Machiavellianism in Children in Dutch Elementary Schools and Sports Clubs: Prevalence and Stability According to Context, Sport Type, and Gender

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The majority of research on children’s peer aggression has focused exclusively on the school context. Very few studies have investigated peer aggression in sports clubs. The prevalence and stability of peer aggression, prosocial behavior, and resource control strategies for children participating in three types of sports (martial arts, contact, and noncontact sports) were examined in two contexts: the sports club and the elementary school. We distinguished aggressive children with (i.e., Machiavellians) and without prosocial tendencies (i.e., coercive-aggressive children). Self-reports about experiences in the two contexts where gathered from 1,425 Dutch elementary school students (717 boys and 708 girls, fourth to sixth grade, mean age 11.25 years) who were participating in a sports club. We found roles for resource control strategies to be rather stable across contexts. The findings did not provide support for the “enhancement” assumption in these contexts with regard to martial arts participants.

Introduction

This study examines self-reported peer aggression in different environmental and social contexts to better understand this complex phenomenon. In particular, this study analyzes the prevalence and stability of peer aggression, and the use of resource control strategies among children participating in three types of sports (martial arts, contact and noncontact sports) in two different contexts (sports club and elementary school). The majority of previous research on peer aggression had focused almost exclusively on the school context. However, peer aggression can also occur within a variety of other social settings, such as homes, residential care, and prisons (Monks et al., 2009). The effectiveness of school-based aggression prevention programs has been found to vary substantially in different countries, with only moderate effectiveness in the short run, at best (Baar, Wubbels, & Vermande,
2007; Smith, Ananiadou, & Cowie, 2003). We argue that knowledge of when, where and by whom peer aggression occurs in different contexts is useful for understanding and dealing more adequately with peer aggression across contexts. This may contribute to the creation of community-based prevention programs.

**Sports and Aggression**

In many countries, sports are an important leisure activity. Children spend a substantial amount of time at sports clubs with their peers. Although the percentage of youth memberships in the Netherlands has slightly decline in recent years, more than 60% of children and adolescents aged 6 to 19 years are members of a sports club (Bredeveld, Kamphuis, & Tiessen-Raaphorst, 2008). In the Netherlands, unlike some Anglo-Saxon countries, youth sports are not embedded in the educational system. Dutch sports clubs are voluntary organizations and almost exclusively organized separately from school and community-based organizations, with funding by members, local government, business, and private resources. Until now, very few studies have investigated peer aggression at sports clubs (e.g., Endresen & Olweus, 2005; Baar, Vermande, & Wubbels, 2011). To the best of our knowledge, no other study has investigated peer aggression in the context of both sports clubs and schools. The sports club, as the school, can be considered a “social anchor” for children in the same neighborhood, in which children can experiment with different roles and group interaction (Nucci & Young-Shim, 2005). Several studies have strongly suggested that the socialization process of sports may legitimize aggressive acts. In contrast with learning activities in school, sports activities generally emphasize physical characteristics. Children learn to be better, faster, and stronger through their participation in organized sports programs (Knoppers, 2006). Organized sports programs are often highly competitive, and a “win-at-all-costs” orientation (Smoll & Smith, 1997) may reinforce aggressive behavior among youth (Coakley, 2009; Endresen & Olweus, 2005; Nucci & Young-Shim, 2005).

The impact of sports in children’s lives is usually assumed by local and national governments to be positive (e.g., the Dutch Ministry of Health, Welfare and Sport, 2005). However, research should also focus on the potentially negative sides of organized youth sports participation, such as peer aggression. The International Society of Sport Psychology has recognized that aggression on and off the playing field has become a social problem, and is has made recommendations to reduce the incidence of aggression in the athletic domain (Tenenbaum, Stewart, Singer, & Duda, 1997).

In this study, we examined the prevalence and stability of self-reported aggressive behavior among different types of sports participants, classified by different physical grades of player-to-player contact: martial arts participants, participants in contact sports, and participants in noncontact sports. The rules of martial arts allow (high) body contact with opposing players, whereas in contact sports, limited physical contact between opposing players is allowed as part of the normal game (e.g., basketball, handball, hockey, soccer). In noncontact sports, there is no physical contact between opposing players (e.g., badminton, horseback riding, tennis, volleyball). Comparison of children’s peer aggression experiences within the different types of sports and within the contexts of sports clubs and schools can provide us insight into the constancy of peer aggression patterns, which is
important for developing adequate sports-specific and community-based aggression prevention programs.

**Resource Control Strategies**

The present research investigates self-reported peer aggression and considers children’s self-reported prosocial behavior in the contexts of schools and sports clubs. Therefore, we distinguished aggressive children with and without prosocial tendencies. From an evolutionary perspective on social dominance relations, Hawley explains that children use two different strategies to control resources in social group contexts: coercive strategies (i.e., purely aggressive children) and prosocial strategies (i.e., purely prosocial children; Hawley, 1999, 2003; Hawley, Little, & Card, 2007, Hawley, Little, & Pasupathi, 2002). A third group, Machiavellians, are bistrategic controllers who are capable of using both coercive strategies (e.g., making demands and threats) and prosocial strategies (i.e., being reciprocal, cooperative, and helpful) to access and compete for the resources of the group, such as goods, social status, and friendships. In other words, for some children peer aggression and prosocial behavior may occur side by side; from an evolutionary point of view, these behaviors are not opposite ends of social behavior (Hawley et al., 2002). Machiavellianism can be a successful or adaptive way to gain resource control or social dominance. It is important to distinguish purely aggressive and coercive children from prosocial and Machiavellian children. Studies (e.g., Bierman, Smoot, & Aumiller, 1993; Crick, 1996) show that aggressive children who lack prosocial skills may be particularly problematic and at risk for peer rejection and future social maladjustment. Prior research in elementary schools further indicates that the friendships of Machiavellians are satisfying and resemble those of prosocial children. Machiavellian children show better social relations and a better adaption over time than coercive children or control groups (Palmen, 2009). Despite their aggression, Machiavellians are socially active and well liked by peers (Hawley et al., 2007) because of their prosocial skills, which may partly camouflage their aggressive behavior to adult observers. Therefore, Machiavellians are difficult for teachers and counselors to trace and monitor (Hawley, 2003; Hawley et al., 2007). If teachers and sports coaches do not adequately recognize peer aggression, they may not deal effectively with situations in which peer aggression occurs.

