Peer Relationship Profiles and Motivation in Youth Sport

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The purpose of this study was to (a) describe peer relationship profiles of youth sport participants and (b) assess the motivational salience of these profiles by examining profile group differences on sport motivation-related variables. Youth sport camp participants (N = 243) ages 10 to 14 years (M = 11.8, SD = 1.2) completed a multisection questionnaire that contained sport-contextualized measures of perceived friendship quality (positive, conflict), perceived peer acceptance, perceived competence, enjoyment, anxiety, self-presentational concerns, and self-determined motivation. The positive friendship quality, friendship conflict, and peer acceptance responses were cluster-analyzed, yielding five peer relationship profiles that were consistent with expectations based on previous research (i.e., Seidman et al., 1999). Profile differences were obtained for all motivation-related variables and were in theoretically consistent directions. Those young athletes categorized in more adaptive peer relationship profiles had more adaptive motivation-related responses. The findings support theoretical perspectives on social relationships and motivation as well as the efficacy of a person-centered approach to the examination of peer relationships in sport.

Key Words: cluster analysis, friendship, peer acceptance, social relationships

As described in recent reviews, there are many reasons to believe that peer relationships are motivationally salient in the youth sport context (see Smith, in press; Weiss & Stuntz, 2004). For example, youth cite affiliation with peers as a key sport participation motive (Weiss & Petlichkoff, 1989), peer comparison and evaluation are important sources of physical competence information (Horn, 2004), and a host of theoretical perspectives on motivation point to social relationships as key antecedents of motivation-related variables such as self-perceptions and affect (Weiss & Ferrer-Caja, 2002). The amount of sport psychology research on peer relationships in youth sport has paled in comparison to that conducted on the role of significant adults such as coaches and parents. Nonetheless, in recent years there has been increased interest in and research specifically directed toward young people’s peer relationships in sport. In the present investigation we seek...
to expand on emerging descriptive research efforts that support a link between peer relationships and motivation-related variables in youth sport. Specifically, we examine the motivational salience of peer relationship profiles that correspond to distinct patterns of positive friendship quality, friendship conflict, and peer acceptance perceptions.

Stemming from Sullivan’s (1953) interpersonal theory of psychiatry, research on peer relationships has typically targeted friendships or popularity/acceptance with similar-aged individuals (see Smith, in press). Friendship is the experience of having a close, mutual, dyadic relationship (Bukowski & Hoza, 1989). The possession of reciprocated friendships, the personal characteristics of one’s friends, and the quality of friendships as reflected in, for example, their level of intimacy or degree of conflict are considered developmentally significant aspects of friendship (Hartup, 1996). Popularity is the experience of being liked and/or accepted by the larger peer group (Bukowski & Hoza). Sullivan argued that specific friends and the larger peer group promote developmental growth and well-being by helping youth become less egocentric and more attuned to the self in relation to others. Further, Sullivan proposed that friendship and peer acceptance have distinct developmental relevance and at the same time may serve common developmental functions, especially in circumstances where one of the relationship systems is functioning in suboptimal fashion. For example, a close friendship can offset the negative effects of rejection by the larger peer group by providing validation of worth. For this reason authors have urged the conduct of peer relationship research that incorporates both friendship and popularity/peer acceptance variables within study designs (Parker & Asher, 1993; Smith, 1999, 2003).

Both friendship and peer acceptance have been examined in conjunction with motivation-related variables in youth sport research. For example, more adaptive perceptions of friendship quality and/or acceptance in sport have been demonstrated to associate with more adaptive achievement goal orientations (Ommundsen, Roberts, Lemyre, & Miller, 2005; Smith, Balaguer, & Duda, in press), greater perceived physical competence (Ullrich-French & Smith, 2006; Weiss & Duncan, 1992), greater self-worth (McDonough & Crocker, 2005), greater sport enjoyment (Ullrich-French & Smith; Weiss & Smith, 2002), lower sport stress (Ullrich-French & Smith), greater success perceptions and expectations (Weiss & Duncan), stronger sport commitment (McDonough & Crocker; Weiss & Smith), and more self-determined motivation (Ullrich-French & Smith). These findings are consistent with conceptual frameworks on motivation that link social constructs (e.g., perceptions of socializers’ beliefs, perceived approval/regard, relatedness) with self-perceptions, affect, and motivational orientations in achievement contexts (e.g., Deci & Ryan, 1985; Eccles [Parsons] et al., 1983; Harter, 1978, 1981; Leary & Kowalski, 1990; Nicholls, 1984, 1989). In sum, regardless of the motivation-related constructs or conceptual frameworks that are emphasized, youth that perceive more positive peer relationships in sport largely exhibit more adaptive sport motivation. Given these findings and Sullivan’s (1953) proposition that both friends and the larger peer group are developmentally critical social agents in late childhood and early adolescence, the present study seeks to shed light on how the combination of friendship and peer acceptance perceptions of young athletes is salient to a broad set of motivation-related variables (i.e., perceived competence, enjoyment, anxiety, self-presentational concerns, and self-determined motivation).
A few of the aforementioned investigations included both friendship and peer acceptance constructs within variable sets for statistical analyses. For example, Smith and colleagues (in press) examined achievement goal orientation profile differences on a set of social contextual and motivation-related variables in youth soccer. Profile differences on perceived peer acceptance and perceived friendship conflict were observed in which youth characterized by relatively lower task orientation exhibited relatively less adaptive peer relationship responses. Ommundsen and colleagues (2005) examined the association of perceptions of the motivational climate, achievement goal orientation, and perfectionism with perceptions of peer relationships in soccer. Multivariate multiple regression analysis showed an association between these sets of variables, with canonical loadings pointing to theoretically expected contributions to the multivariate relationship from perceived friendship quality (companionship, loyalty/free discussion, conflict) and perceived peer acceptance. These efforts are in line with calls to consider friendship and peer acceptance concurrently when seeking to understand the psychological significance of peers; however, a limitation of these investigations is the inability to shed light on how the combination of friendship and peer acceptance experienced by young athletes is of motivational salience. Perceptions of distinct peer relationships can vary, leading to important motivational questions. For example, what are the motivational implications of relatively high perceptions of friendship coupled with relatively low perceptions of peer acceptance in sport? According to Sullivan’s (1953) theoretical perspective, the good friendship may buffer the potentially negative psychological effects of poor peer acceptance.

