Emotional Intelligence and Scholastic Achievement in Pre-adolescent Children

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Abstract

Previous research has reported an association between EI and scholastic achievement in adolescent samples; however, this relationship has not yet been studied in pre-adolescent samples. The current study was the first to explore the relationship between ability Emotional Intelligence (EI) and scholastic achievement in pre-adolescent children, using a newly created measure of EI for younger children - the Swinburne University Emotional Intelligence Test – Early Years (SUEIT-EY). Four hundred and seven girls and boys between the ages of 9 and 13 years were assessed on the SUEIT-EY, and scholastic results were collected for literacy and numeracy ability. Results indicated that a significant relationship existed between the 'Understanding and Analysing Emotions' (UAE) branch of the SUEIT-EY and measures achievement in literacy and achievement in numeracy, for boys and girls, over and above the effect of age. Sequential Multiple Linear Regression Analyses found earlier developing UAE abilities to better predict scholastic achievement variables than the more complex UAE abilities, and accounted for 11% of the variation of both literacy and numeracy scores.

1. **Introduction**

Preadolescence is a time of life when scholastic and emotional development becomes increasingly important for students, their parents and educators. Many factors are acknowledged to affect the scholastic and emotional development of children throughout preadolescence, adolescence, and through to adulthood. In the past 20 years, a significant amount of research has focused on the role of 'Emotional Intelligence' in predicting a variety of aspects of mental functioning (Downey, Johnston, et al., 2008; Martins, Ramalho, & Morin, 2010), scholastic performance (Agnoli et al., 2012; Downey, Mountstephen, Lloyd, Hansen, & Stough, 2008; Jiménez Morales & López-Zafra, 2009; MacCann, Fogarty, Zeidner, & Roberts, 2011; Mavroveli & Sánchez-Ruiz, 2011; Pope, Roper, & Qualter, 2012) and important life outcomes across adolescence and young-adulthood. This research has identified direct relationships between levels of EI and important life outcomes, mediation of relationships between EI and problematic behaviours, and suggested that development of EI abilities can act as both prophylactic strategy for reducing mental health problems (Cha & Nock, 2009; Gardner & Qualter, 2009; González, Piqueras, & Linares, 2010; James, Bore, & Zito, 2012; Nolidin, Downey, Hansen, Schweitzer, & Stough, 2013) and improving social and workplace (Erkutlu & Chafra, 2012; Farh, Seo, & Tesluk, 2012; Görgens-Ekermans & Brand, 2012; Iliescu, Ilie, Ispas, & Ion, 2012) interactions. As such, the ability to reliably and validly assess EI in younger samples and identifying whether similar relationships exist between outcomes such as academic performance should contribute to the understanding of the development and importance of the abilities encompassed by EI across the lifespan.

1.1 *Pre-adolescence and EI*

Currently only a limited amount of research exists concerning younger children or pre-adolescents EI. This is probably due to a variety of reasons including the difficulty of the development of reliable and valid measures of what constitutes pre-adolescent EI. Two recently submitted papers (Lloyd, et al 2014a; Lloyd, et al 2014b) describe the item development around the theoretical model based upon the Mayer and Salovey conceptualisation of 'ability' based EI (Lloyd, 2012), and the assessment of the reliability and validity of the generated items to assess the theoretical four branch model in two large pre-adolescent samples (Lloyd, et al, 2014a). Prior to these studies, research concerning adolescent EI has been predominantly conducted using youth or adolescent versions of previously developed adult measures of EI, for both ability and trait conceptualisations. For example, youth versions of the widely used ability measure the Mayer-Salovey and Caruso Emotional Intelligence test (MSCEIT) (Mayer, Salovey, & Caruso, 2005), the commonly used Emotional Quotient inventory (Bar-On & Parker, 2000), and the Swinburne University Emotional Intelligence test (SUEIT; Luebbers, Downey & Stough, 2007) have been developed.