**Goals and Expectations**

The first goal of this research was to compare the prevalence of self-reported peer aggression and prosocial behavior according to the type of sports participation in sports clubs and elementary schools. From a social dominance point of view, peer aggression can be viewed as a strategy of individuals to gain and maintain social status and dominance in relationships (Hawley, 1999; Pellegrini, 2004, 2008; Pellegrini & Long, 2002). We argue that use of aggressive and prosocial strategies not only depends on children’s personal characteristics (i.e., we follow an evolutionary perspective on social dominance relations) but, additionally also on context characteristics. Features of the context will also influence the use of these strategies. Therefore, from a behavioral ecological point of view (Pellegrini, 2008), aggressive and prosocial behavior were examined for contextual variation. We suggest
that in comparison with the relative social stability over time of the classroom, the sports club offers a less structured setting in which it is more difficult for children to get and to keep social status. Vaillancourt et al. (2010) demonstrated that peer aggression mostly occurs in unstructured school settings with less supervision, such as playgrounds, hallways, and lunchrooms. Craig, Pepler, and Atlas (2000) found that the frequency of aggressive acts was higher on the playground than in the classroom. Therefore, we expected a higher prevalence of self-reported peer aggression in the sports club for two reasons: first, children have to reestablish their social positions with their peers in relatively unstable sports groups that are modified almost every year; and second, the sports club is a less structured setting, with less supervision than the school. In addition, several studies have found that sports programs are often highly competitive, which reinforces aggressive behavior among athletes (e.g., Coakley, 2009; Nucci & Young-Shim, 2005; Smoll & Smith, 1997) and unconsciously teaches that aggression is an acceptable way to achieve desired outcomes (e.g., Mintah, Huddelson, & Doody, 1999; Rowe, 1998). These findings are in line with the “enhancement hypothesis” formulated by Endresen and Olweus (2005), which states that participation in power sports over time enhances antisocial tendencies. Their findings showed higher levels of violent behavior within the sports clubs and nonviolent antisocial behavior outside the sports club among boys who participated in power sports (i.e., fighting and strength sports) than among who did not. Boys who engaged in power sports were not characterized by elevated levels of antisocial involvement (i.e., there was no selection effect). Endresen and Olweus have focused on the appearance of antisocial and violent behavior among male power sports participants both in and outside sports. The present study explores the prevalence of self-reported peer aggression and prosocial behavior across contexts and by gender and types of sport. In contrast to Endresen and Olweus’ study, we did not use the term “power sports” because none of the children in our research sample participated in strength sports. With regard to fighting sports, almost all of the children participated in martial arts (e.g., jiu-jitsu, judo, karate, kung-fu, taekwondo). Therefore, in the current study we used the term “martial arts”. Furthermore, we hypothesized that the prevalence of self-reported aggressive behavior among sports participants depends upon the particular type of sport. Based on Endresen and Olweus’ (2005) “enhancement” considerations (i.e., a positive attitude toward aggression or violence can be expected to lead to aggression in the sports club or in other contexts, such as school) we expected peer aggression to be more prevalent among participants of martial arts and contact sports than among participants of noncontact sports in both contexts. This expectation is also in line with past research findings (Bredemeier, Weiss, Shields, & Cooper; 1987; Conroy et al., 2001) which revealed that high-contact sports participation was associated with a greater perception of legitimacy for aggressive sport behavior than medium-contact and noncontact sports participation. Furthermore, we expected the degree of self-reported prosocial behavior among contact sports participants in the sport club context to be higher than that of noncontact sports participants, followed by participants in martial arts. The contact sports participants in our study were practicing team sports, which require them to be prosocial to be accepted by teammates and to be a good team member. Because martial arts participants practice individual sports, they may be less prosocial because they have less need to consider other participants than contact (team) sports participants do. For noncontact
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sports participants, we had no specific expectations with respect to the degree of prosocial behavior because many noncontact sports can be practiced individually (e.g., fitness), as a team (e.g., volleyball), or both individually and/or as a team (e.g., tennis). Finally, we expected boys to report more peer aggression than girls (e.g., Salmivalli & Peets, 2009; Schwartz, Proctor, & Chien, 2001) and girls to report more prosocial behavior (e.g., Closson, 2009; Zimmer-Gembeck, Geiger, & Crick, 2005) than boys within the three different types of sports in both contexts.

The second goal of the current study was to compare the prevalence of roles for resource control strategy (i.e., coercive-aggressive, purely prosocial, and Machiavellian) in sports clubs and schools among children participating in different types of sports. The children were classified according to their level of self-reported peer aggression and prosocial behavior to compare resource control strategies roles in both contexts. Based on Hawley’s Resource Control Theory (Hawley, 1999, 2003; Hawley, Little, & Card, 2007; Hawley, Little, & Pasupathi, 2002), we expected contact sports participants to be Machiavellians more often than martial artists and noncontact sports participants, particularly in the sports club context. The contact sports participants in our study were all team sports players who needed to be part of a team and to be accepted by teammates. Contact sports participants must cooperate to be good team members and must be good competitors within their own sports team. In other words, they should be able to balance “getting along” with and “getting ahead” of their peers. Both strategies can be effective in resource control (Hawley, 2003). Martial arts are not team sports, so their participants may be less cooperative because they have less need to consider other participants. Noncontact sports participants may be less coercive-aggressive in the sports club context because of the absence of direct physical player-to-player contact. Furthermore, the sports club setting, with winners and losers, is a less structured and more competitive setting than a school. Thus, it may be probably more difficult for children to get and to keep social status within their peer group in the sports club context. In light of the behavioral ecological theory, the contest may determine the use of aggressive and affiliative strategies to access resources (Pellegrini, 2008). We expected martial arts participants to be coercive-aggressive more often and to be Machiavellian and prosocial less often in both contexts. Noncontact sports participants can participate in both team sports and in individual sports. Therefore, with regard to noncontact sports participants, we had no specific expectations about prosocial behavior. In line with the results of other studies (e.g., Hawley, 1999, 2003), we assumed that boys would be coercive-aggressive more frequently and that girls would more frequently occupy the prosocial role. We had no a priori reason to expect gender differences with regard to the Machiavellian role because girls tend to be more prosocial, and boys tend to be more aggressive. Therefore, we expected that boys and girls were equally likely to be Machiavellian in both contexts.

