because no alternative models had been specified in advance), our data analytic plan was to abandon the use of confirmatory factor analytic procedures and to re-analyze the data with exploratory factor analytic techniques (see MacCallum, Roznowski, & Necowitz, 1992). Under these circumstances, a series of principal axes (PA) exploratory factor analyses (with orthogonal and ob-

lique rotations) was to be used in order to explore the latent structure of the PYD-Sport data; the number of factors to be retained in each EFA would be based upon scree-test (see Cattell, 1978) and parallel-analysis criteria (see Lautenschlager, 1989).

#### Results

Results from the CFA revealed that none of the model-fit indices reached the criterion values necessary to conclude that a good fitting model had been achieved ( $\chi^2 [395] = 1257.07$ ,  $p < .00001$ ; RMSEA = .094; SRMR = .082; CFI = .93). Moreover, five of the 10 inter-factor correlations ranged in size from .81 to .94, suggesting that there was a very high degree of conceptual overlap among many of the factors. Consequently, we rejected the hypothesized 5-factor model and re-analyzed the data with exploratory factor analytic techniques.

The first PA extraction produced a scree plot that suggested the retention of two or three factors. Parallel analysis results suggested the retention of three factors. Consequently, 2- and 3-factor solutions were examined. Factor matrices were subjected to orthogonal (varimax) and oblique (direct oblimin) rotations. In both the 2- and 3-factor solutions, oblique solutions were preferred over orthogonal solutions because the oblique solutions provided better simple structure (Thurstone, 1947) across the items.

In the 3-factor solution, three items demonstrated poor simple structure and one factor was defined by only two items (i.e., only two items had factor loadings  $> .30$  on the factor). One of these two items did not possess simple structure because it had a factor loading  $> .30$  on two factors. In contrast, the 2-factor oblique solution had excellent simple structure across 28 of the 30 items. Given that factor analysts recommend a minimum of three items to define a factor (Gorsuch, 2003; Velicer & Fava, 1998), the research team retained the 2-factor solution over the 3-factor solution. The two items (i.e., item 6 and 24) that demonstrated poor simple structure in the 2-factor solution were removed from the data set. Item 6 ("I have learned how to accept responsibility for my actions when I make a mistake") was originally designed to measure character and Item 24 ("When playing sport I get angry with myself") was originally designed to measure confidence. The remaining 28 items were re-analyzed with a second PA analysis. The resulting 2-factor oblique solution demonstrated excellent simple structure across all 28 items (see Table 1).

Factor 1 contained 15 items that were originally selected with the intention of measuring caring/compassion ( $n = 6$  items: e.g., "I have learned how to care for people who are hurt or upset"), character ( $n = 4$  items: e.g., "I have learned how to tell the truth, even when it is not easy"), family connection ( $n = 2$  items: e.g., "I have learned how to get along with my parents"),

**Table 1. Pattern Coefficients from Principal Axes Analysis Following Direct Oblimin Rotation**

#	Full item description	Intended factor	Pattern coefficients	
			F1	F2
19	I have learned how to care for people who are hurt or upset.	Caring	.840	-.068
8	When I see another person who is hurt or upset, I feel sorry for them.	Caring	.821	-.216
10	I have learned how to help people.	Character	.781	.058
1	I have learned how to be kind to other people.	Character	.679	-.039
9	I have learned to do well at school.	Competence	.660	.092
3	I have learned to recognize other people's feelings.	Caring	.633	.083
7	I have become closer with my family.	Connection	.614	.122
18	I have learned how to tell the truth, even when it's not easy.	Character	.608	.113
5	I have learned how to respect the values and beliefs of people who are of a different race or culture than I am.	Character	.597	.136
16	I have learned how to get along with my parents.	Connection	.582	.132
13	When I see someone being taken advantage of, I want to help them.	Caring	.532	.106
2	I have learned how to get along with adults who are not part of my family.	Connection	.503	.170
15	I have learned how to see things from other people's perspectives.	Caring	.478	.218
11	I don't feel sorry for other people when they are having problems.(R)	Caring	.426	.071
20	I have learned how to finish my school class work quickly.	Competence	.385	.219