With regard to these aforementioned adolescent/youth versions of established measures of EI have each been effective in predicting scholastic outcomes in adolescents. Recently the MSCEIT-Youth Version was administered to students in grades 4-12 (ages 10-18), with Perceiving emotions being observed to be associated with general intellectual ability and reading, Facilitating Emotions was associated with reading and Understanding Emotions was associated with general intellectual ability, reading and math marks (Peters, Kranzler, & Rossen, 2009). The EQ-i youth version has also provided consistent results within

a variety of student populations, with more academically successful students scoring significantly higher than less successful student's on the EQ-I in a larger (N=667) sample of American students aged 14-18 years for example (Parker et al., 2004). Similarly when using the adolescent SUEIT, higher GPA's have been reported to be related to higher levels of Emotional Management and Control (Downey, Lomas, Billings, Hansen, & Stough, 2013) the total EI score has been observed to correlate positively with GPA, geography and science marks, and again, more successful students reported significantly higher EI scores (Downey, Mountstephen, et al., 2008) in students aged 12-17. These results in these samples point to the utility of these measures, and suggest that even at the lower end of the ages assessed in these studies that EI scores are measurable and related to scholastic criterion. Although both trait and ability models have evidenced predictive efficacy and validity within young samples, it is likely that ability models for younger children would be more appropriate than self-report measures as younger children may have limited ability to understand their own EI and to report these accurately using self-report techniques.

1.2   *EI, Age and Scholastic Performance in Students*

EI abilities have been observed to develop with age (Mayer, Roberts, & Barsade, 2008) and females tend to return higher scores on EI measures than males (Austin, 2010). In primary school children, Lloyd (2012) found a significant difference in EI due to gender in both the calibration sample [*Welch* (1, 462.57) = 10.89, $p < .001$], with girls scoring higher than boys (eta squared = .01, $p < .05$), and in the validation sample [*Welch* (1, 551.06) = 7.677, $p = .006$], with girls again scoring higher than boys (eta squared = .01, $p < .05$) (Lloyd et al, 2013a). EI has been defined as the capacity to carry out sophisticated information processing about emotions and emotion-related stimuli and to use this information as a

guide to thinking and behaving (Mayer, Salovey, & Caruso, 2008). As such, EI may be defined as a set of abilities that develop with increasing age and a wider range of life experiences (Mayer, Caruso, & Salovey, 2000).

Currently only limited research exists concerning the EI of preadolescent children and this is surprising given the important developmental changes that are known to occur during this phase of life, particularly in terms of a changing social context and the growing importance of peer relationships and children's increasing ability to understand themselves and others. This emotional development is partly reliant on the concurrent development of cognitive structures. Carroll and Steward (1984) found age differences in a number of emotional abilities, with older children's (8- to 9-year-olds) use of emotion words reflecting a more complex structure and meaning than that of 4 to 5-year-olds (Carroll & Steward, 1984). Developmental changes also occur in the way children try to control or manage the emotions of another person in a social situation (McCoy & Masters, 1985). As such, tailoring the development of EI measures to assess established models of EI within young children may increase the ability to monitor the development of emotional abilities during childhood.

Mayer and Salovey's Four Branch Model is an integrative approach to studying EI because it conceptualises EI as a complete, integrated set of abilities: perceiving emotions, using emotions, understanding emotions and managing emotions (Mayer, Salovey, & Caruso, 2004, 2012). The branches are organised such that lower branches are more isolated within the psychological systems of emotions whereas higher branches are more integrated with other psychological systems beyond that of emotions (Mayer et al., 2012). The model conceptualises EI as a developmental ability that begins developing in early

childhood, with different abilities developing at different rates (Mayer, Roberts, et al., 2008). Within each branch, the abilities develop and progress from basic, to more complex, and research suggests that examining EI in terms of the four branches may be a more beneficial strategy when conducting EI research than considering the construct as a whole (Downey, Mountstephen, et al., 2008; Fiori & Antonakis, 2011). For example, Fiori and Antonakis (2011) recommended using the scores of the single branches rather than the total EI scores because they were found to be measuring distinct constructs and Di Fabio and Palazzeschi (2009) found that by entering the individual branches of the MSCEIT, more variance in scholastic success could be explained (Di Fabio & Palazzeschi, 2009). As such the aim of the current study was to explore the relationship between ability EI of a newly designed measure (Lloyd, et al, 2014a; 2014b) at the branch level and the scholastic achievement of pre-adolescent children.

2. Method

2.1 Participants

The sample consisted of 407 mainstream primary school students (200 males, 207 females) attending four primary schools in Melbourne, Australia. Students ranged from 9 to 13 years of age with a mean age of 10.72 years (SD = .93) for females and 10.75 years for males (SD = .88). All children and parents provided written informed consent to participate in the study which was approved by the institutional ethics committee.

