Abstract

Previous research has shown that children with greater self-regulation exhibit less aggressive behaviour in their everyday interactions with peers. Boys are usually more aggressive than girls, have lower self-regulation and understand primary emotions less. However, those who understand emotions better behave more prosocially. Therefore, the aim of the present study was to examine the relationship of self-regulation and emotion understanding with regard to aggressive behaviour in preschool boys. The participants in this study included 241 boys aged 3 to 7, their parents (both mothers and fathers) and preschool teachers. Self-regulation was measured by parental estimations of inhibitory control and attentional focusing. Aggressive behaviour was measured by teachers’ estimations, while emotion understanding was assessed in individual interviews with the boys. The results showed that the boys who recognized and described primary emotions better and had high self-regulation showed less aggressive behaviour, while those who understood emotions less and had low self-regulation behaved more aggressively. The results were discussed in the light of importance of strengthening self-regulation and emotion understanding in preschool boys as a way of developing their social and emotional competence.

Key words: aggressive behaviour; emotion understanding; preschool boys; self-regulation.

Introduction

Social-emotional competence refers to a set of different abilities and/or capacities of individuals that allow them to function adaptively in interpersonal relationships. It includes a large number of interrelated skills and behaviours from the social and
emotional developmental domain (Denham, 2007; Saarni, 1999). Although researchers consider different skills and behaviours as indicators of social competence, prosocial and aggressive behaviour, as well as various social skills are most widely researched. Aggressive behaviour, which is a negative indicator of social competence, refers to intentional behaviour, open or covert, aimed at causing harm to others (Aronson et al., 2005). Research has shown that aggressive behaviour is manifested as early as preschool (Brajša-Žganec, 2010; Brajša-Žganec & Hanzec, 2014; Denham et al., 2002), as instrumental or hostile aggression. With age, physical aggression is replaced with verbal, instrumental decreases and hostile increases (Tremblay, 2000). For that reason, the first few years after birth are the most important period for learning various social skills as substitutes for aggressive behaviour (Tremblay, 2000). Research has shown that boys are more aggressive and less cooperative during peer play than girls and generally have more problems in social adjustment and show more inappropriate behaviour in social interactions (Denham et al., 2002), especially according to teachers, compared to parent estimations (Brajša-Žganec, 2010). Due to established differences in frequency and form of aggression between boys and girls, Keresteš (2007) concludes that in planning prevention and intervention different approaches should be used for boys and girls. For example, measures for reducing physical aggression are more needed for boys and their attitudes toward the acceptability of aggressive behaviour should be changed to a larger extent.

Emotional competence, closely related to social, refers to an individual’s self-efficacy in emotion-eliciting social transactions (Saarni, 1999). Three wide abilities that are most frequently researched include emotion knowledge or recognition, emotion expression and emotion regulation (Denham, 2006). Emotion knowledge or recognition refers to the ability to accurately label emotions and/or recognize emotions on the basis of their labels or facial expressions (Denham, 2006; 2007). It enables children to respond appropriately to other people, fostering their social relationships (Denham et al., 2003). Children who understand and recognize emotions better act more prosocially in their relationships towards others, are more popular among peers (Denham, 2006; Denham et al., 2003), and are less aggressive (Brajša-Žganec, 2003; Denham et al., 2003; Howes et al., 1994). Boys who are, according to teachers’ estimations, highly emotional have low regulation and unconstructive coping skills, are more aggressive and respond with hostility to peers’ anger (Murphy & Eisenberg, 1997), which indicates the importance of not only knowing socially acceptable alternatives to aggressive behaviour, but also of being able to regulate emotions and behaviours in social interactions.