**Table 1 (continued)**

21	I like the way I am leading my life.	Confidence	-.004	.655
23	I have learned how to become good at any new physical activities.	Competence	-.010	.636
26	When I am an adult, I'm sure I will have a good life.	Confidence	.085	.629
27	I have learned how to like myself.	Confidence	.125	.619
29	I have learned lots of different sport skills.	Competence	.085	.599
25	I have learned how to improve at all kinds of other sports.	Competence	.185	.558
17	I have learned how to believe in myself in any situation.	Confidence	.238	.550
4	My friends from sport are good friends.	Connection	-.007	.502
14	My friends from sport are there when I need them.	Connection	.134	.468
12	I have learned how to make friends with other people.	Connection	.210	.451
30	I have learned how to stand up for what I believe, even when it's unpopular.	Character	.157	.451
28	I feel like I am smart for my age.	Competence	.102	.436
22	At times I think I am no good at all. (R)	Confidence	.143	.363

Note. Items 11 and 22 were reverse scored prior to data analysis.

and academic competence ( $n = 2$  items: e.g., "I have learned how to finish my school class work quickly"). The factor was labeled *pro-social values* because it was largely comprised of items related to social bonds with other people or to socially desirable values (such as honesty).

Factor 2 contained 13 items that were originally selected with the intention of measuring confidence ( $n = 5$  items e.g., "I have learned how to believe in myself in any situation"), physical competence ( $n = 4$  items e.g., "I have learned how to become good at any new physical activities"), peer connection ( $n = 3$  items e.g., "My friends from sport are there when

I need them") and character ( $n = 1$  item e.g., I have learned to stand up for what I believe, even when it's unpopular). The factor was labeled *competence/confidence* because it largely contained items designed to measure the constructs of competence and confidence (as conceptualized by Lerner et al., [2005]) and perceptions of social competence in terms of building friendships (e.g., "I have learned how to make friends with other people"). The inter-factor correlation was .57.

For descriptive purposes, composite (mean item) subscale scores were computed for each factor. The mean item score for pro-social values was 5.61 ( $SD = .92$ ). The mean item score for competence/confidence was 5.88 ( $SD = .70$ ). Both subscales had acceptable levels of internal consistency: pro-social values ( $\alpha = .91$ ), competence/confidence ( $\alpha = .84$ ).

### Discussion

The purpose of this study was to examine the latent dimensionality of PYD in sport and to determine the empirical validity of the 5Cs model of PYD in sport. Although the authors anticipated five factors (i.e., the 5Cs), evidence supporting the 5Cs in the current data was not obtained by confirmatory or exploratory factor analyses. The most parsimonious and interpretable solution that resulted from the factor analyses contained two factors that were labeled pro-social values and confidence/competence.

Factor 1 (pro-social values) largely comprised items designed to measure caring, character, and family connection. Although caring, character, and connection have been represented as separate factors in previous studies (i.e., Lerner et al., 2005; Phelps et al., 2009), Lerner and his colleagues noted that modification indices in their model identified common variance between caring and character that was not accounted for by their final model (but would have been accounted for with further modifications). Furthermore, Lerner et al. reported a large inter-factor correlation between connection and character ( $r = .74$ ) in their model that indicates a high degree of conceptual overlap between the two constructs.

Lerner et al. (2005) defined caring/compassion as a sense of sympathy and empathy for others, and character as respect for societal and cultural rules, possession of standards for correct behaviors, a sense of right and wrong, and integrity. Examination of the items originally selected with the intention of measuring caring/compassion and character in this study (see Table 1) may lead researchers to conclude that the items are measuring the same construct. For example, items intended to measure caring (e.g., "I have learned how to care for people who are hurt or upset") might also represent a sense of right and wrong (i.e., character) and items intended to measure character (e.g., "I have learned how to be kind to other people") may represent caring/compassion.

Further examination of the item content in Factor 1 reveals that 12 of the 15 items focus on specific interactions, beliefs, or behaviors that are directed towards other people. As such, the current results indicate that caring, character, and family connections in sport may be best represented by a single factor that is based upon the development of pro-social values surrounding positive societal interactions with other people. Examination of the content of this factor also reveals similarities with the multidimensional construct of sportpersonship (see Dunn & Causgrove Dunn, 1999; Vallerand & Losier, 1994). For example, sportpersonship comprised dimensions that reflect respect and concern for (a) social conventions in sport, (b) rules and officials, and (c) opponents. These aspects of sportpersonship reflect current pro-social values. Pro-social values characterize PYD in terms of helping people (e.g., "I have learned how to help people"), respecting values and beliefs of other people (e.g., "I have learned how to respect the values and beliefs of people who are of a different race or culture than I am"), and feeling concern for those who are hurt, upset, or injured (e.g., "When I see someone being taken advantage of, I want to help them"). It appears that PYD in sport (as reflected by pro-social values) may be linked to sportpersonship identified in the sport psychology literature.