2.2 Measures

2.2.1 Emotional Intelligence

The Swinburne University Emotional Intelligence Test – Early Years (SUEIT-EY) is a 68 item questionnaire designed to assess a four-factor model of EI in pre-adolescents. The development of which is described in two submitted papers, (Lloyd, et al, 2014a; Lloyd, et al, 2014b) and a manual within a thesis (Lloyd, 2012). The test provides scores for four EI branches; the 38 self-report items (items 1 to 38) were designed to measure three of the four Mayer and Salovey (1997) branches of Emotional Intelligence; "Perception and Appraisal of Emotion" (PAEE: Branch I), "Emotional Facilitation of Thinking" (EFT: Branch II) and "Reflective Regulation of Emotion" (RRE: Branch IV). Six items measuring ability subsumed under Branch I; "Identify emotions in others" (IEO: Branch I Maximum EI) was measured using performance based assessment. The remaining 22 items were designed to measure Mayer and Salovey's (1997) "Understanding and Analysing Emotion" (UAE: Branch III) using performance-based assessment. Self-report items were scored on a five point Likert-type scale where 1= "not like me at all" and 5 = "exactly like me". Four items were reverse scored. The Branch I Maximum EI items entailed presentation of a 1070 mm x 1700

mm photograph of a male adolescent (15 years of age) modelling emotional expressions (happy, disgusted, angry, sad, scared and surprised). These were scored using a six point response format (happy, disgusted, angry, sad, scared and surprised). Each image was presented on a single page (for paper based testing) or screen (for computer based testing) in the order of "angry", "happy", "surprised", "sad", "scared" and "disgusted". Each item yielded a score of "zero" for an incorrect response and "one" for a correct response. The remaining performance items were measured using a multiple choice format, using either a two point response ("yes" or "no"), three point responses, four, five, six, or seven point responses (Lloyd, 2012) depending on the nature of the question (Lloyd, 2012).

2.2.2   Social Desirability

The Child Social Desirability Scale (CSD) was included in order to test the extent to which children's responses to self-evaluative questions were motivated by their need for social approval and therefore that they responded in a socially acceptable manner (Crandall, Crandall, & Katkovsky, 1965).

2.2.3   Scholastic Achievement

Scholastic achievement scores were standardised across schools using a 5 point scale where 5 was the highest score and 1 was the lowest score. These scores were computed for reading, writing, literacy, and maths/numeracy. Overall achievement was calculated by averaging students' literacy and numeracy scores.

2.3   Statistical Procedure

As previous findings that EI is influenced by age, gender and can be affected by socially desirable responding, the influence of these variables on the relationship between EI and

scholastic success was assessed. Correlations were calculated between each of the four SUEIT-EY branches (Perception, Appraisal and Expression of Emotion; Emotional Facilitation of Thinking; Understanding and Analysing Emotions and Reflective Regulation of Emotion) and each of the achievement criteria (overall achievement, achievement in literacy and achievement in numeracy whilst controlling for gender, age and social desirability. Additionally scores from the four branches were entered together into a multiple regression to predict scholastic success.

3. Results

3.1   Descriptive Analysis

Table 1 describes the means and SDs for all main variables and dimensions including Age, gender, social desirability, emotional intelligence and scholastic performance. Table 2 reports the inter-correlations between all variables.

3.2   *EI, Age, Gender and Social Desirability*

Significant correlations were found between social desirability and each of the three branches comprising part 1 of the SUEIT-EY: RRE ($r = .27$, $p < .001$), EFT ($r = .13$, $p < .01$) and PAEE ($r = .13$, $p = .01$). Confirming the hypotheses, there was no significant correlation between 'Social Desirability' and Part 2 of the SUEIT-EY, namely the UAE branch of the model. Whilst significant, all correlations were small, ($r < .28$). Small, significant correlations were found between gender and PAEE (Kendall's tau – $b = .13$, $p = .002$) and UAE (Kendall's tau-$b = .09$, $p = .04$), but not for either of the other 2 branches. A significant difference in means were found between girls and boys for both branches: PAEE $F (1, 402) = 11.18$, $p = .001$ and UAE $F (1, 402) = 6.21$, $p < .05$, with girls outperforming boys in both cases. Age was found to be significantly positively correlated only with the UAE branch ($r = .20$, $p < .001$).

