Relationships between Machiavellianism, emotional intelligence and theory of mind in children

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Abstract

The current study investigates the associations of Machiavellianism (Mach) with trait and ability emotional intelligence (EI), and theory of mind (ToM) in 109 primary school children. Consistent with previous research with adults, negative associations were found between Mach and social and emotional understanding. Subsequent multiple regression analyses for girls showed that being more adept at emotional and social understanding does not lead them to manipulate others in social encounters. This was not the case for boys. These findings are discussed in relation to other social and individual difference variables that impact on Mach, particularly amongst boys.

1. Introduction

Emotional intelligence (EI) is related to social relationships and actual social engagement, and leads to positive social relationships with peers and friends. However, there is also the possibility that being better at identifying and inferring emotional states leads a person to behave in a deceitful manner. Specifically, someone high on EI may make use of their abilities to read and manage other people's emotions to manipulate their behaviours for personal gain. However, previous research with adults (Austin, Farrelly, Black, & Moore, 2007) showed there to be an inverse association between Machiavellianism (Mach) and EI. There is no research examining that association in childhood. The present study investigates this relationship in primary aged children. We also investigated the role of theory of mind (ToM) given that it has been associated with Mach type qualities, such as deception, in child samples.

1.1. Emotional intelligence and social relations

Mayer and Salovey's (1997) model of emotional intelligence (EI) outlines the construct as a cognitive ability involving four skills: the ability to perceive, use, understand and regulate emotion. These abilities form a hierarchy, increasing in complexity from emotion perception to emotion management (Mayer, Caruso, & Salovey, 1999). A person's overall ability EI is a measure of their overall emotional capabilities, and concerns emotion-related abilities. In contrast, EI has been conceptualised by some as a constellation of emotion-related perceptions located at the lower-levels of personality hierarchies (Petrides & Furnham, 2001). These two perspectives have been termed ability EI and trait EI, respectively. Many researchers now work within the framework of these two coexisting types of EI.

The subcomponents of ability EI contribute to optimal social functioning since the accurate and ongoing perception of others' emotions underpin adaptation to developing social and emotional situations for adults (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006) and children (Denham, 2007). In addition, managing one's own emotions effectively makes possible the expression of socially appropriate emotions and behaviour (Eisenberg, Fabes, Gauthrie, & Reiser, 2000). Overall ability EI also predicts both self and informant reports of emotional support, conflict, and positive social relations (Brackett, Mayer, & Warner, 2004; Brackett, Warner, & Bosco, 2005; Ciarrochi, Chan, & Chaputi, 2000; Lopes, Salovey, & Straus, 2003; Lopes et al., 2004; Mayer et al., 1999), and actual social success in naturally occurring peer encounters (Qualter, Henzi, & Barrett, 2009).

Trait EI also correlates with social functioning. It is positively associated with peer-rated pro-social behaviour amongst children (Mavroveli, Petrides, Rieffe, & Bakker, 2007), and measures of social...
adjustment in older adolescents and adults (Chapman & Hayslip, 2005; Engelberg & Sjoberg, 2004; Petrides, Sangareau, Furnham, & Frederickson, 2006; Sakhofske, Austin, & Minski, 2003; Schutte et al., 2001), with those lower on EI scoring higher on loneliness, depression, and aggression than their peers.

Despite reports of the positive impact of both ability and trait EI on social relationships, it has been proposed that scoring higher on EI may be associated with higher Mach, as individuals use their ability to read the emotions of others for personal gain and manipulation (Carr, 2000; Paal & Bereczki, 2007). ‘Machiavellianism is indicative of an attitudinal personality predisposition to see people as manipulable in interpersonal situations’ (Sutton & Keogh, 2000, p. 445), and it is negatively correlated with alexithymia (an inability to verbalise emotions) and empathy in adult samples (Wastell & Booth, 2003). Amongst adults, Mach has been shown to be negatively associated with ability and trait EI (Austin et al., 2007).

Given the proposed developmental changes in ability and trait EI from childhood to adolescence (Zeidner, Matthews, Roberts, & MacCann, 2003), an investigation of the relationship between Mach and EI during childhood is important. Is it the case, for example, that only once a person has achieved their full EI potential in adulthood, do they start to use these skills prosocially? In addition, empirical research suggests that during childhood, manipulating peers may be one way in which children manage relationships as they make sense of changing social roles (Pellegrini & Long, 2002). Thus, we investigated whether being high on ability and/ or trait EI in middle childhood enables the child to manipulate others and thus, manage changing social groups and roles. This strategy for managing relationships is characteristic of boys more than girls (Pellegrini, 2002); so, we investigate whether the direction of association between EI and Mach is different across gender.