Factor 2 (confidence/competence) largely comprised items that were selected with the intention of measuring confidence, physical competence, and connection. The fact that these items converged on a single factor in this study may account for the shared variance between confidence and competence that Lerner et al. (2005) had alluded to in their original model. Nine of the 13 items comprising factor 2 in the current study were selected from Phelps et al.'s (2009) measure of PYD with the intention of measuring confidence ( $n = 5$ ) and competence ( $n = 4$ ). The fact that competence and confidence items loaded on the same factor may not be surprising given that Lerner et al. obtained a strong positive inter-factor correlation between confidence and competence in their 5Cs model ( $r = .63$ ). Moreover, Lerner and his colleagues noted that modification indices for their final model indicated the possible presence of "additional structure" (p. 51) to better explain the relationship between confidence and competence but decided to retain the 5Cs model and to test this potential (hierarchical) structure in future cross validation research. As such, current results indicate that the original items developed to measure confidence and competence may actually measure the same latent construct in sport.

Lerner et al. (2005) defined competence as a positive view of one's actions in social (e.g., conflict resolution), academic (e.g., school grades, attendance, and test scores), cognitive (e.g., decision making), and vocational (e.g., work habits and career choice explorations) areas of one's life. In contrast, Lerner et al. defined confidence as an internal sense of overall positive self-worth, self-efficacy, and global self-regard. However, positive relationships between positive self-worth and perceptions of high competence have been previously dis-

cussed in the literature. For example, in his theory of self-worth, Covington (1992) defined the motive for self-worth as the tendency to establish and maintain a positive self-image. Covington argued that because young people spend such a long time in the classroom they needed to maintain and protect their academic competence in order to maintain their positive self-image and self-worth. The same could be true for sporting contexts. Youth who spend significant time in organized sport contexts may need to protect their sense of physical competence to maintain their self-worth. This relationship between self-worth (confidence) and competence may provide an explanation as to why items designed to measure competence and confidence (as conceptualized by Lerner et al., 2005) loaded on the same factor in this study.

Existing literature also supports the link between competence and peer connections and may explain why peer connection items loaded on Factor 2. For example, Rubin, Bukowski and Parker (1998) suggested that in order to maintain peer relationships young people require a degree of social competence (i.e., social skills and the ability to maintain friendships). Evans and Roberts (1987) also found that athletic ability positively related to peer acceptance, where the most athletically competent young people were the most popular in the peer group (also see Causgrove Dunn, Dunn, & Bayduza, 2007). Thus, the link between athletic competence and peer acceptance may explain why items designed to measure physical competence and peer connection loaded on the same factor in the current study.

Finally, Harter (1988) argued that as children enter their teenage years they develop a sense of perceived competence around their ability to establish and maintain close friendships (i.e., intimacy and loyalty) with peers. As such, some of the peer-connection items (e.g., Item 12: "I have learned how to make friends with other people") may actually measure young people's perceptions of competence (or confidence) in their ability to make friends and may explain why peer-connection items loaded on the competence/confidence factor.

Although evidence supporting the distinction between each of the 5Cs was not obtained in this study, it is worth noting that the composite (i.e., mean item) subscale scores for pro-social values and competence/confidence generally reflect quality experiences of development through sport among the current sample. That is, mean scores of 5.61 ( $SD = .92$ ) for pro-social values and 5.88 ( $SD = .70$ ) for competence/competence indicate that participants were, on average, high in PYD indicators developed through sport (as reflected on the current 7-point scale). Whereas these findings suggest that sport can provide positive developmental experiences, more research is needed to establish how sport participation may promote PYD and to understand potential moderators and mediators (e.g., gender, coaching behaviors, and participation in other organized activities) of PYD experiences. Such studies could provide a foundation to compare and contrast various youth sport programs to enable scholars and practitioners to match youth needs with activities that present opportunities to learn specific skills.