Self-regulation, as the ability to regulate one’s own emotions, attention and behaviour, has frequently been studied as a temperamental dimension, constitutionally based individual characteristic influencing one’s behaviour from an early age (Rothbart & Bates, 1998). However, self-regulation is also a developmental construct influenced by experience, and research shows that components of self-regulation such as inhibitory
control and attention focusing can be learned and strengthened in children through, for example, preschool programmes focused on the development of social and emotional competence (Domitrovich et al., 2007; Leong & Bodrova, 2003). The ability to self-regulate at an early age showed to be predictive of emotion knowledge, social competence, conscientiousness and resilience in early and middle childhood (McCabe et al., 2004), for reducing aggressive and increasing prosocial behaviour and for better school performance in relevant subjects (Brebić, 2008).

As stated earlier, boys are more aggressive than girls of preschool age, and at the same time have lower self-regulation and lower understanding of primary emotions (Eisenberg et al., 2001), which puts them at more risk for developing inadequate, aggressive behaviour. However, those boys who understand emotions better behave more prosocially (Brajša-Žganec & Slunjski, 2007), which is related to less behaviour problems in preschoolers (Brajša-Žganec & Hanzec, 2014). Therefore, the purpose of the present study was to examine the relationship of self-regulation and emotion understanding in relation to aggressive behaviour in preschool boys, as components of social and emotional competence that could be influenced in order to reduce the manifestation of aggressive behaviour among preschoolers.

Method

Participants

The participants in this study included 241 boys between 3 and 7 years of age (M = 62 months; ranging from 33 to 85 months), from intact families, their parents (both mothers and fathers) and preschool teachers. The majority of mothers (54%) and fathers (59%) had a secondary school level of education, a relatively high portion of them completed some form of postsecondary education (40% of mothers, 35% of fathers), and only 6% of parents had a primary level of education.

Instruments

Aggressive behaviour was assessed with the help of preschool teachers’ ratings on the PROS/AG scale (Scale for the Assessment of Aggression and Prosocial Behaviour in Children; Žužul et al., 1990). We only used the Aggressive Behaviour Subscale (10 items), in which participants estimated the frequency of a described behaviour in a child on a 5-point scale (from never to almost always). An overall result was obtained through summing all responses, with a theoretical range from 10 to 50. Cronbach’s alpha calculated in this research was .93.

Self-regulation (effortful control) was assessed by using the Attentional Focusing and Inhibitory Control Subscales of Children’s Behaviour Questionnaire (CBQ, Rothbart, 1988, as cited in Goldsmith & Rothbart, 1991). Both scales consist of 11 items describing a child’s behaviour in specific situations. Parents rated their child on each item on a 7-point scale (from extremely untrue of your child to extremely true of your child; or not applicable). The total score was obtained as a mean of all estimations
(excluding not applicable estimations). In this research, composite scores were formed for the fathers’ and mothers’ estimations for both scales. Internal consistency of both composites was .79.

*Emotion understanding (recognition and description)* was assessed by applying the Emotion Understanding Interview (Brajša-Žganec, 2003) conducted individually with every child. The children were shown pictures of children’s faces with happy, sad, angry, scared and surprised emotional expressions, and asked to identify the emotion and report if they ever felt that way. Their answers were scored with zero, one or two points, and a total score for each child was obtained as a sum of responses for five emotions, with a theoretical range from zero to 10 points. Internal consistency in this research for both the recognition and description of emotions was .76.

**Procedure**

The study was conducted in kindergartens in a part of the northwest Croatia as a part of a larger study of the social-emotional development of preschoolers. The teachers were asked to estimate the children’s aggressive behaviour, while the parents estimated the children’s self-regulation. The children’s emotion understanding was assessed with every child individually.

**Results**

In order to examine the relation of measures of self-regulation, emotion understanding and aggressive behaviour of the boys, intercorrelations of all the variables were calculated (Table 1).