In a recent investigation designed to examine this potential interplay of social relationships, Ullrich-French and Smith (2006) examined the independent and combined prediction of motivation-related constructs by perceptions of relationships with parents and peers (best friend and larger peer group acceptance) in youth soccer. Hierarchical regression analyses were employed in which interaction terms representing combinations of social relationship perceptions (e.g., mother by friend by peer acceptance) were entered into the regression model after accounting for main effects. Results showed peer acceptance to be a dominant predictor variable at the main effect level, with higher perceptions of peer acceptance associated with higher soccer enjoyment and perceived soccer competence, lower soccer-related stress, and more self-determined motivation for soccer. Significant interaction terms adding 3% to 6% explained variance over and above main effects emerged for enjoyment, perceived competence, and self-determined motivation. The interaction patterns suggested that the motivationally undermining nature of a lower quality relationship in sport could be buffered by the presence of other social relationships in sport that are relatively higher in quality, thus providing support for Sullivan’s (1953) theoretical perspective.

The examination of interaction terms to assess how combinations of peer relationship variables associate with motivation-related constructs is useful for extending the knowledge base on peer relationships in sport; however, it is not without its challenges. Field tests of interaction terms are generally underpowered, making it difficult to detect theorized moderator effects (McClelland & Judd, 1993). Additionally, the strategy is variable-centered and therefore does not produce understanding of the occurrence of certain constellations of relationship perceptions experienced by individual youth sport participants. It is possible that
there exists a finite number of such constellations and that a person-centered, as opposed to variable-centered, treatment of peer relationships in research designs would meaningfully extend our understanding of the motivational salience of peers in youth sport. A person-centered approach involves treating individuals in a holistic fashion, whereby research questions and outcomes are framed with reference to persons rather than variables (see Magnusson, 1998, for discussion of variable and person approaches to research). Therefore, an alternative approach to understanding how combinations of peer relationship perceptions are motivationally salient is to assess patterns of young athletes’ peer relationship perceptions and to subsequently assess whether or not youth of differing holistic profiles are motivationally distinct.

The determination of these profiles is afforded by cluster analysis, which classifies objects into groups based on selected characteristics of the objects of interest (Aldenderfer & Blashfield, 1984; Hair, Anderson, Tatham, & Black, 1998; Kaufman & Rousseeuw, 1990). In the present investigation young athletes represent the objects of interest, and perceptions of friendship and peer acceptance represent the characteristics used for classification. The data analytic technique enables researchers to uncover naturally occurring profiles of characteristics and therefore has advantages over approaches in which groups are specified by the researcher (e.g., through mean/median split and orthogonal combinations of characteristics). Indeed, cluster analysis has been successfully used in youth sport research when the research purpose has centered upon the illumination of naturally occurring psychological profiles of young athletes (e.g., Harwood, Cumming, & Fletcher, 2004; Raedeke, 1997; Weiss & Amorose, 2005). The primary limitation of cluster analysis is that it is data driven and therefore groups will be generated whether or not genuine group structures exist. Therefore, best practice is to carefully consider what characteristics are to be clustered and to seek means to validate resultant profiles by assessing, for example, consistency of findings across samples and whether profiles can be discriminated using theoretically related variables that are not included in the cluster analysis.

Sullivan’s (1953) theoretical perspective ascribes particular importance to friendship and peer acceptance in youth development and therefore helps delimit the set of characteristics to be examined. Important to the consideration of friendships in sport is that such relationships possess both positive and negative features (Weiss, Smith, & Theeboom, 1996). Therefore perceptions of positive friendship quality and friendship conflict will be incorporated into the present study along with perceptions of peer acceptance. Also, developmental psychology research that has uncovered constellations of variables reflecting perceptions of peer social systems provides guidance as to the type of profiles to expect (Roberts et al., 2000; Seidman et al., 1999). Specifically, Seidman and colleagues cluster-analyzed perceived peer support, peer involvement, peer hassles, peer acceptance, and peer values of urban youth (final grade in elementary school, junior high school) living in poverty, and they found a range of profiles. These profiles included those considered to be engaging (regardless of perceived prosocial or antisocial peer values) and characterized by relatively low peer hassles and relatively high perceptions of support, involvement, and acceptance; those with an opposite profile; and those with mixed profiles (e.g., relatively high hassles combined with relatively high support and involvement). Controlling for demographic and family system profiles, peer
profile differences were observed with those in more engaging/positive profiles exhibiting less depression and more antisocial behavior. The finding for antisocial behavior was attributed to the risky (i.e., high poverty) living environment of study participants. In a follow-up study, Roberts and colleagues found peer profile membership to significantly predict self-esteem over and above demographic and family system profiles, with relatively more engaging/positive profiles associated with relatively higher self-esteem.