Despite putting forward theoretically- and empirically-based explanations for the emergence of two (as opposed to five) factors in this study, we acknowledge the possibility that our results could have been influenced by the items we selected and/or the sample that we used. For example, we cannot determine if the 5Cs would have emerged from the data provided by the current sample if we had selected different items from Phelps et al.'s (2009) 78-item measure of PYD. Similarly, it is possible that the 5Cs could have emerged if we had used current items with a different sample. As such, it is clear that cross-validation of the current results is required by either selecting new items or by giving the same items to independent samples of young athletes in future research.

Another potential limitation of the current study, which may have influenced the results, relates to the setting of the research: namely, summer sports camps. It is possible that the atmosphere and philosophy surrounding sports camps is different to those of intact sports teams in specific competitive leagues. Indeed, it is possible that some participants will have answered questions based on their most proximal sport experiences during the camp (as opposed to their "main sport" that they were instructed to consider). If the young people were participating in new sports in the university camp program, their confidence and competence may have been affected as they were experimenting and learning new skills. Future research is required to determine if the current 2-factor solution would emerge if the sample comprised of intact sport teams that participate in competitive leagues where the goal of winning is so often emphasized over potential PYD outcome goals.

It is plausible that sport does not provide a homogenous experience for all young people. Rather, the different rules, structures, coaching styles, motivational climates, and organizational nuances observed across sports may provide young people with diverse developmental experiences and PYD outcomes. Larson et al. (2006) suggested that research is needed to evaluate "the mediating processes responsible for differences not only between but within categories of organized activities" (p. 861). Consequently, future research is required to establish whether different sports, coaching styles, and competitive levels make unique contributions to the development of young people.

Finally, we acknowledge that differences between the 2-factor solution obtained in this study and the 5Cs models reported by Lerner et al. (2005) and Phelps et al. (2009) could be a function of the age of the participants. The mean ages of the samples in the studies conducted by Lerner et al. ( $M_{age} = 10.9$  years) and Phelps et al. ( $M_{ages} = 10.97, 12.09,$  and  $13.07$  years in Grades 5, 6, and 7 respectively) are younger than the mean age of the current sample ( $M = 13.77$  years). Lerner et al. stated that "given the orthogenetic principle (Werner, 1957), it may be that these components [*ideological and behavioral components of contribution*] are differentiated (e.g., weakly correlated) in early development periods (e.g., at the beginning of adoles-

cence) and become integrated later in ontogeny" (p.2). The orthogenetic principle states that wherever development occurs it proceeds from relative globality and lack of differentiation to a state of increasing differentiation, articulation and hierarchical integration (Werner, 1957). It may be that current results are a function of the selection of older participants later in ontogeny. Thus, the 2-factor solution that emerged in this study may represent a difference in the developmental periods that were sampled by Lerner et al. and Phelps et al. We therefore recommended that future research should explore the 5Cs with different age groups and developmental periods to establish whether the latent dimensionality of PYD is invariant across different developmental periods. We also suggest further research into the conceptualization of PYD in sport to determine if sport provides young people with a unique context that provides qualitatively different PYD experiences than other organized youth activity settings.

In closing, we want to emphasize that we are not suggesting that scholars and practitioners abandon the 5Cs in the context of PYD research in sport; clearly, results from a single study cannot be used for this purpose. Nevertheless, the current results do raise issues about the validity of the 5Cs conceptualization in youth sport. Based on the current findings (and the results reported by Lerner et al. [2005]), we encourage researchers to carefully consider the magnitude of inter-factor correlations among PYD constructs in future research. As noted previously, when the current data were subjected to the maximum likelihood CFA, half ( $n = 5$ ) of the inter-factor correlations were  $> .81$ . Even if model-fit indices had reached the criteria to conclude that the model fit was adequate (which they did not), to accept a model with such high inter-factor correlations would have been highly questionable. Indeed, Lerner et al. acknowledged the high positive correlations among some of the 5Cs in their model and noted that other higher-order factors may better represent some of the Cs (thereby resulting in fewer than 5Cs). We encourage researchers to refrain from blindly accepting the 5Cs as the best conceptual model for PYD in sport (and any other setting for that matter) until they can empirically demonstrate the validity of this conceptualization in the research settings they are examining.

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