1.2. Theory of mind and Mach

The ability to deceive others has been positively associated with ToM tasks in childhood when false belief tasks are used (Chandler, Fritz, & Hala, 1989; Russell, Mauthner, Sharpe, & Tidswell, 1991). ToM refers to the ability to impute the mental states of others, and to appreciate what another will think, feel or believe (Premack & Woodruff, 1978), and like EI, it is important for social relationships (Astington & Jenkins, 1995; Bosacki & Astington, 1999; Walker, 2005). ToM is used in the current study as an additional correlate of Mach, given not only its association with Mach type qualities such as deception in children, but also its relationship with EI (Qualter, Barlow, & Stylianou, in press). Specifically, both trait and ability EI are correlated with more advanced ToM tasks, such as faux pas tests.

Age and language are used as additional control variables as they relate to ToM development (Astington & Jenkins, 1999; Slade & Ruffman, 2005; Wimmer & Perner, 1983). Also, ability EI is placed within an intelligence framework (Mayer et al., 1999) and correlates with verbal IQ (e.g., Bastian, Burns, & Nettelbeck, 2005; Livingstone & Day, 2005).

1.3. Aims

This paper aims to explore the relationships between Mach, EI and ToM in a sample of primary school aged children. It was hypothesised that both trait and ability EI would be negatively associated with Mach, replicating the pattern found in adults. Furthermore, this study investigates the unique contribution of ToM and EI in predicting Machiavellianism, using false belief and faux pas tests of ToM. Based on previous research, we acknowledge that there may be different patterns of associations for boys and girls.

2. Method

2.1. Participants

The sampling frame was developed to ensure that children were chosen from a group of schools in the North West of England that were reasonably representative of schools in different areas of the UK as determined by the government Index of Multiple Deprivation. The six schools approached agreed to take part in the study by sending consent forms to parents and providing study space in the school for data collection. All children between 96 and 132 months (8 and 11 years) who attended the targeted schools were possible participants. Approximately 360 children were therefore selected, and consent forms were sent to their parents. Active parental consent was required to work with the children. Parents of 109 (65 boys, 44 girls: 10–33% from each school) returned signed consent forms. The ages of the participants ranged from 8 years 1 month to 10 years 11 months (M = 9 years 3 months).

2.2. Measures

2.2.1. Machiavellianism

The Kiddie Mach (Christie & Geis, 1970) comprises 20 statements. Children circled the response that best described the way they felt about each item using a five point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Higher scores represent higher Machiavellianism. In the current study, this scale demonstrated acceptable internal consistency, α = .82.

2.2.2. ToM false belief

Passing a first order false belief task is a benchmark for understanding basic mental states. Second order false belief tasks are more difficult tasks that establish whether an individual can correctly attribute a false belief about a belief. One first order and two second order change of location stories were used, and all stories were accompanied by pictures. Both first order and second order stories were taken from Stone, Baron-Cohen, and Knight (1998). In both instances, children were awarded a pass and a score of one if they correctly answered the false belief questions. The children were also asked two control questions to assess their comprehension of the story and had to answer these questions correctly in order to receive a pass. Passes on the first order and second order tasks were summed to give an aggregate score (range = 0–3).

2.2.3. Advanced ToM tasks (faux pas)

Children were read three stories which each contained a situation in which somebody accidentally says something they should not have as it may hurt the feelings of another. These stories and scoring method were taken from Stone et al. (1998). Children were asked three questions for each story: (1) a detection question, ‘did somebody say something they should not have?’, (2) an understanding question, ‘who was it that said something they should not have said?’; (3) an understanding of the mental state of listener question, ‘why should they not have said it?’; and (4) a control question which assessed whether they had understood the content of the story. Children had to be correct on the control question and correctly detect a faux pas had occurred in order to pass the faux pas task. Subsequently, one point was awarded for each correct answer on the detection, understanding and understanding of mental state of listener, and a total of three points was available for each. An aggregate score was calculated summing all points accrued, giving a range of scores from zero to nine. A control faux pas task was also administered to control for a ‘yes’ bias for the detection of a...
impulsivity, peer relations, emotion regulation and affective disposition. A global trait EI score is also obtained. Levels of internal consistency have been reported as satisfactory (α = 0.76: Mavroveli & Petrides, 2006). Given the small sample size, we have restricted our analyses to trait EI as a global construct. Correlations between global TEIQue-CF and subscale scores ranged from .59 (adaptability) to .79 (peer relationships).