The third goal of this research was to investigate the stability of roles for resource control strategies for the three types of sports participants in the contexts of the sports club and the elementary school. As stated previously, there is a lack of research on the extent to which aggressive children in school are also aggressive on sports clubs. A few studies (Baar et al., 2011; Craig, Pepler, & Atlas, 2000; Hörmann & Schäfer, 2009) have shown that peer aggression is stable across different contexts, but the results of these studies did not focus on specific types of sports. If we make a distinction between types of sports and types of aggressive
children (i.e., coercive and Machiavellian), we may find context differences in peer aggression. It could be that peer aggression is considered more “acceptable” among contact sports (and martial arts in particular), in which physical contact and physical characteristics are emphasized. The masculine orientation could create a positive attitude toward the use of aggression in the sports club and in other contexts, such as school (Coakley, 2009; Endresen & Olweus, 2005; Knoppers, 2006; Nucci & Young-Shim, 2005). In line with the theoretical assumptions mentioned in the second goal of this study and adopting a person-oriented approach, we expected martial arts participants to occupy the coercive-aggressive role more often than participants in contact and noncontact sports in both contexts. We also expected that the contact sports participants would occupy the Machiavellian role more often in both contexts than martial artists and noncontact sports participants. We explored the possibility of differences across contexts, but we had no hypothesis regarding the stability of the prosocial roles for the three types of sports.

The fourth and final goal of this study was to investigate the stability of resource control strategies for sports club and elementary school contexts by gender. We expected boys to occupy coercive-aggressive and Machiavellian roles more often than girls in both contexts. This expectation was based on the theoretical insight that peer aggression in boys is connected with anti social personality patterns (Olweus, 1993; Salmivalli, Lappalainen, & Lagerpetz, 1998) and therefore would be more stable for boys across contexts. Peer aggression among girls seems to be more situation dependent and related to the social network and social demands of peers (Olweus, 1993; Salmivalli et al., 1998). Thus, girls may more easily adopt aggressive behavior patterns when they switch social environments. We had no expectation regarding gender differences for prosocial behavior roles, but we nevertheless explored the possibility of gender differences across contexts.

Method

Participants

A total of 1425 fourth-, fifth-, and sixth–grade students (717 boys and 708 girls, mean age 11.25 years) from 26 elementary schools in 21 towns throughout the Netherlands participated in the current study. Most of the students (83.8%) were Dutch. A student was considered to have a non-Dutch ethnic origin if the child or at least one of its parents had been born in a country other than the Netherlands. The remainder of the sample was of the following origins: Turkish (2.1%), Moroccan (3.0%), Antilleans (0.7%), Surinamese (1.2%), or other ethnic origin (9.3%). The percentages students with other than Dutch origins (16.2%) approximates the wider Dutch 10–12-year-old population (i.e., 22.2%; CBS, 2010). Based on the children’s sport club participation (i.e., sport club membership with regard to their most practiced type of sport), three types of sports participation groups were distinguished: martial artists (55 boys and 49 girls), contact sports participants (462 boys and 140 girls), and noncontact sports participants (200 boys and 519 girls).

Measures

Self-reports were used to assess the children’s subjective experiences with peer aggression and prosocial behavior toward others in both school and sports club
contexts. Peer reports are often used in classroom settings to assess peer aggression. For sports, however, the group size is often too small or the group setting is too ambiguous to apply the peer-reporting technique. Thus, in this study only self-reports were gathered for both contexts.

The children’s subjective experiences with peer aggression and prosocial behavior were assessed using a Dutch translation of the Social Experience Questionnaire-Self Report (SEQ-S), as originally formulated by Crick and colleagues (Crick, 1997; Crick & Grotpetter, 1995; Grotpetter & Crick, 1996). One version of the self-reporting measure was developed for the sports club context and one version was developed for the school context.

**Peer Aggression.** The Peer Aggression Scale consisted of 11 items: three physical items (e.g., “How often do you hit, kick, or punch others?”), three verbal items (e.g., “How often do you say mean things to others, insult others, or put others down?”), and five relational items (e.g., How often do you say unfavorable things about someone to others?”).

**Prosocial Behavior.** The Prosocial Behavior Scale consisted of six items (e.g., “How often do you cheer up other kids who feel upset or sad?”).

Each questionnaire item was rated individually by the children on a five-point Likert scale that ranged from 1 (= never) to 5 (= all the time). For the sports club context, Cronbach’s alpha was .84 for the Peer Aggression Scale and .74 for the Prosocial Behavior Scale. For the school context, Cronbach’s alpha was .84 for the Peer Aggression Scale and .81 for the Prosocial Behavior Scale.

**Procedure**

Both parents and children were informed about the study by a letter, which did not reveal the specific aims of the study to avoid influencing the children’s responses to the questionnaire. The anonymity of the survey responses was assured, and participation was voluntary. The researchers met the children in their classrooms. The questionnaires, part of a larger project, were conducted in two 60-min standardized classroom sessions on the same day by trained undergraduate students. In the first session, the children responded to questions completed regarding demographics, sports participation, and the SEQ-S relating to the sports club. During the second session, the children completed the SEQ-S questionnaire relating to their school.