Overall, person-centered developmental psychology research indicates that a finite set of profiles of youth exist as based on youths’ perceptions of their peer relationships. Supporting the validity of these profiles, youth of varying peer relationship profiles exhibit different levels of key psychosocial constructs (i.e., depression, self-esteem, antisocial behavior) in conceptually logical directions. As detailed in reviews of the sport-based peer relationship literature (e.g., Smith, in press; Weiss & Stuntz, 2004), the nature of and expectations held by youth for relationships with peers is often context specific. To our knowledge, no developmental sport psychology research on young athletes’ peer relationships has been conducted that adopts a person-centered strategy such as that detailed above. There is much potential for this research approach to improve our understanding of youth sport motivation, and therefore the purpose of our research was to (a) describe peer relationship profiles of youth sport participants and (b) assess the motivational salience of these profiles by examining profile group differences on sport motivation-related variables. Based on Seidman et al. (1999), we hypothesized that a stable set of roughly five profiles would be observed that include an adaptive profile (relatively higher perceptions of positive friendship quality and peer acceptance with lower perceptions of friendship conflict), a maladaptive profile (lower positive friendship quality and peer acceptance, higher conflict), and mixed profiles.1 We also hypothesized profile group differences on sport motivation-related variables where those with more adaptive peer relationship profiles would exhibit higher levels of perceived competence, enjoyment, and self-determined motivation as well as lower levels of anxiety and self-presentational concerns.

Method

Participants

Participants in the study were 243 youth (157 female, 86 male), ages 10 to 14 years ($M = 11.8, SD = 1.2$), attending sport-specific instructional summer camps of 1 week or 2 weeks in duration. Both day/commuter camp participants and overnight camp participants were included. Basketball ($n = 70$), golf ($n = 6$), soccer ($n = 50$), softball ($n = 16$), synchronized swimming ($n = 22$), tennis ($n = 13$), and volleyball ($n = 66$) campers are represented in the sample. Most participants (92.2%) described themselves as White, with youth of multiethnic background comprising 4.5% of the sample and American Indian, Asian, Black, and Other backgrounds comprising less than 1% of the sample each. The campers reported 0 to 11 years ($M = 4.2, SD = 2.3$) of participation in organized forms of their sport and had attended summer camp for their sport for one (41.2% of participants) to nine summers ($M = 2.4, SD = 1.6$).
Procedure and Measures

Procedures for the protection of human research participants were reviewed and approved by an institutional ethics review board and were followed throughout the study. Upon receipt of permission from directors of summer sport camps \((N = 14)\), we provided information and consent documents to prospective participants on an early camp date. We returned 2 or 3 days later with a multisection questionnaire, which was administered by one of the authors during a break in normal camp activities and took about 30 min to complete. Verbal instructions were provided on three occasions over the course of the administration to increase the likelihood that the response format of various measures would be understood by participants. Participants were instructed to respond to items relative to their broad experience with their sport (i.e., not necessarily their camp experience). For example, basketball campers completed items with reference to their overall basketball experiences. When participants completed the questionnaire, they were asked to double-check their responses and then were thanked for their participation and released to the camp staff. The questionnaire included demographic questions and also tapped the following variables.

**Perceived Friendship Quality.** Perceived quality of a specific friendship in sport was assessed using the Sport Friendship Quality Scale (SFQS; Weiss & Smith, 1999). The SFQS contains 22 items that assess six dimensions of friendship quality: self-esteem enhancement and supportiveness (e.g., “My friend and I praise each other for doing basketball well”), loyalty and intimacy (e.g., “My friend and I stick up for each other in basketball”), things in common (e.g., “My friend and I do similar things”), companionship and pleasant play (e.g., “I like to play with my friend”), conflict resolution (e.g., “My friend and I try to work things out when we disagree”), and conflict (e.g., “My friend and I get mad at each other”). Response options fall on a 5-point Likert scale of (1) *not at all true*, (2) *a little true*, (3) *somewhat true*, (4) *pretty true*, and (5) *really true*. Participants were asked to complete items with reference to one best friend in their sport (e.g., volleyball campers completed items with reference to a “best friend in volleyball” who could be at the camp or on one’s home team/club). Weiss and Smith (1999, 2002) have provided support for the reliability and validity of the SFQS with youth ages 8 to 18 years. In the present study internal consistency reliability of the six friendship scales were acceptable to good \((\alpha = .70 \text{ to } .90)\). A composite of the five positive friendship quality subscales \((\alpha = .91)\) and the friendship conflict subscale \((\alpha = .90)\) were used in the primary analyses.

**Perceived Peer Acceptance.** Perceived peer acceptance in sport was measured using the social acceptance subscale of the Self-Perception Profile for Children (Harter, 1985). The subscale consists of six items that are presented in a structured-alternative format, where a respondent selects one of two options that is most personally descriptive and then indicates whether the descriptive statement is *sort of true* or *really true* for her or him. Items are scored from 1 to 4, with higher scores ascribed to responses reflecting higher perceptions of acceptance by peers. As in previous sport-based peer relationship research (e.g., Weiss & Smith, 2002), items were adapted to refer specifically to the respondent’s sport context.
(e.g., “Some kids are popular with others in soccer BUT Other kids are not very popular in soccer”). Support has been provided for the reliability and validity of the original and sport-specific versions of the measure with children (Harter; Weiss & Smith). Interitem correlations and item–total correlations suggested that one item (“Some kids would like to have a lot more friends in soccer BUT Other kids have as many friends as they want in soccer”) may be problematic. That item was removed from the subscale, resulting in an acceptable internal consistency reliability value ($\alpha = .70$).