2.2.6. Measure of verbal ability

The British Picture Vocabulary Scale (BPVS) (Dunn, Dunn, Whetton, & Burley, 1997) is designed to measure a child’s receptive vocabulary for Standard English between the ages of 3 and 16. The BPVS is one of the most frequently used tests assessing verbal ability. It consists of 150 picture plates, each with four pictures, one plate for each word. The participant points to the picture most like the stimulus word, which is spoken by the examiner. Language ability was within the normal range for the current sample, with a standardised mean of 101.81 (SD 14.47).

2.2.7. Procedure

The Mach, ToM, and EI measures were administered in one of three sessions (albeit other measures of socio-cognition not examined in this study). Each session lasted approximately 40 min. All tasks were paper and pencil exercises, and were administered in small groups at the schools.

3. Results

Data were screened for missing values, outliers and normality according to Tabachnick and Fidell (2001). Missing values were estimated using Person Mean Substitution, as recommended in Hawthorne and Elliot (2005). No cases were identified as multivariate outliers.

Descriptive statistics are shown in Table 1. t-tests for gender differences on the study variables showed that boys scored higher than girls on Mach; and girls scored higher than boys on ability EI. Table 2 shows the partial correlations, controlling for language ability and age, between Mach, EI, and ToM. Findings show that for girls, ability EI (MSCEIT-Yv), trait EI (TEIQue-CF), and the faux pas aggregate were significantly negatively correlated with Mach, when controlling for age and language ability. For boys, significant partial correlations showed Mach to be negatively associated with ability EI and the faux pas aggregate, but not trait EI. It is important to note the different direction of association between Mach and language for boys and girls. For girls, lower BPVS scorers are more Mach; for boys, higher BPVS scorers are more Mach.

To determine the unique contribution of ToM and EI in predicting Mach, separate hierarchical regressions were conducted for boys and girls. Age and language were entered into the regression equation at Steps 1 and 2, and ability EI, trait EI, and advanced ToM were added at Step 3, with the target variables added alternatively.

**Table 1**

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th>Girls</th>
<th>t</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mach</strong></td>
<td>111</td>
<td>110</td>
<td>0.62 ns</td>
<td>.09</td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td>94.38 (17.32)</td>
<td>91.52 (15.75)</td>
<td>0.38 ns</td>
<td>.19</td>
</tr>
<tr>
<td><strong>Mach</strong></td>
<td>56.25 (8.34)</td>
<td>52.18 (7.57)</td>
<td>2.58 **</td>
<td>.51</td>
</tr>
<tr>
<td><strong>FB</strong></td>
<td>1.10 (0.79)</td>
<td>1.02 (0.73)</td>
<td>0.15 ns</td>
<td>.10</td>
</tr>
<tr>
<td><strong>FP</strong></td>
<td>5.95 (2.59)</td>
<td>6.68 (2.24)</td>
<td>1.52 ns</td>
<td>.30</td>
</tr>
<tr>
<td><strong>MSCEIT-Yv</strong></td>
<td>92.16 (14.34)</td>
<td>100.42 (13.75)</td>
<td>2.33 **</td>
<td>.59</td>
</tr>
<tr>
<td><strong>TEIQue-CF</strong></td>
<td>3.35 (0.49)</td>
<td>3.53 (0.51)</td>
<td>1.89 ns</td>
<td>.36</td>
</tr>
</tbody>
</table>

FB (false belief); FP (faux pas).

* Cohen’s effect size d.
** Significant at the 0.01 level.