**Statistical Approach**

The SPSS package was used to run the analyses. To assess the prevalence of peer aggression and prosocial behavior according to the type of sports participants in sports clubs and elementary schools (first goal), a repeated measures multivariate analysis of variance (MANOVA) and subsequent univariate tests (ANOVA) were conducted. A classification procedure (Crick, 1997; Crick & Bigbee, 1998; Crick & Grotpetter, 1996) was used to assess children’s use of the different strategies for resource control in both contexts (second goal). Cross-tabular analyses (chi-square tests) were used to investigate the stability of resource control strategies for three types of sports participants (third goal) and gender (fourth goal) within the contexts.
Results

Prevalence of Peer Aggression and Prosocial Behavior in the Two Contexts and for Different Types of Sports

To examine potential differences between the school and the sports club for levels of self-reported peer aggression and prosocial behavior, repeated measures of multivariate analysis of variance (MANOVA) were conducted: 2 (context: school vs. sports club) × 3 (types of sports participation: martial arts participant vs. participant in contact sports vs. participant in noncontact sports) × 2 (gender: boy vs. girl). Children’s peer aggression and prosocial behavior scores in the two contexts served as the dependent variables (see Table 1 for means and standard deviations). Supporting our hypothesis, a significant multivariate main effect for context was found (F(2,1420) = 15.62, p = .000, Ph² = .02). Follow-up univariate tests with regard to context revealed a significant effect for peer aggression (F(1,1421) = 9.92, p = .002, Ph² = .01) and also yielded a significant effect for prosocial behavior (F(1,1421) = 16.01, p = .000, Ph² = .01). Further analyses yielded a significant multivariate main effect for gender (F(2,1420) = 90.46, p = .000, Ph² = .11). However, no significant main effect for sport type was found. The interaction effect of context x types of sport participation (F(4,2842) = 4.54, p = .001, Ph² = .01) and of context x gender (F(2,1420) = 3.22, p = .040, Ph² = .01) appeared significant. However, all the effect sizes were small (Cohen, 1988).

Table 1  Mean Self-Reported Peer Aggression and Prosocial Behavior Scores According to Context, Sport Type, and Gender (Standard Deviations in Parentheses)

<table>
<thead>
<tr>
<th></th>
<th>Martial arts</th>
<th>Contact sports</th>
<th>Noncontact sports</th>
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<tbody>
<tr>
<td></td>
<td>(n = 104)</td>
<td>(n = 602)</td>
<td>(n = 719)</td>
</tr>
<tr>
<td>Context and Resource</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Context and variable</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sports club</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Peer aggression</td>
<td>1.85 (0.61)</td>
<td>1.84 (0.49)</td>
<td>1.66 (0.45)</td>
</tr>
<tr>
<td></td>
<td>1.53 (0.36)</td>
<td>1.54 (0.43)</td>
<td>1.51 (0.41)</td>
</tr>
<tr>
<td>Prosocial behavior</td>
<td>3.69 (0.65)</td>
<td>3.68 (0.56)</td>
<td>3.73 (0.52)</td>
</tr>
<tr>
<td></td>
<td>4.14 (0.48)</td>
<td>4.08 (0.50)</td>
<td>4.06 (0.53)</td>
</tr>
<tr>
<td>School</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer aggression</td>
<td>1.78 (0.59)</td>
<td>1.78 (0.47)</td>
<td>1.73 (0.51)</td>
</tr>
<tr>
<td></td>
<td>1.47 (0.38)</td>
<td>1.50 (0.38)</td>
<td>1.49 (0.41)</td>
</tr>
<tr>
<td>Prosocial behavior</td>
<td>3.59 (0.67)</td>
<td>3.62 (0.63)</td>
<td>3.63 (0.62)</td>
</tr>
<tr>
<td></td>
<td>4.01 (0.64)</td>
<td>4.05 (0.59)</td>
<td>4.01 (0.58)</td>
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</tbody>
</table>
Based on subsequent univariate tests, we observed a significant difference in self-reported peer aggression in both contexts between martial arts, contact sports, and noncontact sports participants ($F(2,1421) = 3.69, p = .025, \eta^2 = .01$). On average and as predicted, post hoc comparison in accordance with the Games-Howell method indicated that contact sports participants were reporting significantly ($p = .000$) more peer aggression in both contexts than noncontact sports participants. Contrary to our expectations, there were no significant differences between the other types of sports with regard to the two contexts. Furthermore, subsequent univariate tests showed that boys reported significantly more peer aggression ($F(1,1421) = 93.89, p = .000, \eta^2 = .06$) in both contexts. Girls reported significantly more prosocial behavior ($F(1,1421) = 146.56, p = .000, \eta^2 = .09$) in both contexts than the boys. Again, all the effect sizes were small.

### Prevalence of Resource Control Strategy Roles in the Two Contexts for Different Types of Sports

The scores on the SEQ-S subscales were used to classify the children into four discrete resource control strategy groups for each context (see Table 2). The criteria of Crick and colleagues (Crick, 1997; Crick & Bigbee, 1998; Crick & Grotpeter, 1996) were used to categorize the children. When a child’s score within a context was more than 1 SD above the sample mean for the Aggression Scale and below this criterion for the Prosocial Behavior Scale, the child was classified as “coercive-aggressive” in that context. A child was classified as “Machiavellian” when the child’s aggression and prosocial behavior scores were above the criterion of the sample mean plus 1 SD. A comparable procedure was used to classify a child as

<table>
<thead>
<tr>
<th>Context and Resource Control Strategies Roles</th>
<th>Boys (n = 55)</th>
<th>Girls (n = 49)</th>
<th>Boys (n = 462)</th>
<th>Girls (n = 140)</th>
<th>Boys (n = 200)</th>
<th>Girls (n = 519)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sports club</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Coercive</td>
<td>45.5</td>
<td>10.2</td>
<td>45.9</td>
<td>22.9</td>
<td>38.5</td>
<td>18.7</td>
</tr>
<tr>
<td>Prosocial</td>
<td>14.5</td>
<td>42.9</td>
<td>11.3</td>
<td>39.3</td>
<td>17.5</td>
<td>40.7</td>
</tr>
<tr>
<td>Machiavellian</td>
<td>12.7</td>
<td>16.3</td>
<td>13.2</td>
<td>12.1</td>
<td>5.5</td>
<td>10.0</td>
</tr>
<tr>
<td>Control</td>
<td>27.3</td>
<td>30.6</td>
<td>29.7</td>
<td>25.7</td>
<td>38.5</td>
<td>30.6</td>
</tr>
<tr>
<td>School</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Coercive</td>
<td>43.6</td>
<td>20.4</td>
<td>46.5</td>
<td>15.7</td>
<td>42.0</td>
<td>19.3</td>
</tr>
<tr>
<td>Prosocial</td>
<td>16.4</td>
<td>44.9</td>
<td>15.6</td>
<td>35.7</td>
<td>15.0</td>
<td>40.3</td>
</tr>
<tr>
<td>Machiavellian</td>
<td>3.6</td>
<td>4.1</td>
<td>8.2</td>
<td>10.0</td>
<td>4.5</td>
<td>6.7</td>
</tr>
<tr>
<td>Control</td>
<td>36.4</td>
<td>30.6</td>
<td>29.7</td>
<td>38.6</td>
<td>38.5</td>
<td>33.7</td>
</tr>
</tbody>
</table>
being purely “prosocial” or a “control” child. The same cut-off points were used in the school context and the sports club context to allow for comparison.