**Perceived Competence.** Perceived competence at one’s sport was measured using the six-item athletic competence subscale of the Self-Perception Profile for Children (Harter, 1985). As with the peer acceptance measure, items were presented in a structured alternative format, scored from 1 to 4, with higher scores representing higher competence perceptions, and were adapted to refer specifically to the respondent’s sport context (e.g., “Some kids do very well at tennis BUT Other kids don’t feel that they are very good when it comes to tennis”). Support has been provided for the reliability and validity of the original and sport-specific versions of this measure with children (Babkes & Weiss, 1999; Harter). Item analyses showed two items to be problematic (i.e., “Some kids wish they could be a lot better at tennis BUT Other kids feel they are good enough at tennis”; “In tennis some kids usually watch instead of play BUT Other kids usually play rather than watch”). These items were removed from the subscale, yielding an acceptable internal consistency reliability value ($\alpha = .71$).

**Enjoyment.** Enjoyment of one’s sport was assessed using the Sport Enjoyment Scale (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993). The four items that constitute the scale were tailored to the specific sport of the respondent (e.g., “Do you enjoy participating in synchronized swimming?”). Response options fall on a 5-point scale of (1) not at all, (2) a little, (3) somewhat, (4) pretty much, and (5) very much. Support has been provided for the reliability and validity of the scale with youth sport participants (Scanlan et al.; Ullrich-French & Smith, 2006). The internal consistency reliability of the scale was good in the present study ($\alpha = .91$).

**Anxiety.** Anxiety was measured using the Sport Anxiety Scale (SAS; Smith, Smoll, & Schutz, 1990). The SAS contains 21 items that assess somatic (e.g., “My body feels tense”), worry (e.g., “I have self-doubts”), and concentration disruption (e.g., “My mind wanders during sport competition”) aspects of competitive trait anxiety. Respondents are instructed to indicate how they feel prior to or during competition on a 4-point Likert scale of (1) not at all, (2) somewhat, (3) moderately so, and (4) very much so. Smith et al. have provided support for the reliability and validity of the SAS with high school and college athlete samples. In the present study, internal consistency reliability values for the somatic anxiety ($\alpha = .86$) and worry ($\alpha = .83$) subscales were good, whereas the value for the concentration disruption subscale was marginal ($\alpha = .64$). Item analyses did not reveal any obvious item deletions, and our interest for the present study was in anxiety generally; therefore no items were removed from the concentration disruption subscale. A total score ($\alpha = .90$) generated from all of the SAS items was used in the primary analyses.

**Self-Presentational Concerns.** Self-presentational concerns during competition were assessed using a modified version of the Self-Presentation in Sport Questionnaire.
naire (SPSQ; Wilson & Eklund, 1998). The original SPSQ was developed using college athletes and contains 33 items that assess self-presentational concerns about performance/composure inadequacies, appearing fatigued/lacking energy, physical appearance, and appearing athletically untalented, respectively. Informed by pilot data obtained from a high school sample (Smith & Eklund, 2003), several modifications were made to the SPSQ in an effort to make it easier for children to complete. Specifically, we reduced the total number of items to 12 (3 per subscale), modified the item stem and included it with each item rather than once at the beginning of the measure (i.e., “During competition I worry that other people may perceive me as . . .”) to “During competition I am concerned other people will think I . . .”), and simplified the wording of some items (e.g., “. . . appearing to not perform up to my potential.” to “. . . am not performing my best.”). Response options fall on a 5-point Likert scale of (1) never, (2) hardly ever, (3) sometimes, (4) often, and (5) always.

Self-Determined Motivation. Motivation for participation in sport ranging on a self-determination continuum was assessed using a modified version of the Sport Motivation Scale (SMS; Pelletier et al., 1995). The SMS was developed using older adolescents and college athletes and contains 28 items that assess seven forms of motivation ranging from amotivation (absence of motivation for sport), to extrinsic types of motivation (sport engaged in as a means to some end), and then to intrinsic motivation (sport engaged in for inherent pleasure and satisfaction). In an effort to make the measure easier for children to complete, we used 12 items (4 amotivation, 2 external regulation, 2 identified regulation, 4 intrinsic motivation) that adopt relatively simple wording, specified the respondent’s particular sport within the stem and several of the items, made subtle simplifications to four items (e.g., “. . . I don’t know any more; I have the impression that I am incapable of succeeding in this sport” to “. . . I don’t know any more; I have the feeling that I’m unable to succeed in golf”), and changed the anchors on the 7-point Likert response set as follows: (1) does not correspond at all to do not agree, (4) corresponds moderately to moderately agree, (7) corresponds exactly to completely agree. Evidence for the psychometric integrity of the original SMS is detailed in Pelletier et al.; however, as with the SPSQ, given our significant modification of the questionnaire we conducted a confirmatory factor analysis (maximum likelihood estimation) of the SMS data collected in the present study. A four-factor model corresponding to the four types of motivation represented in the set of items exhibited an acceptable fit to the data according to traditional criteria for model fit (GFI = .94, NNFI = .95, CFI = .97, RMSEA = .056). Our interest for the present study was in self-presentational concerns generally; therefore a total score (α = .89) generated from all of the SPSQ items was used in the primary analyses.
regulation items by +1, and the averaged intrinsic motivation items by +2 (see Ullrich-French & Smith, 2006; Vallerand, 2001). Higher index scores represent relatively more self-determined sport motivation.