**Table 2**

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Language</th>
<th>Mach</th>
<th>FB</th>
<th>MSCEIT-Yv</th>
<th>TEIQue-CF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>.26</td>
<td>-.31 **</td>
<td>.18</td>
<td>.34</td>
<td>-.01</td>
<td>.15</td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td>-.24</td>
<td>-.44 **</td>
<td>.42 **</td>
<td>.17</td>
<td>.41 **</td>
<td>.06</td>
</tr>
<tr>
<td><strong>Mach</strong></td>
<td>.26</td>
<td>-.48 **</td>
<td>-.06</td>
<td>-.34 **</td>
<td>-.39 **</td>
<td>-.30 **</td>
</tr>
<tr>
<td><strong>FB</strong></td>
<td>.07 (-.10)</td>
<td>-.12 (-.26)</td>
<td>.46 **(-.38)</td>
<td>.10 (.03)</td>
<td>.57 (.47 **)</td>
<td>.16 (.14)</td>
</tr>
<tr>
<td><strong>FP</strong></td>
<td>.24</td>
<td>-.11 (-.27)</td>
<td>.46 (.33)</td>
<td>.48 (.38)</td>
<td>.13 (.15)</td>
<td>.40 <strong>(.38)</strong></td>
</tr>
<tr>
<td><strong>MSCEIT-Yv</strong></td>
<td>.20</td>
<td>-.46 **</td>
<td>-.04</td>
<td>.21 (.22)</td>
<td>.24 (.30)</td>
<td>.33 (.37)</td>
</tr>
<tr>
<td><strong>TEIQue-CF</strong></td>
<td>.32</td>
<td>-.18 (-.19)</td>
<td>.11 (.12)</td>
<td>.21 (.22)</td>
<td>.24 (.30)</td>
<td>.33 (.37)</td>
</tr>
</tbody>
</table>

FB (false belief); FP (faux pas).

Correlations for boys in lower triangle and correlations for girls in upper triangle.

* Significant at the 0.06 level.
** Significant at the 0.01 level.
Table 3
Hierarchical multiple regression analyses predicting Mach for girls and boys.

<table>
<thead>
<tr>
<th></th>
<th>Girls R²</th>
<th>Change</th>
<th>F change</th>
<th>Boys R²</th>
<th>Change</th>
<th>F change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1: age</td>
<td>.095</td>
<td>.095</td>
<td>4.28</td>
<td>.009</td>
<td>.009</td>
<td>0.57</td>
</tr>
<tr>
<td>Step 2: language</td>
<td>.236</td>
<td>.142</td>
<td>7.43</td>
<td>.063</td>
<td>.054</td>
<td>3.44</td>
</tr>
<tr>
<td>Step 3: ability EI, ToM</td>
<td>.392</td>
<td>.156</td>
<td>4.86</td>
<td>.158</td>
<td>.095</td>
<td>1.27</td>
</tr>
<tr>
<td>Step 4: trait EI</td>
<td>.398</td>
<td>.006</td>
<td>0.36</td>
<td>.165</td>
<td>.007</td>
<td>0.51</td>
</tr>
<tr>
<td>Step 3: trait EI, ToM</td>
<td>.388</td>
<td>.152</td>
<td>4.71</td>
<td>.141</td>
<td>.078</td>
<td>2.45</td>
</tr>
<tr>
<td>Step 4: ability EI</td>
<td>.398</td>
<td>.010</td>
<td>0.60</td>
<td>.165</td>
<td>.024</td>
<td>1.64</td>
</tr>
<tr>
<td>Step 3: trait EI, ability EI</td>
<td>.309</td>
<td>.073</td>
<td>2.00</td>
<td>.143</td>
<td>.080</td>
<td>2.70</td>
</tr>
<tr>
<td>Step 4: ToM</td>
<td>.398</td>
<td>.089</td>
<td>5.46</td>
<td>.165</td>
<td>.023</td>
<td>1.55</td>
</tr>
</tbody>
</table>

Significant at the 0.05 level.
* Significant at the 0.01 level.

Table 4
Mach and faux pas groups.

<table>
<thead>
<tr>
<th></th>
<th>Boys Faux pas</th>
<th>Girls Faux pas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Average High</td>
<td>Low Average High</td>
</tr>
<tr>
<td>Mach Low</td>
<td>4 (6.5%) 1 (1.5%) 3 (4.6%)</td>
<td>0 (0%) 3 (6.8%) 6 (13.6%)</td>
</tr>
<tr>
<td>Average</td>
<td>6 (9.2%) 25 (38.5%) 11 (16.9%)</td>
<td>3 (6.8%) 16 (36.4%) 7 (15.9%)</td>
</tr>
<tr>
<td>High</td>
<td>3 (4.6%) 5 (7.7%) 7 (10.8%)</td>
<td>4 (9.1%) 5 (11.4%) 0 (0%)</td>
</tr>
</tbody>
</table>

at Step 4 (Table 3). For girls, the overall model predicted a significant 40% of the variance in Mach score ($F(5, 108) = 4.89, p < .001$). However, it was only the advanced ToM that added unique variance (9%) in Mach score once accounting for age, language and EI ($F(1, 108) = 5.46, p = .025$). For boys, the overall model was not significant ($F(5, 108) = 2.26, p = .061$), with the only significant regression for boys being in the second set of analyses, when ability EI and ToM are entered to predict Mach, followed by Trait EI. It is not a robust effect (9% of variance explained), and disappears in subsequent analyses.