<table>
<thead>
<tr>
<th></th>
<th>PE</th>
<th>ME</th>
<th>ER</th>
<th>ED</th>
<th>AF</th>
<th>IC</th>
<th>Aggressive behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child’s age</td>
<td>.02</td>
<td>.02</td>
<td>.58**</td>
<td>.55**</td>
<td>.11</td>
<td>.18**</td>
<td>-.06</td>
</tr>
<tr>
<td>Paternal education (PE)</td>
<td>.48**</td>
<td>.05</td>
<td>-.02</td>
<td>.08</td>
<td>-.12</td>
<td>-.02</td>
<td></td>
</tr>
<tr>
<td>Maternal education (ME)</td>
<td>.07</td>
<td>-.01</td>
<td>.08</td>
<td>-.12</td>
<td>-.15*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotion recognition (ER)</td>
<td></td>
<td>.77**</td>
<td>.12</td>
<td>.12</td>
<td>-.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotion description (ED)</td>
<td></td>
<td>.06</td>
<td>.08</td>
<td>-.10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attentional focusing (AF)</td>
<td></td>
<td></td>
<td></td>
<td>.59**</td>
<td>-.22**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhibitory control (IC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.12</td>
<td></td>
</tr>
</tbody>
</table>

**p<.01; *p<.05**

Statistically significant correlations with the boys’ aggressive behaviour were obtained only for maternal education and boys’ attentional focusing. The boys whose mothers were more educated and the boys who had better attentional focusing were less aggressive in their preschool surroundings. Recognition and description of emotions increased with age, as well as inhibitory control. Measures of self-regulation
(attentional focusing and inhibitory control) were in relatively high correlations, as well as recognition and description of emotions. The boys with better attention focusing had better inhibitory control. The boys who recognized primary emotions better were better at describing these emotions. Despite statistically insignificant correlations of measures of emotion understanding and inhibitory control to aggressive behaviour and significant intercorrelations of those measures, due to theoretical significance and earlier empirical findings, we conducted a hierarchical regression analysis to determine the contribution of self-regulation and emotion understanding variables to the prediction of the boys’ aggressive behaviour (Table 2). In the first step of the analysis socio-demographic variables (child’s age, paternal and maternal education) were controlled, and in the second step two variables of emotion understanding and two variables of self-regulation were included. After controlling socio-demographic variables, the contribution of emotion understanding and self-regulation variables was significant, although rather poor, accounting for an additional 5% of the boys’ aggressive behaviour variance. For the prediction of the boys’ aggressive behaviour, maternal education and boys’ attentional focusing were the most important.

Table 2
Hierarchical regression analysis for the prediction of aggressive behaviour

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Aggressive behaviour</th>
<th>Step 2</th>
<th>Aggressive behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β=−.19**</td>
<td>Emotion recognition</td>
<td>β=−.22**</td>
</tr>
<tr>
<td>Child’s age</td>
<td>R</td>
<td>Emotion description</td>
<td></td>
</tr>
<tr>
<td>Paternal education</td>
<td>R²</td>
<td>Attentional focusing</td>
<td></td>
</tr>
<tr>
<td>Maternal education</td>
<td>F</td>
<td>Inhibitory control</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ΔR²</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ΔF</td>
<td>3.35**</td>
</tr>
<tr>
<td>Final regression equation</td>
<td>R</td>
<td></td>
<td>.29</td>
</tr>
<tr>
<td></td>
<td>R²</td>
<td></td>
<td>.09</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td></td>
<td>3.08**</td>
</tr>
</tbody>
</table>

**p<.01; *p<.05

In the subsequent analyses, since the prediction of aggressive behaviour on the basis of self-regulation and emotion understanding variables was low, we wanted to stress the relationship of composites instead of individual measures of both constructs. Further, we wanted to examine whether the groups of boys with different levels of self-regulation and emotion understanding differed in aggressive behaviour. We formed
a composite score for self-regulation from mean estimation scores for attentional focusing and inhibitory control (Cronbach's alpha=.87) and a composite score for emotion understanding from mean estimations for emotion recognition and emotion description (Cronbach's alpha=.80). According to these results, the boys were divided into the subgroups below (Understanding 1) and above (Understanding 2) the median for emotion understanding and below (Self-regulation 1) and above (Self-regulation 2) the median for self-regulation. Table 3 shows the means and standard deviations for aggressive behaviour for the subgroups of boys. Differences between these subgroups were analyzed by using the analysis of covariance (with maternal education as a covariate).