Data Analysis

To address the first purpose of the study, cluster analysis was conducted using the perceived positive friendship quality, friendship conflict, and peer acceptance variables. As detailed in the Results section, multiple approaches to cluster analysis were employed in order to assess the stability of the outcome. To address the second purpose of the study, peer relationship profile groups that emerged from the cluster analysis were compared on the set of sport motivation-related variables (i.e., perceived competence, enjoyment, anxiety, self-presentational concerns, and self-determined motivation) using one-way MANOVA. A significant multivariate effect was followed with univariate follow-up tests. All analyses were completed using SPSS 11.5 (SPSS Inc., Chicago, IL).

Results

Descriptive Statistics

Table 1 contains descriptive statistics for the study variables. Participants perceived high positive friendship quality, low-to-moderate friendship conflict, moderate-to-high peer acceptance, and moderate-to-high perceived competence. Also, participants reported high sport enjoyment, low-to-moderate competitive trait anxiety, low self-presentational concerns, and relatively self-determined motivation. Significant correlations among variables were in theoretically consistent directions. Perceived positive friendship quality and perceived peer acceptance were positively correlated. Perceived positive friendship quality was also positively correlated with perceived competence, enjoyment, and self-determined motivation. Perceived friendship conflict was positively correlated with anxiety. Perceived peer acceptance was positively correlated with perceived competence, enjoyment, and self-determined motivation. Perceived friendship conflict was positively correlated with anxiety. Perceived peer acceptance was positively correlated with perceived competence, enjoyment, and self-determined motivation as well as negatively correlated with anxiety and self-presentational concerns. Among the motivation-related variables, perceived competence was positively associated with enjoyment and self-determined motivation as well as negatively associated with anxiety and self-presentational concerns. Anxiety and self-presentational concerns were positively correlated with one another and were both negatively associated with self-determined motivation. Finally, enjoyment positively correlated with self-determined motivation. Significant correlations were of low or moderate magnitude, indicating that multicollinearity issues would not be of concern in subsequent analyses of the data.

One-way MANOVAs by gender were conducted on the set of peer relationship and motivation-related variables, respectively, for descriptive purposes. A significant multivariate effect was obtained for the peer relationship variable set, Pillai’s trace $= .09$, $F(3, 239) = 7.86, p < .001, \eta^2_p = .09$. Follow-up ANOVAs showed positive friendship quality to be higher in girls ($M = 4.24, SD = 0.52$) than in boys ($M = 3.86, SD = 0.67$), $F(1, 241) = 23.71, p < .001, \eta^2_p = .09$. No other univariate effects were significant. A multivariate effect was not obtained for the set of motivation-
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Note. Alpha values on diagonal, correlation values below diagonal, *p < .05 (two-tailed). Correlations calculated using pairwise deletion of missing data.
related variables, Pillai’s trace = .02, $F(5, 230) = .71, p > .05$. Overall, this set of findings is consistent with previous sport-based research on peer relationships and motivation (Ullrich-French & Smith, 2006).

**Cluster Analyses**

Univariate and multivariate outliers can substantially perturb cluster solutions and therefore must be carefully considered when conducting cluster analysis (Hair et al., 1998). Univariate outliers ($z > ±3.0$) were observed in five cases and no multivariate outliers were observed based on Mahalanobis’ $D^2$ with a $p < .001$ threshold. Results of analyses including and excluding the outlier cases were minimally discrepant and therefore these cases were retained in the sample. Because outlier cases can represent genuine segments of the population, retention of such cases is advised in such circumstances (Hair et al.).

Standardized scores for perceived positive friendship quality, friendship conflict, and peer acceptance were cluster-analyzed. A two-step process was employed in assessing peer relationship profiles. First, a hierarchical cluster analysis—using Ward’s linkage method and squared Euclidean distance as the similarity measure—was conducted to provide guidance as to the number of clusters represented in the data. Examination of the agglomeration coefficients resulting from this analysis showed that the percentage change in coefficient notably increased when moving from five clusters to four clusters and when moving from four clusters to three, suggesting that a five- or four-cluster solution would be most appropriate. We settled on a five-cluster solution because it corresponded with our expectations based on Seidman et al.’s (1999) work and because subsequent analyses specifying both options showed the five-cluster solution to produce nonredundant profiles of distinct motivational salience.

Second, $k$-means (nonhierarchical) cluster analysis using simple Euclidean distance as the similarity measure was conducted, specifying a five-cluster solution. We performed this analysis on a random selection of half the subjects and then on the other half of the sample. Although the magnitude of final cluster centers showed some variability, the pattern of cluster centers was equivalent and therefore supported the validity of the resultant profiles. We also performed the analysis using random seeds and seeds generated from Seidman et al. (1999), with highly consistent outcomes. Overall, the solution was quite stable across the various approaches used to examine the data and therefore we present the full sample results as generated using the specified seed points (the preferred approach with nonhierarchical clustering methods; Hair et al., 1998). Table 2 contains the means, standard deviations, and standardized scores for the clustered variables (i.e., perceived positive friendship quality, friendship conflict, and peer acceptance), and Figure 1 pictorially represents the peer relationship profiles that emerged from the analysis. We used a $z$ score criterion of ±0.5 to represent relatively high or low scores on the peer relationship variables and assigned labels to profiles based on the set of these scores. The reader is cautioned that the labels we employ are designed to ease the negotiation of the remaining sections of this paper and are not intended to characterize the groups in absolute terms. As is often the case in research with youth sport participants, relatively low or high scores on constructs may not correspond to low or high response set values. For example, the profile
possessing the lowest mean value for peer acceptance ($z = -0.99$) exhibits a value above the scale midpoint of 2.5.