In accordance with our hypothesis, the results in both contexts showed that contact sports participants tended to be relatively more Machiavellian than martial arts and noncontact sports participants (see Table 2). However, female contact sports participants were less Machiavellian than female martial arts participants in the sports club. All types of sports participants, particularly martial arts participants, were more often Machiavellian in the sports club than in the school. Our hypothesis also predicted that the martial arts participants would be more coercive-aggressive in both contexts, but the results generally showed that contact sports participants were the most coercive-aggressive in both contexts. However, in the school context, female martial arts participants were more coercive-aggressive than female contact and noncontact sports participants. Surprisingly, martial arts participants were more prosocial than the other types of sports participants in both contexts. The only exceptions to this were male noncontact sports participants in the sports club context. Finally, in accordance with our assumptions about gender differences, boys tended to be more frequently coercive-aggressive than girls were in both contexts, particularly male martial arts participants in the sports club context. Girls tended to be more prosocial than boys in both contexts. Girls were somewhat more likely than boys to be Machiavellian in both contexts. The only exceptions to this were male contact sports participants in the sports club.

**Stability of Resource Control Strategy Roles Across Contexts According to Sport Type**

The third goal of this research was to investigate the stability of resource control strategy roles for the three types of sports participants in both contexts (see Table 3). Adjusted standardized residuals provided information on the differences between the observed and expected frequencies for each cell (i.e., role per context). Positive residuals indicate higher frequencies for a particular cell than might be expected by chance, and negative residuals indicate lower frequencies than might be expected. When the absolute value of the adjusted standardized residual is larger than 1.96 or smaller than -1.96, the particular cell is over- or under-represented, respectively ($p < .05$).

As predicted, all three types of sports participants likelihood than expected from chance of having the same roles in school as they had in the sports club context. Cross-tabular analyses showed consistency in the roles that the children occupied at school and at the sports club for participants in martial arts ($\chi^2 = 72.0; df = 9; p < .001$), contact sports ($\chi^2 = 3995; df = 9; p < .001$), and noncontact sports ($\chi^2 = 4944; df = 9; p < .001$). Other role associations for resource control strategies across contexts according to sports type were negatively associated or were nonsignificant, as shown by the small size of the adjusted standardized residuals.

Contrary to our expectations, the coercive-aggression roles were not more stable across both contexts for the martial arts participants ($n = 20; 19.2\%$) than the contact sports participants ($n = 167; 27.7\%$). As expected, the coercive-aggressive roles were more stable across the contexts for the martial arts participants than for the noncontact sports participants ($n = 121; 16.8\%$). In line with our expectations, the Machiavellian roles were more stable across the contexts for the contact sports
Table 3  Stability of Resource Control Strategy Roles for Two Contexts According to Sport Type

<table>
<thead>
<tr>
<th>Roles in school</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
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<td><strong>Martial arts (n = 104)</strong></td>
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<td>1. Coercive</td>
<td>20 (4.7)***</td>
<td>2 (-3.5)**</td>
<td>6 (0.7)</td>
<td>6 (-1.8)</td>
<td>34</td>
</tr>
<tr>
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<td>1 (-3.8)**</td>
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<td>3 (-0.9)</td>
<td>5 (-1.9)</td>
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</tr>
<tr>
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<td>0 (-1.3)</td>
<td>3 (3.5)**</td>
<td>0 (-1.3)</td>
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</tr>
<tr>
<td>4. Control</td>
<td>8 (-1.0)</td>
<td>5 (-2.2)*</td>
<td>3 (-1.2)</td>
<td>19 (4.1)***</td>
<td>35</td>
</tr>
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<td>15</td>
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<tr>
<td><strong>Contact sports (n = 602)</strong></td>
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</tr>
<tr>
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<td>24 (-1.7)</td>
<td>41 (-5.0)***</td>
<td>237</td>
</tr>
<tr>
<td>2. Prosocial</td>
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<td>71 (13.1)***</td>
<td>14 (-0.5)</td>
<td>29 (-1.4)</td>
<td>122</td>
</tr>
<tr>
<td>3. Machiavelian</td>
<td>12 (-2.7)**</td>
<td>5 (-1.6)</td>
<td>31 (10.5)***</td>
<td>4 (-3.5)**</td>
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<tr>
<td>4. Control</td>
<td>57 (-3.6)**</td>
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<td>9 (-4.1)***</td>
<td>99 (8.5)***</td>
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<tr>
<td>Total sports club</td>
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<td>78</td>
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<td>602</td>
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<tr>
<td><strong>Noncontact sports (n = 719)</strong></td>
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</tr>
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<td>1. Coercive</td>
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<td>14 (-8.8)***</td>
<td>16 (0.0)</td>
<td>33 (-5.0)***</td>
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</tr>
<tr>
<td>2. Prosocial</td>
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<td>167 (14.2)***</td>
<td>19 (-0.5)</td>
<td>40 (-6.5)***</td>
<td>44</td>
</tr>
<tr>
<td>3. Machiavelian</td>
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<td>16 (0.3)</td>
<td>18 (7.8)***</td>
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</tr>
<tr>
<td>4. Control</td>
<td>33 (-5.1)***</td>
<td>49 (-6.1)***</td>
<td>10 (-3.3)**</td>
<td>160 (12.9)***</td>
<td>252</td>
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<td>Total sports club</td>
<td>174</td>
<td>246</td>
<td>63</td>
<td>236</td>
<td>719</td>
</tr>
</tbody>
</table>