Table 3

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotion understanding 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-regulation 1</td>
<td>24.03</td>
<td>9.92</td>
<td>73</td>
</tr>
<tr>
<td>Self-regulation 2</td>
<td>21.37</td>
<td>7.08</td>
<td>58</td>
</tr>
<tr>
<td>Total</td>
<td>22.85</td>
<td>8.24</td>
<td>131</td>
</tr>
<tr>
<td>Emotion understanding 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-regulation 1</td>
<td>21.65</td>
<td>8.47</td>
<td>60</td>
</tr>
<tr>
<td>Self-regulation 2</td>
<td>19.09</td>
<td>7.26</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>20.48</td>
<td>8.01</td>
<td>110</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-regulation 1</td>
<td>22.95</td>
<td>8.77</td>
<td>133</td>
</tr>
<tr>
<td>Self-regulation 2</td>
<td>20.31</td>
<td>7.22</td>
<td>108</td>
</tr>
<tr>
<td>Total</td>
<td>21.77</td>
<td>8.21</td>
<td>241</td>
</tr>
</tbody>
</table>

Figure 1. The main effects of emotion understanding and self-regulation on boys’ aggressive behaviour

The analysis of covariance (2x2) showed statistically significant main effects of emotion understanding ($F=4.19, p=.04$) and self-regulation ($F=6.61, p=.01$), but
their interaction was non-significant. Preschool boys who understood primary emotions better behaved less aggressively, as did boys with better self-regulation skills. The least aggressive behaviour was manifested by the boys who understood emotions better and had high self-regulation, while the most aggressive were those who understood emotions less and had low self-regulation (Figure 1). The results should be considered in relation to the importance of strengthening self-regulation and emotion understanding among children of preschool age for the prevention of aggressive behaviour and development of social and emotional competence of boys.

**Discussion**

The results of this study show that aggressive behaviour in preschool boys can be predicted by attentional focusing, a dimension of self-regulation, and maternal education. The finding that children of less educated mothers exhibit more aggressive behaviour has been obtained in some previous research as well, and indicates a risk which lower socioeconomic status posits for the manifestation of aggression in preschoolers (e.g. Izard et al., 2001). The possibility of using attention in order to consider the effects of one's own reactions to others (Rothbart et al., 2000) or diverting attention as a strategy to avoid potentially aggressive interactions (Eisenberg et al., 1995) both appear in the relevant literature as explanations of the relationship between attention regulation and aggressive behaviour. The absence of significant correlations and the possibility of prediction of aggressive behaviour on the basis of inhibitory control and emotion recognition and description was not expected. For example, in research by Denham et al. (2002) deficits in emotion knowledge predicted children's aggressive behaviour even a few years later, especially for boys. In other research (e.g. Denham et al., 2003; Izard et al., 2001), individual measures of emotion knowledge were not significantly correlated to individual scores of child behaviour subscales, while composite scores longitudinally predicted positive and negative social behaviour, which is why composite scores of self-regulation (attentional focusing and inhibitory control) and emotion understanding (recognition and description) were formed in this research as well, and their relation to aggressive behaviour examined by analysing the covariance. Significant main effects were obtained for both factors, but their interaction was non-significant. Boys who understand emotions better and have high self-regulation manifested the least aggressive behaviour, while the most aggressive were those who understand emotions less and have low self-regulation. These results are consistent with the previously mentioned research (e.g. Eisenberg et al., 2001; Izard et al., 2001; McCabe et al., 2004).