We labeled the first cluster ($n = 29; 11.9\%$) the Isolate profile because respondents in this group are characterized by relatively low perceptions of positive friendship quality and peer acceptance yet also tend toward relatively low perceptions of friendship conflict, suggesting they may perceive less engagement in peer relationships generally than other youth in the sample. The second cluster ($n = 17; 7.0\%$) was labeled the Reject profile because respondents in this group perceive relatively low positive friendship quality and peer acceptance as well as relatively high friendship conflict, suggesting they perceive less effective engagement with peers than other youth in the sample. Respondents within the Survive profile ($n = 62; 25.5\%$) hold average perceptions of positive friendship quality and relatively low perceived friendship conflict, suggesting they perceive an adaptive sport friendship, but report difficulty gaining acceptance within the larger peer group. Respondents within the Thrive profile ($n = 80; 32.9\%$) report relatively high perceived peer acceptance and relatively low perceived friendship conflict, as well as tend toward relatively high perceptions of friendship quality. The final cluster ($n = 55; 22.6\%$) was labeled the Alpha profile. Respondents in this group reported relatively high

Figure 1—Results of $k$-means cluster analysis ($N = 243$).
perceptions of peer acceptance and friendship conflict and tended toward relatively high perceptions of positive friendship quality. These individuals may engage in sport in an intense fashion that yields both admiration and friction from others. Chi-square analysis showed a significant difference in gender representation across profiles, \( \chi^2(4) = 15.29, p < .01 \). Follow-up examination showed that males were disproportionately represented within the isolate profile, \( \chi^2(1) = 11.40, p < .01 \).

### Group Difference Analyses

One-way MANOVA conducted to assess potential peer relationship profile differences on the set of motivation-related variables yielded a significant multivariate effect, Pillai’s trace = .26, \( F(20, 920) = 3.20, p < .001, \eta^2 = .07 \). Follow-up ANOVAs yielded significant univariate effects for all motivation-related variables with effect sizes ranging from 5% to 13% variance explained (see Table 3). Post hoc pairwise comparisons of the estimated marginal means showed significant \( (p < .05) \) profile group differences in hypothesized directions. Those in the more adaptive thrive and alpha peer relationship profile groups had significantly higher perceived sport competence than those in the remaining profile groups. Similarly, they reported significantly higher enjoyment of sport than those in the isolate and survive groups. Those in the thrive profile group had significantly less competitive anxiety and self-presentation concerns in sport than those in any other profile group. Young athletes falling within the reject profile group reported significantly higher competitive anxiety than those in any other group. Those in the thrive profile group were more self-determined in their motivation for sport than those in the isolate and reject groups, and those in the alpha profile group reported more self-

### Table 2 Participant Numbers, Means, Standard Deviations, and Standardized Scores for Peer Relationship Profiles Resulting from k-Means Cluster Analysis

<table>
<thead>
<tr>
<th>Cluster</th>
<th>n</th>
<th>M (SD)</th>
<th>z</th>
<th>M (SD)</th>
<th>z</th>
<th>M (SD)</th>
<th>z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolate</td>
<td>29</td>
<td>2.90</td>
<td>−1.99</td>
<td>1.82</td>
<td>−0.42</td>
<td>2.76</td>
<td>−0.74</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.46)</td>
<td></td>
<td>(0.65)</td>
<td></td>
<td>(0.42)</td>
<td></td>
</tr>
<tr>
<td>Reject</td>
<td>17</td>
<td>3.74</td>
<td>−0.60</td>
<td>3.96</td>
<td>1.53</td>
<td>2.68</td>
<td>−0.87</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.44)</td>
<td></td>
<td>(0.68)</td>
<td></td>
<td>(0.48)</td>
<td></td>
</tr>
<tr>
<td>Survive</td>
<td>62</td>
<td>4.21</td>
<td>0.19</td>
<td>1.73</td>
<td>−0.50</td>
<td>2.61</td>
<td>−0.99</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.34)</td>
<td></td>
<td>(0.61)</td>
<td></td>
<td>(0.36)</td>
<td></td>
</tr>
<tr>
<td>Thrive</td>
<td>80</td>
<td>4.34</td>
<td>0.39</td>
<td>1.60</td>
<td>−0.62</td>
<td>3.62</td>
<td>0.77</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.38)</td>
<td></td>
<td>(0.49)</td>
<td></td>
<td>(0.25)</td>
<td></td>
</tr>
<tr>
<td>Alpha</td>
<td>55</td>
<td>4.38</td>
<td>0.46</td>
<td>3.61</td>
<td>1.21</td>
<td>3.55</td>
<td>0.65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.36)</td>
<td></td>
<td>(0.66)</td>
<td></td>
<td>(0.31)</td>
<td></td>
</tr>
</tbody>
</table>
Table 3  Univariate F, Effect Size, and Cluster Means, Standard Deviations, and Standardized Scores for Motivation-Related Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Isolate (n = 29)</th>
<th>Reject (n = 17)</th>
<th>Survive (n = 59)</th>
<th>Thrive (n = 77)</th>
<th>Alpha (n = 54)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived Competence</strong></td>
<td>8.93**</td>
<td>.13</td>
<td>2.69a (0.77)</td>
<td>2.65a (0.81)</td>
<td>2.64a (0.64)</td>
</tr>
<tr>
<td><em>Enjoyment</em>*</td>
<td>3.27*</td>
<td>.05</td>
<td>4.62a (0.69)</td>
<td>4.66a (0.53)</td>
<td>4.69a (0.54)</td>
</tr>
<tr>
<td><strong>Anxiety</strong></td>
<td>7.06**</td>
<td>.11</td>
<td>1.94b (0.63)</td>
<td>2.36c (0.52)</td>
<td>1.94b (0.54)</td>
</tr>
<tr>
<td><strong>Self-Presentation Concerns</strong></td>
<td>3.97**</td>
<td>.06</td>
<td>1.93b (0.75)</td>
<td>2.13b (0.76)</td>
<td>1.98b (0.74)</td>
</tr>
<tr>
<td><strong>Self-Determined Motivation</strong></td>
<td>3.34*</td>
<td>.06</td>
<td>5.10a (4.41)</td>
<td>5.32ab (5.28)</td>
<td>6.54abc (4.23)</td>
</tr>
</tbody>
</table>