3.3   Emotional Intelligence and Scholastic Achievement

Significant partial correlations were observed between the UAE branch and the achievement criteria: literacy (males: $r = .27$, $p < .001$; females: $r = .29$, $p < .001$) and numeracy (males: $r = .30$, $p < .001$; females: $r = .29$, $p < .001$) while controlling for the effects of socially-desirable responding and age. Whilst there was a significant gender difference between boys and girls on UAE, the effect of this branch on scholastic achievement did not

significantly differ according to gender: literacy (Fisher's $z = .20$, $p > .05$) and numeracy (Fisher's $z = .1$, $p > .05$).

3.4   Regression Analyses

To further examine the predictive efficacy of the UAE branch, the four separate abilities that constitute the entire branch were entered into a regression equation for both literacy and numeracy scores whilst still controlling for gender. For the literacy scores, after entering gender into the regression equation (F [1, 400] = 3.11, p > .05; R^2 = .008) the UAE ability scores were observed to predict a significant amount of variation (F [5,396] = 9.31, p < .001; R^2 = .11). *Understanding and analysing emotions* ability 2 ('Interpret the meanings that emotions convey') entered the equation next (β =.23, p < 0.01; R^2 change = 0.053), followed by Ability 1 ('labelling emotions and recognising relations among emotions'), β = .15, p < .01; R^2 change = 0.021), and emotion ability 3 ('Understanding complex feelings, simultaneous feelings and blends of emotion'), β = .10, p < .01; R^2 change = 0.01), to make significant contributions to the model concerning literacy. With regard to the regression concerning numeracy skills, after entering gender into the regression equation (F [1, 400] = 11.04, p < .001; R^2 = .03) the UAE ability scores were observed to predict a significant amount of variation (F [4,397] = 12.52, p < .001; R^2 = .11). After gender, ability 4 ('recognising likely transitions among emotions') entered the equation next (β =.20, p < 0.01; R^2 change = 0.038), followed by Ability 1 ('labelling emotions and recognising relations among emotions'), β = .16, p < .01; R^2 change = 0.027), then ability 3 ('Understanding complex feelings, simultaneous feelings and blends of emotion'), β = .14, p < .01; R^2 change = 0.020), and ability 2 ('Interpret the meanings that emotions convey'), β = .12, p < .05; R^2 change = 0.013), to make significant contributions to the model concerning numeracy.

4. Discussion

The current study is the first to empirically examine whether scores on the new measure of EI for pre-adolescents (the SUEIT-EY; Lloyd, et al., 2014a) predicted scholastic achievement. The general aim of the study was to determine the strength of the relationship between a newly developed measure of EI for preadolescent children and children's achievement in school, and whether this relationship is affected by their age, gender or socially desirable responding style. Further, the aim of the study was to determine which branches and abilities of the model are the strongest predictors of scholastic achievement in this age group. In regards to predicting scholastic performance, only the Understanding and Analysing Emotions branch of the SUEIT-EY was found to be related to scholastic performance, and predictive of 11% of the variation in both literacy and numeracy performance.

Previous research in adolescents has identified the Understanding Emotions dimension of both ability (Peters et al., 2009) and trait (Downey et al., 2013) assessments to be significantly related to various scholastic outcomes. For example, using the MSCEIT with students aged 10-18 the Understanding Emotions branch was found to be associated with general intellectual ability, reading and math marks (Peters et al., 2009), which mirrors the findings of the current studies UAE branch being associated with literacy and numeracy performance. Also in line with previous research (Mayer, Roberts, et al., 2008) there was a significant relationship between EI and age, but this was again limited to the UAE branch. This pattern of results may be a consequence of the previously observed relationship between understanding emotions and cognitive ability (Brackett, Rivers, & Salovey, 2011), where adolescents ability to understand theirs and others emotions develops through adolescence along with the typical increase in cognitive ability. As such, those pre-

adolescents in the current sample who demonstrated greater development of the ability to understand emotions for their age interpret the meanings that emotions convey and how multiple emotions can be experienced together where also performing academically superior to their peers.