Note. Values are numbers of participants. Adjusted standardized residuals are presented in parentheses:

* \( p < .05 \), ** \( p < .01 \), *** \( p < .001 \).

participants \((n = 31; 5.1\%)\) than for the martial arts \((n = 3; 2.9\%)\) and noncontact sports participants \((18; 2.5\%)\), although the differences were small. We had no predictions regarding the stability of the prosocial roles across the contexts. Nevertheless, it is worth mentioning that the prosocial roles were less stable across the contexts for participants in contact sports \((n = 71; 11.8\%)\) than for the martial arts \((n = 22; 21.2\%)\) and the noncontact sports \((n = 167; 23.2\%)\).
Stability of Resource Control Strategy Roles Across Contexts According to Gender

The fourth goal of this research was to investigate the stability of the children’s classification within resource control strategy groups across contexts for gender (see Table 4). As expected, adjusted standardized residuals show that both boys and girls in the sports club were more likely than expected from chance to have the same role in the school and less likely to switch roles. Cross-tabular analyses showed an association between the classifications at school and the sports club for both boys ($\chi^2 = 5044; df = 9; p < .001$) and girls ($\chi^2 = 3905; df = 9; p < .001$). The other relations were negatively associated or were nonsignificant, as indicated by the small adjusted standardized residuals.

In line with our hypothesis, the coercive-aggressive roles of the boys ($n = 243; 32.6\%$) were more stable across contexts than the coercive-aggressive roles of the girls ($n = 74; 10.5\%$). The Machiavellian roles of the boys ($n = 29; 4.0\%$) were also more stable across contexts than the Machiavellian roles of the girls ($n = 23; 3.2\%$), although the difference was small. We explored the possibility of gender differences in prosocial behavior roles across contexts. The prosocial roles were less stable for the boys ($n = 61; 8.5\%$) across contexts than for the girls ($n = 199; 28.1\%$).

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<td>53 (-8.1)***</td>
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<td></td>
<td>29 (11.2)***</td>
<td>5 (-3.4)**</td>
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<tr>
<td></td>
<td>60 (-6.8)***</td>
<td>22 (-2.1)*</td>
<td>9 (-4.3)***</td>
<td>143 (11.7)***</td>
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<td>79</td>
<td>229</td>
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</thead>
<tbody>
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<td>13 (-8.0)***</td>
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<td>27 (-2.6)***</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td>199 (13.3)***</td>
<td>23 (-1.9)</td>
<td>46 (-6.3)***</td>
<td>281</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 (-1.1)</td>
<td>23 (8.1)***</td>
<td>2 (-4.2)***</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td></td>
<td>38 (-1.7)</td>
<td>58 (-6.6)***</td>
<td>13 (-3.4)***</td>
<td>135 (10.8)***</td>
<td>244</td>
</tr>
<tr>
<td>Total sports club</td>
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<td>287</td>
<td>77</td>
<td>210</td>
<td>708</td>
</tr>
</tbody>
</table>

Note. Values are numbers of participants. Adjusted standardized residuals are presented in parentheses:

* $p < .05$. ** $p < .01$. *** $p < .001$. 

$p < .05$. ** $p < .01$. *** $p < .001$. 

Table 4 Stability of Resource Control Strategy Roles for Two Contexts According to Gender
Discussion

With respect to the first goal, we examined the prevalence of self-reported peer aggression and prosocial behavior for participants in different types of sports and by gender in school and sports contexts using a variable-oriented approach. As expected, from a social dominance point of view (Hawley, 1999, 2003; Hawley et al., 2007; Hawley et al., 2002; Pellegrini, 2004) significantly higher degrees of self-reported peer aggression and prosocial behavior were found among children at the sports club than at the school. This finding provides support for the assumption that it is more difficult for a child to gain and maintain dominant social status in the relatively less structured and less stable sports context. It also supports the assumption that organized sports programs may reinforce aggressive behavior among children (Coakley, 2009; Endresen & Olweus, 2005; Knoppers, 2006; Mintah et al., 1999; Rowe, 1998; Smoll & Smith, 1997).

With regard to gender, boys reported significantly more peer aggression in both contexts than girls. Past research on sex differences in children’s competitiveness within and outside the sports context have consistently documented that boys are more competitive and participate more frequently in directly competitive activities than girls (e.g., Benenson et al., 2002; Gill & Dzewaltowski, 1988; White, Duda, & Keller, 1998). Competition and masculine-oriented settings may enhance aggressive behavior on the part of children, particularly for boys participating in competitive activities (i.e., with winners and losers). Further research is needed, however, to verify this assumption. According to previous studies (e.g., Closson, 2009; Zimmer-Gembeck et al., 2005), girls reported significantly more prosocial behavior in both contexts than boys. Meta-analysis shows that differences in prosocial behavior increased with age, particularly for girls in early adolescence (Fabes, Carlo, Kupanoff, & Laible, 1999). The fact that prosocial behavior is expected from girls by peers could be an explanation for this. Peer status seems to be more important for girls than for boys, which is consistent with gender stereotypes (Crick, 1996; Zimmer-Gembeck et al., 2005).

The present findings, although cross-sectional, did not provide support for the “enhancement” considerations of Endresen and Olweus (2005) with regard to martial arts. One reason for this might be that the contact sports participants in our study were all practicing team sports. Consequently, from a social dominance point of view, they may need to be more aggressive and competitive within their own sports team to gain resource control or social dominance (Hawley, 1999, 2003; Hawley et al., 2007; Hawley et al., 2002). In addition, training and practicing fighting skills in competition are not the only important motives for children to become involved in martial arts. Children also practice martial arts to learn self-defense (Theeboom 2001a, 2001b). Self-defense-oriented martial arts participants may be less interested in martial arts competitions and may have a less violent attitude with regard to conflict situations. Furthermore, the present findings did not support the assumption that martial arts participants reported less prosocial behavior because they are not required to account the needs of their fellow participants than team sports participants. Results of another study (Elling & Wisse, 2010) also showed that martial arts participants reported relatively more prosocial behavior than participants of other sports. We do not have a specific explanation for this, but we assume that the social context of martial arts, the existence of specific codes
Machiavellianism in Children Across Contexts

(e.g., discipline, increased responsibility, respect for the teacher and opponent), and different types of guidance and approaches to martial arts practice (Theeboom 2001a; 2001b) are associated with the prevalence of prosocial behavior. Research on prosocial behavior among martial arts participants is scarce. Further research is needed to examine these associations.