Note. Cluster differences (p < .05) based on pairwise comparison of estimated marginal means are indicated by distinct superscripts. Analyses are based on participants with complete data (n = 236).

*p < .05, **p < .01.
determined motivation than those in the isolate group. Overall, the comparisons indicate that those who perceive more positive peer relationships within sport have more adaptive sport motivation.

**Discussion**

The first purpose of our research was to describe peer relationship profiles of youth sport participants. We observed a finite number of profiles (i.e., five) based on youth perceptions of positive friendship quality, friendship conflict, and peer acceptance. These profiles emerged consistently across different approaches to cluster analysis and were consistent with expectations based on Seidman and colleagues’ (1999) findings with urban youth living in poverty. A fully adaptive profile was observed (i.e., thrive profile) that was characterized by relatively high perceptions of acceptance, a tendency toward relatively high perceptions of positive friendship quality, and relatively low perceptions of friendship conflict. A fully maladaptive profile was observed (i.e., reject profile) that was characterized by relatively low perceptions of peer acceptance and positive friendship quality along with relatively high perceptions of friendship conflict. Mixed profiles were also observed that were characterized by one or two adaptive peer relationship perception(s).

The second purpose of our research was to assess the motivational salience of these profiles by examining profile group differences on sport motivation-related variables (i.e., perceived competence, enjoyment, anxiety, self-presentational concerns, and self-determined motivation). Those possessing more adaptive peer relationship profiles were expected to report higher perceived competence, enjoyment, and self-determined motivation as well as lower anxiety and self-presentational concerns relative to sport. Overall, the pattern of means conformed with these expectations, suggesting that peer relationship profiles are motivationally salient in sport. The findings also serve as evidence for the validity of the cluster analysis solution (Hair et al., 1998), showing that the profiles can be discriminated on constructs not included in the clustering procedures.

Aside from general support for our hypotheses, there were several specific observations of note. Particularly interesting are findings associated with the mixed profiles. For example, we found males to be disproportionately represented in the isolate profile, characterized by relatively low perceptions of peer acceptance and positive friendship quality as well as a tendency toward relatively low friendship conflict. This finding may indicate that, in sport, boys are more likely than girls to be isolated or ignored by their peers. Alternatively, this may reflect sport-related choices made by boys and girls. Coakley and White (1992), in a study of gender and the sport participation decisions of adolescents, found many girls to report that they would not participate in sport unless a friend accompanied them, whereas boys were not as likely to require the involvement of a friend. Emotional support is more frequently reported by girls than boys as a salient feature of their best sport friendship (Weiss et al., 1996), and therefore the absence of social contact that enables such support may be particularly problematic for girls’ involvement. Future research is warranted that shows whether or not our finding is replicable and, if so, what explains the disproportionate representation of boys in this profile.
The contrast of the survive and alpha mixed profiles is also interesting. Both profiles are characterized by one maladaptive peer relationship perception. Those in the survive profile perceive relatively low peer acceptance, whereas those in the alpha profile perceive relatively high friendship conflict. Although those in the respective profiles do not significantly differ on anxiety, self-presentational concerns, or self-determined motivation, those in the alpha profile report higher perceived competence and enjoyment. Although additional research would be necessary to confirm the possibility, this suggests that those in the survive profile may be less skilled and ultimately susceptible to lowered self-determined motivation in the long term. Perceived competence and actual competence are known to be positively associated with perceived and actual peer acceptance (Weiss & Duncan, 1992). Also, enjoyment is closely linked with perceived competence and social recognition of competence (Scanlan, Stein, & Ravizza, 1989). Additionally, perceived peer acceptance has emerged as a dominant predictor of perceived competence, enjoyment, stress, and self-determined motivation when considered simultaneously with perceptions of friendship quality (Ullrich-French & Smith, 2006). Together these observations suggest that those in the survive profile that emerged in the present study may be motivationally “at risk.” In support of this point, with the exception of anxiety, the survive and reject profiles did not differ on the motivation-related constructs. These observations also suggest that friendship conflict in itself may not be, in the short term at least, especially problematic for youth sport participants. Support for this is found in Weiss et al.’s (1996) observation that conflict is a natural feature of best sport friendships. Having stated that, those in the alpha profile did score significantly higher than those in the thrive profile on anxiety and self-presentational concerns. Therefore, potentially fruitful areas of future research would include examination of the sources and stability of friendship conflict perceptions as well as the long-term implications of persisting friendship conflict in sport.