The finding that socially desirable responding was significantly correlated with all three branches of Part 1 of the SUEIT-EY was not surprising, as the task required children to rate themselves on a series of EI abilities that involved being attuned to the emotional needs of others, managing their own emotional reactions and other pro-social abilities. This could be considered further evidence that ability models may be more appropriate for younger children, as children's responses to these types of items may be affected by their relatively limited understanding of theirs and others emotional experiences, and possibly the responding in a manner consistent with showing self-control and self-monitoring of emotional behaviours that is rewarded in a schooling context may also bias their responses. Somewhat consistent with previous work in the area, girls were found to score higher than boys, but only for two out of the four branches. The lack of consistent influence of gender throughout each of the four branches reflects the findings in the literature in that gender differences in emotional development (i.e. EI abilities) are not always apparent, particularly in younger (Brody, 1985).

The current results provided partial support for the predicted relationship between EI and scholastic achievement in preadolescents and are in line with previous research (Barchard, 2003; Di Fabio & Palazzeschi, 2009; Downey, Mountstephen, et al., 2008; MacCann et al., 2011; Peters et al., 2009; Qualter, Gardner, Pope, Hutchinson, & Whiteley, 2012) which found significant relationships between the *understanding emotions* branch of

ability and trait EI measures and scholastic or academic achievement. Future replications of the current study would benefit from controlling for personality and cognitive factors, to determine whether or not UAE has incremental predictive validity over and above personality and IQ in its prediction of scholastic and academic achievement variables. This is particularly important given the moderate correlation found between the UAE branch and cognitive ability (Brackett et al., 2011).

The results of the present study have both theoretical and practical implications for education and psychology. The primary theoretical implication is that the relationship between EI and scholastic achievement can be assessed in preadolescent children. There is also a clear link between self-reporting of EI abilities and a tendency to respond in a socially desirable manner, for this age group. However, it is difficult to ascertain the level of insight children have into their own subjective EI abilities, and how these will affect responding to self-reported items. In conclusion, the current study has explored the relationship between each of the four branches of the SUEIT-EY and scholastic achievement in preadolescent children, taking into consideration the effects of age, gender and socially desirable responding. The study found UAE to be the most robust predictor of scholastic achievement for girls and boys, with less sophisticated abilities as stronger predictors than more sophisticated abilities. As the first to examine the direct relationship between EI and scholastic achievement in preadolescent children using the SUEIT-EY, the current study provides the first valuable data that - if replicated - may suggest that EI should be consciously and constructively developed in young children.

Table 1: *Descriptive Statistics for all variables*

Variable	Statistic		*SE*
Age	*M*	10.74	.05
	SD	.90	
Gender	*M*	1.50	.03
	SD	.50	
Social Desirability	*M*	20.79	.47
	SD	9.27	
Overall Achievement	*M*	3.22	.03
	SD	.52	
Literacy Achievement	*M*	3.19	.03
	SD	.64	
Numeracy Achievement	*M*	3.26	.03
	SD	.57	
PAEE	*M*	45.53	.33
	SD	6.51	
EFT	*M*	42.06	.33
	SD	6.64	
UAE	*M*	12.68	.10
	SD	2.00	
RRE	*M*	37.42	.28
	SD	5.61	

Note: *N* = 403; *M* = mean; *SD* = Standard Deviation; *SE* = Standard Error; PAEE =

perception, appraisal and expression of emotion; EFT = emotional facilitation of thinking;

UAE = understanding and analysing emotions; RRE = reflective regulation of emotions.

Table 2: *Correlation Matrix for Scholastic and EI scores*

	1	2	3	4	5	6	7	8	9
1.AGE	1.00								
2.GENDER	.00	1.00							
3.SD	-.07	.18***	1.00						
4.LITERACY	.05	.17***	.10*	1.00					
5.NUMERACY	.02	-.09*	.06	.48***	1.00				
6.PAEE	-.10*	.16***	.13**	.05	.01	1.00			
7.EFT	-.09*	.06	.13**	-.01	-.06	.69***	1.00		
8.UAE	.20***	.11*	.01	.31***	.30***	.11*	.01	1.00	
9.RRE	-.03	.08	.27***	-.01	-.03	.64***	.57***	.01	1.00

Note: N = 396; SD = Social Desirability; PAEE = perception, appraisal and expression of

emotion; EFT = emotional facilitation of thinking; UAE = understanding and analysing

emotions; RRE = reflective regulation of emotions.

* *p* < .05

** *p* < .01

*** *p < .001*

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