Further investigation into the association between ToM and Mach, high and low groups on Mach and advanced ToM were identified (high = 1 SD above the mean; low = 1 SD below the mean; average = ±1 SD). Table 4 shows the distribution of children falling into these groups. A chi-square analysis for girls showed that there are fewer girls in the high ToM/high Mach group than we would expect by chance, and more in the high ToM/low Mach group ($\chi^2 = 14.25, p < .01$). For boys, we find that there are more in the high ToM/high Mach group than we would expect by chance ($\chi^2 = 9.75, p < .05$). Thus, for girls advanced ToM is closely associated with negative Machiavellian tendencies. For boys, the pattern is not so clear: a larger than expected number of boys with advanced ToM scores report using this ability in a manipulative way during social encounters.

4. Discussion

This study examined the relationships between EI, ToM, and Mach in a sample of primary school aged children. The findings suggest that ToM and aspects of both ability and trait EI are negatively associated with Mach. Moreover, the findings show that for girls, lower EI may predict Mach because of its shared variance with ToM: once the impact of ToM is controlled in the analyses, we find that the impact of both ability- and trait EI no longer exists. The present study provides further evidence of a negative association between EI and Mach, but suggests that this is a more robust effect for girls. Contrary to previous research with children, we do not find a positive association between scores on the false belief ToM tasks and Mach qualities, and instead find advanced ToM to be negatively associated with Mach.

4.1. EI, ToM and Machiavellianism

The negative relationship between ability and trait EI and Mach supports previous research (Austin et al., 2007). Despite claims that being more adept at emotional understanding enables the manipulation of others, it appears that this is not the case. Both ability and trait EI showed similar strength associations with Mach.

The inclusion of ToM measures was based on previous research showing that children who are better able to deceive another score higher on ToM tasks (Chandler et al., 1989; Russell et al., 1991), and those who bully have a superior ToM (Sutton & Keogh, 2000). However, current findings show that false belief understanding was unrelated to Mach for the current sample. In addition, the advanced ToM task scores were negatively associated with Mach. Moreover, it independently predicted Mach after controlling for age, language and EI. The current finding is also in contrast with adult literature which failed to find any association between advanced ToM and Mach (Paal & Bereczkei, 2007). It seems that children with superior advanced ToM may be more able to deceive and manipulate others; however, this alone is not enough for high levels of Mach. Our data suggest that children who are better able to understand the emotions, thoughts and beliefs of others do not use this information in a negative way. Having a more advanced understanding of emotions may therefore allow one to appreciate the feelings of others and be less likely to act in a manner that may hurt or upset another person.

4.2. Gender and Machiavellianism

The significant difference between males and females in Mach levels replicates previous research (Austin et al., 2007; Sutton & Keogh, 2001). We find that advanced ToM predicts significant variance in Mach scores for girls only. El and ToM may come to impact on social behaviour in different ways for boys and girls because: (1) Mach qualities are less frowned upon in boys, and therefore may be more acceptable (Sutton & Keogh, 2001); (2) Mach qualities may serve a social purpose within peer relationships for boys, such that they need to be more distrustful and suspicious of others (Sutton & Keogh, 2001); and/or (3) boys may manage others differently from girls as they establish social roles and groups (Pellegrini, 2002).

There are some issues to consider regarding the current findings. First, the study uses a relatively small sample of children. We also chose a liberal alpha level, which may have inflated Type I error. Our analyses were also restricted to global trait and ability EI. In addition to addressing these limitations, future studies should use prospective designs to examine the developmental trajectories of ability and trait EI, and ascertain how they influence the use of Mach and other strategies to manage social encounters. Gender differences in the use of such strategies should also be examined.

5. Conclusions

The present study is the first to examine the relationship between ability and trait EI, and Mach in children, whilst controlling for ToM. Although the comparatively small effect sizes suggest many other factors influence the onset and maintenance of Mach, the overall significance of the models suggest that for girls, low EI
and poor advanced ToM skills are important. Future research is needed to determine other individual differences variables that predict Mach, particularly amongst boys.

References