The findings of the present investigation are in line with Sullivan’s (1953) theoretical views on peer relationships in the sense that more positive peer relationships are more psychologically adaptive and that combinations of social relationships are of importance. As evidenced by the alpha profile, relatively high conflict perceptions with a friend in sport in combination with relatively high positive friendship quality and peer acceptance perceptions did not undermine perceived competence, enjoyment, or self-determination. Findings are also in line with theoretical perspectives that hold social constructs (e.g., perceptions of socializers’ beliefs, perceived approval/regard, relatedness) as critical to motivation-related cognitions and affect (e.g., Deci & Ryan, 1985; Eccles [Parsons] et al., 1983; Harter, 1978, 1981; Leary & Kowalski, 1990; Nicholls, 1984, 1989). All motivation-related variables included in the present investigation served to discriminate peer relationship profiles, suggesting a relatively wide-ranging motivational impact of peers on sport motivation. Future research is warranted that extends the present findings to behavioral indexes of motivation, such as sport-related choices (e.g., participation or not, selection of optimally challenging goals or not), effort, and persistence, and that targets the understanding of mechanisms that underlie peer influence on motivation.

Finally, the present study supports the value of pursuing sport-based peer relationships research from a holistic, person-centered conceptual vantage (Magnusson,
This approach groups individuals rather than variables and therefore enables the detection of ecologically salient profiles that better represent the social landscape of youth sport than would profiles artificially constructed using variables scores (e.g., through mean/median split). Such an approach has been valuable in extending the knowledge base on achievement goal orientations and other motivational constructs in the physical domain (e.g., Harwood et al., 2004; Hodge & Petlichkoff, 2000; Ntoumanis, 2002; Smith et al., in press; Wang & Biddle, 2001) and would appear to offer similar benefits to the study of peer relationships in this setting.

A primary limitation discussed earlier in this article is the data-driven nature of cluster analysis. Profiles generated by the technique may or may not be genuine features of the sport social milieu. In conducting the analyses multiple ways, showing findings consistent with previous work (Seidman et al., 1999), and demonstrating emergent profiles to be motivationally distinct, we have provided support for the validity of the peer relationship profiles that emerged in the present study. Further confidence in the validity of these profiles would be obtained through replication with other samples of young athletes. The present sample was dominated by team sport athletes and it is possible the structure of peer relationship perceptions in individual sport settings is different. That said, the profiles’ similarity to those in Seidman et al.’s non-sport investigation suggests that we might expect some degree of consistency not only across individual sport settings but also perhaps settings such as compulsory physical education, where a wider range of absolute levels of peer relationship perceptions would be expected. Although the nature of and expectations held for peer relationships are known to differ within individuals across contexts (Smith, in press; Weiss & Stuntz, 2004), it is possible that the types of profiles observed in the present study are relatively ubiquitous and that context-specific effects are manifested in individuals occupying different profiles across settings. This issue is worth pursuing in future research as is the degree to which profile membership within a context remains stable or not across time.

The reader is also reminded that cluster profiles and the labels we assigned to them were characterized as a function of the relative distribution of scores on the peer relationship constructs. As noted earlier, a relatively low or high score in absolute terms may be moderate when mapped to the response set range. Therefore, the labels we used to characterize profiles should be considered “working” in nature and their appropriateness must be evaluated upon assessing, for example, the actual competence of individuals of different profiles and how they respectively engage with peers in behavioral terms. This also goes for the motivation-related variables. Although individuals in some profiles might be considered motivationally “at risk” relative to other individuals in the sample, this is within the context of a sample of voluntary sport participants possessing reasonably high motivation in absolute terms. An additional limitation of the study is the relatively narrow frame of reference used to conceptualize peer relationships. In targeting young athletes’ perceptions of their relationships, we focused upon the individual level of analysis. Other levels of analysis to be pursued in future work include bidirectional interactions, trajectories/histories of peer relationships, and higher-order group processes (see Rubin, Bukowski, & Parker, 1998). Future work addressing different levels of analysis may illuminate promising strategies for promoting social functioning in sport, which is valuable in itself and, according to the present research, could have motivational implications as well. Finally, as is typical in social psychological
research in sport, a relatively modest amount of variance in the dependent (i.e.,
motivation) variables was explained in the present study. There is clearly a wider
social network/setting that will influence motivational processes in sport. Keeping
in mind that a balance must be maintained between parsimony of research design
and representation of the multifarious social context young athletes operate in, we
encourage future research that in a theoretically informed fashion broadens the
social frame of reference explored to date.

Having acknowledged these limitations and future research needs, we believe
the present study meaningfully extends the developmental sport psychology litera-
ture. The work suggests that young people’s perceptions of their peer relationships
in sport fall within a distinct set of profiles and that these profiles are motivationally
salient. The motivational salience of these profiles highlights the importance of
assessing combinations of relationship variables when examining social influence
in sport, the importance of peers as social agents in youth sport and to the study of
motivational processes, and more generally the value of person-centered approaches
to sport psychology research. It is our hope that the present research will stimulate
further work on peer relationships in sport that illuminates the processes underlying
profile group formation, elucidates mechanisms of peer influence on motivation,
and ultimately leads to the development of strategies for enhancing peer relation-
ships and, in turn, the broader youth sport experience.

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Notes

1. Six clusters emerged in Seidman et al. (1999); however, two clusters showed similar variable patterns with the exception of peer values (e.g., toward smoking marijuana). Of interest in the present study were perceptions of relationships with friends and the larger peer group rather than perceptions of peers’ prosocial/antisocial values. Also, the specification of a hypothesized number of clusters based on Seidman and colleagues’ work should be considered simply as a guide. Few developmental psychology investigations have used this approach to examine peer relationships and, as noted, the nature of peer relationships can depend on context. Therefore, in analyzing our data we adopted an exploratory strategy relative to the appropriate number of clusters to settle upon.

2. The modified SPSQ used in this study is available from A.L. Smith.

3. The modified SMS used in this study is available from A.L. Smith.