The second goal of the current study was to use a person-oriented approach to compare the prevalence of roles for resource control strategy (i.e., coercive-aggressive, purely prosocial, and Machiavellian) in sports clubs and schools among children participating in different types of sports. Contrary to our expectations, and in line with the variable approach findings, our data show that contact sports participants (boys and girls) were generally more often coercive-aggressive than participants in other sports. These findings do not support the “enhancement” considerations from Endresen and Olweus (2005) with regard to martial arts participants. Female martial arts participants were the most coercive-aggressive in the school context, but they also were the lowest coercive-aggressive in the sports club context. However, several issues can be raised in interpreting the dissimilar results of Endresen and Olweus’ study and our study. For example, Endresen and Olweus examined a sample of boys. We assume that girls’ motives for martial arts participation are different from boys’ motives and that they are more or less associated with different approaches to martial arts practice. The ability to defend oneself and to deal with peer aggression at school are important motives for children practicing martial arts (Theeboom, 2001a). Girls tend to be more likely to participate in martial arts to learn self-defense (e.g., for building self-confidence on the street). Conversely, boys tend to have more sporting motives, such as practicing fighting skills with an emphasis on competition (Elling & Wisse, 2010). A competitive orientation reinforces aggressive behavior among martial arts participants (Coakley, 2009; Nucci & Young-Shim, 2005; Smoll & Smith, 1997), and fighting skills can be used outside the sports context for aggressive purposes. These two aspects of competitive martial arts are plausible explanations for aggressiveness among boys in particular. In the current study, male martial arts participants were classified as coercive-aggressive four times more often in sports clubs than female martial arts participants. Past studies have generally found that (male) students, trained in competitive martial arts showed a greater tendency toward and increase in aggressiveness (Nosanchuk & Macneil, 1989; Trulston, 1986; Twemlow et al., 2008; Zivin, 2001). Further research is needed to examine the associations between different approaches to martial arts practice, children’s motives for martial arts participation, and the prevalence in peer aggression.

With regard to prosocial roles, girls belonged three times more frequently to the prosocial group in both contexts than boys. This finding is in keeping with our expectation and in line with previous research (Hawley, 2003; Hawley et al., 2007; Hawley et al., 2002). Contrary to our expectations, martial arts participants (boys and girls) in both contexts were more often prosocial than participants in contact and noncontact sports. This unexpected result is in line with findings of the first goal and was previously discussed.

Contact sports participants were more likely than martial arts and noncontact sports participants to be Machiavellians in both contexts. This finding provides support for Hawley’s Resource Control Theory (Hawley, 1999, 2003; Hawley et al., 2007; Hawley et al., 2002) and the assumption that contact sports participants
(in our study all team sport players) more frequently use both coercive and pro-social strategies for resource control than do martial arts and noncontact sports participants. Contact sports participants need to cooperate and to be accepted by their teammates (“getting along”), and they also need to be good competitors within their own sports team (“getting ahead”) for resource control. Furthermore, the three different types of sports participants showed more Machiavellian behaviors in the sports club than in school. This was particularly true for martial arts participants. This result provides support for a behavioral ecological theory (Pellegrini, 2008), which suggests that contest and competition may determine the use of aggressive and affiliative strategies to access resources. The sports club setting is less structured and more competitive than the school setting, in which it is probably less difficult for children to get and keep status within their peer group. We should, however, recognize that other environmental and personal characteristics of children also can be associated with the use of aggressive and affiliative strategies to access resources in sports clubs and schools. Examples of such features are, supervision and disciplinary strategies of coaches and school teachers, the social climate in sports club and school, peer relationships in the two contexts. Different peer status can also play an important role when using aggressive of affiliative strategies in one specific context. For example, for children who are strong in academic subjects but weak in sports it could be more easy to establish and keep status in the school context than in the sports context. On these points, further research is needed.

The third goal of our study was to investigate the stability of resource control strategy roles in both contexts for three types of sports participants using a person-oriented approach. As expected, consistency was shown in children’s classifications as coercive-aggressive, prosocial, and Machiavellian in both contexts for all three types of sports participants. According to previous studies (Baar et al., 2011; Craig et al., 2000; Hörmann & Schäfer, 2009), the peer aggression roles were stable across different contexts. Further research is required to examine the stability of resource control strategies across these contexts.

We expected martial arts participants to occupy the coercive-aggressive role more often than participants in contact sports and noncontact sports in both sports club and school contexts. We considered peer aggression to be more “acceptable” among participants in martial arts, in which (high) physical contact is allowed and physical characteristics are emphasized (e.g., Bredemeier et al., 1987; Conroy et al., 2001). The “enhancement” assumption, which suggests that competition and a masculine orientation increase aggression in sports clubs and may generalize to interpersonal relationships in other contexts such as schools (Coakley, 2009; Endresen & Olweus, 2005; Knoppers, 2006; Nucci & Young-Shim, 2005), was partly supported by the findings in our study. The coercive-aggressive roles were less stable across contexts for the noncontact sports than for contact sports participants. However, contrary to our expectations, the coercive-aggressive roles were more stable across contexts for contact sports than for martial arts. Defending oneself and regulating aggressive behavior are important motives for children in martial arts, and these children may be less interested in practicing fighting skills and competition. On this point, further research is required.

In line with Hawley’s Resource Control Theory (Hawley, 1999, 2003; Hawley et al., 2007; Hawley et al., 2002), the Machiavellian roles were more stable across contexts for contact sports participants than for martial arts and noncontact sports.
participants. The prosocial roles were less stable across contexts for contact sports than for martial arts and noncontact sports participants. This finding is not in line with the former results, but we assume that the specific approach of martial arts practice and the existence of specific martial arts codes (Theeboom 2001a; 2001b) may play a role.