Although social and emotional skills and behaviours in children are partly determined by their constitutional characteristics such as temperament, their development is not automatic and it should be encouraged, especially in children who are at high-risk due to their temperament or stressful and harsh living conditions (Webster-Stratton & Reid, 2004). Research has shown that social and emotional skills
can be taught through various intervention programmes of social and emotional learning, which refer to the processes of acquiring and effectively applying skills and knowledge necessary to understand and manage emotions, establish and maintain positive relationships, and make responsible decisions (Domitrovich et al., 2007; Durlak & Weissberg, 2011; Štefan, 2008; Webster-Stratton & Reid, 2008). Reviews of existing programmes suggest that they are effective ways of reducing problem behaviours and emotional difficulties of students, and encouraging prosocial behaviour (Munjas Samarin & Takšić, 2009; Payton et al., 2008; Webster-Stratton & Reid, 2008). Participation of preschool children in such programmes is associated with increased emotion knowledge, emotion regulation skills and social competence, as well as with reduced expressions of negative emotions (Domitrovich et al., 2007; Izard et al. 2004; Štefan, 2008; Webster-Stratton & Reid, 2004).

**Concluding Remarks**

According to the results obtained in this study, the development of self-regulation and emotion understanding could be of significance for decreasing aggressive behaviour among preschool boys. Earlier research by Brajša-Žganec and Slunjski (2007) showed that the same skills were associated with more prosocial behaviour of preschool boys, so their development could have a twofold function of decreasing undesirable and increasing desirable social behaviours. Since the implementation of the above-mentioned programmes for fostering these skills is their integration into the (pre)school curricula, there is a clear need to create conditions for their implementation in (pre)school facilities. This could be achieved by organizing quality in-service training for educators, as well as through providing constant professional support and opportunities for further education. This would provide children with opportunities to learn and practice social and emotional skills in a variety of social interactions, as well as to try out and practice different styles of communication and cooperative behaviour.

When considering the results of this study, it is also important to note its limitations. We used a convenience sample and the instruments used could be improved, extended or replaced. For example, the recognition and understanding of emotion could be examined through various experimental situations in which children respond to questions about a story or play with dolls in a requested manner, as is the case in many studies. In future research, it is also preferable to assess the constructs of interest by applying multiple operationalizations, such as using other indicators of social competence (e.g. externalizing problems or positive social skills) and to examine their relationship with other components of emotional competence (emotion regulation and expression).
References


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Samokontrola, razumijevanje emocija i agresivno ponašanje dječaka predškolske dobi

Sažetak
Dosadašnja istraživanja pokazala su da djeca koja imaju bolju samokontrolu manifestiraju manje agresivnog ponašanja u svakodnevnim vršnjačkim interakcijama. Dječaci su agresivniji od djevojčica u predškolsko doba, imaju nižu samokontrolu i niže razumijevanje primarnih emocija. Međutim, oni koji bolje razumiju emocije, ponašaju se više prosocijalno. Cilj istraživanja bio je stoga provjeriti povezanost samokontrole i razumijevanja emocija s agresivnim ponašanjem dječaka predškolske dobi. U istraživanju su sudjelovali 241 dječak u dobi od 3 do 7 godina, njihovi roditelji (i majka i otac) i odgojiteljice. Samokontrola je mjerena roditeljskim procjenama inhibitorne kontrole i fokusa pažnje. Agresivno ponašanje mjereno je odgojiteljskim procjenama, a razumijevanje emocija pojedinačnim intervjuima s dječacima. Rezultati su pokazali da najmanje agresivnog ponašanja manifestiraju dječaci koji bolje prepoznaju i opisuju primarne emocije te imaju visoku samokontrolu, a najviše agresivnog ponašanja oni koji imaju lošije razumijevanje emocija i nisku samokontrolu. Rezultati su razmatrani u smjeru važnosti jačanja samokontrole i razumijevanja emocija u predškolsko doba za razvoj socijalne i emocionalne kompetencije dječaka.

Ključne riječi: agresivno ponašanje; dječaci; predškolsko doba; razumijevanje emocija; samokontrola.