Finally, we found that the resource control strategy roles of both girls and boys were stable across contexts. As expected, the coercive-aggressive and Machiavellian roles of the boys were more stable in both contexts than the roles of the girls. In addition, we found less stable prosocial roles in both contexts for boys than for girls. These findings support the hypothesis that aggressive behavior among boys is related with anti social personality patterns. Aggressive behavior among girls tends to be more situation-dependent; thus, girls switch more easily between roles across contexts (Olweus, 1993; Salimalli et al., 1998).

Limitations and Implications

Some limitations must be considered in the interpretation of the results. We must take into account that the current study is cross-sectional. Longitudinal research is required to examine causality and the aggression enhancement effect of martial arts participation over time. For example, the fact that contact sport participants scored higher on peer aggression than noncontact sports participants does not mean that this difference is caused by participation in contact sports. We could not control for already elevated levels of aggressive behavior in boys and girls who engaged in this sport. Moreover, whether martial arts and contact sports have an enhancing or declining effect over time (the so-called “cathartic effect”) on antisocial and aggressive behavior inside and/or outside the context of the sports club, may depend upon the personal characteristics of the child, the quality of the relationships between coaches and athletes, different sporting approaches, and the children’s repeated contact with “macho” attitudes, norms and ideals in the sports club (Biesta et al., 2001; Endresen & Olweus, 2005; Rutten et al., 2007, 2008; Theeboom, 2001a). On these points, further research is required.

In this study, we used self-reports to measure involvement in peer aggression. As mentioned in the Method section, for the sports club context we could not use the peer-reporting technique. Prior research has suggested a disadvantage to self-report measures, namely, the underreport of the extent of peer aggression (e.g., Goossens, Olthof, & Dekker, 2006). Children possibly are more likely to depict themselves in a favorable light when asked about their involvement in aggressive behavior. It cannot be ruled out that such an effect has occurred in this study, but we tried to prevent underreporting by not revealing the specific aims of the study, by assuring anonymity of the survey response, and by making students’ participation voluntary. Furthermore, it is important that from self-report data we can understand the private and subjective self-views of children regarding peer aggression. Peer-report data, in contrast, represent the peer social reputation of children and therefore probably is a complementary construct which is not verifiable by self-reports (Juvenen, Nishina, & Graham, 2001). Finally, we consider the prevalence rates as relatively estimates (Goossens et al., 2006; Schwartz et al., 2001; Solberg & Olweus, 2003).

Within the sports context, a distinction between on- and off-field aggressive behaviors of athletes has been made (e.g., Rutten et al., 2008). Most studies that
have examined aggressive behavior in sports (e.g., Coulomb-Cabagno & Rascale, 2006; Mintah et al., 1999) have focused on aggressive acts on the playing field (during the match) itself and, more specifically, on two sports-related types of aggression: hostile aggression (i.e., aggression against another person for its own sake, accompanied by anger) and instrumental aggression (i.e., aggression against another person as a means to a competitive outcome, for example, irregular tackling to prevent an opponent from scoring). In contrast, the focus of the current study was (1) on peer aggression, which is usually regarded as another subcategory of aggressive behavior, and (2) on the broader context of the sports club environment (i.e., off-field aggressive behavior in cafeterias, dressing rooms, bicycle sheds, etc.). For this two reasons, further research and conceptualization is needed with regard to sports-competition and game-related aggressive behavior in light of research findings on peer aggression in the sports club and other contexts.

Although a school-based prevention program or policy can be successful in a particular school or context, this is no guarantee of success in another context (Swearer, Espelage, Vaillancourt, & Hymel, 2010). Results of a meta-analysis show that school-based aggression prevention programs were found to be more effective in reducing peer aggression than were classroom curriculum programs (Vreeman & Caroll, 2007). In line with this insight, school-based aggression prevention programs can presumably improve their effectiveness by considering external environmental influences, circumstances, and peer relationships. Origins, reasons, manifestations and consequences of peer aggression are not always restricted to one specific context. Insight into the pervasiveness and constancy of patterns of peer aggression and resource control strategy roles across contexts is important for developing more adequate and more comprehensive or community-based aggression prevention programs in general, and for developing specific peer aggression prevention programs for athletes in particular (which do not exist yet in the Netherlands).

The results of this study showed that peer aggression is very consistent across contexts and is experienced by children in Dutch sports clubs. We think that this finding should be a cause for concern of coaches in sports clubs. The results point to the need of extension of the attention for peer aggression in Dutch elementary schools to sports clubs. Adequate and early social-emotional environmental support for perpetrators and victims is essential for preventing and reducing peer aggression. For Dutch elementary schools, peer aggression has become an official school priority leading to explicit attention of teachers for aggressive pupil behaviors and the use of prevention programs. It is plausible that sports coaches, however, are mainly focuses on physical and sporty aspects of children and have less attention than teachers for the peer relations of children. Generally, the impact of sports in children’s lives is regarded as positive (e.g., Dutch Ministery of Health, Welfare and Sport, 2005) and the more negative aspects of sports participation, such as peer aggression, are less often considered. This may lead to trivializing peer aggression and insufficient noticing and preventing of peer aggression by coaches. Most of the Dutch youth sport coaches are volunteers and have not been educated pedagogically. Although a substantial minority of the youth coaches have followed a coach training program, most of these programs are limited to technical and tactical aspects of coaching in the type of sport. Elementary school teachers, however, are professionally educated in their teacher training program and have more knowledge about and insight in the psychosocial and emotional development of children.
and in the potential risk factors for developmental problems. Further, teachers might be more sensitive to deviant group processes because they see the children almost every day. To the best of our knowledge, in the curricula of coach training programs, peer aggression is largely neglected. The results of this study urge to include in the curricula of such training elements, in which (prospective) coaches are made some more conscious of manifestations and forms of peer aggression in sports clubs and are trained in pedagogical/psychological skills and approaches to prevent and tackle peer aggression.

References


