

Running Head: EU AND SOCIO-EMOTIONAL DEVELOPMENT

My Friends Always Know When I'm Sad:  
How Children's Emotion Understanding is Associated with Socio-Emotional  
Development.

By

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## Abstract

The current study examined whether prosocial, social, and psychological development in children are more strongly associated with an overall understanding of emotions, or whether certain aspects of development are associated with specific components of emotion understanding. 38 children aged between 6 and 9 years old were administered the Test of Emotion Comprehension and the Kusche Affective Interview-Revised. Their parents completed the Strengths and Difficulties Questionnaire. Overall emotion understanding was found to be associated with conduct problems. Specific components of emotion understanding were associated with peer and emotional problems and inattention-hyperactivity. Prosocial behaviour was not significantly associated with emotion understanding. Results suggest that social and psychological development are primarily associated with specific components of emotion understanding rather than overall understanding.

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Over the past three decades research has shown that children's understanding of emotions plays a significant role in their social, academic and psychological development (Izard et al., 2001; Southam-Gerow & Kendall, 2002). Children with adequate emotion understanding are equipped to function optimally within the social milieu that confronts them once they begin school. Conversely, children with less developed emotion understanding can find social interaction both difficult and stressful (Denham et al., 2003; Schultz, Izard, Ackerman, & Youngstrom, 2001). Underdeveloped emotion understanding has been linked with childhood aggression, which can lead to youth violence, crime, and ultimately imprisonment (Moffitt & Caspi, 2001). Difficulties with emotion understanding have also been associated with childhood internalizing problems such as anxiety and depression, particularly in community samples (Fine, Izard, Mostow, Trentacosta, & Ackerman, 2003; Southam-Gerow & Kendall, 2002). Early internalising problems can lead to ongoing psychopathology, for instance; anxiety, depression, and eating problems as well as self harm and suicidality (Southam-Gerow & Chorpita, 2007). Therefore, understanding the links between emotion understanding and childhood development, both optimal and sub-optimal, may prove critical in helping young children to thrive and avoid psychopathology.

### *Emotion Understanding*

Emotion Understanding (EU) is a broad construct that includes many components. EU is defined in the current study in accordance with the work of Paul Harris, Francisco Pons and colleagues (for example, Pons, Harris, & de Rosnay, 2004). This definition encompasses recognition of emotions and emotional cues (Recognition); understanding of situations that trigger specific emotions (Emotion Situation); understanding that what we believe or want may influence our emotional

reaction to an event (Beliefs and Desires); morals that may influence or temper emotional reactions (Morality); understanding that individuals can feel more than one emotion at the same time (Mixed Emotions); understanding that a person can show one emotion while feeling another (Display Rules); and knowledge of emotional regulation (although not necessary the skills required to put this knowledge into action; Pons & Harris, 2005; Southam-Gerow & Kendall, 2002). EU has been associated with prosocial behaviour and social competence (Ensor & Hughes, 2005; Mostow, Izard, Fine & Trentacosta, 2002). Underdeveloped EU, however, has been linked with psychopathology, neglect, abuse and pervasive developmental disorders. While it has been found that occurrences such as neglect, abuse and pervasive developmental difficulties impact negatively on the development of EU (Baron-Cohen, 1991; Sullivan, Bennett, Carpenter & Lewis, 2008), psychopathology, such as internalising and externalising problems, may occur at least partially as a result of underdeveloped EU (Fine et al., 2003; Southam-Gerow & Kendall, 2002).

#### *The Definition of Emotion Understanding*

A major obstacle that arises when examining EU is that there are many different definitions of this construct in the current literature. In particular, the distinction between EU and emotion knowledge is vague and imprecise. Some authors use these terms seemingly interchangeably and without definition. Other authors provide very clear definitions for the terms that they are using, but these definitions are not consistent; one author's emotion knowledge is another's emotion understanding. A particular problem within the current literature is that different research groups appear to be using the same terminology to describe distinctly different constructs. For example, Miller et al. (2005) and Izard (2001) both use the term emotion knowledge. While Miller et al. include only two facets in their study of emotion knowledge,



however, Izard talks of emotion knowledge as having 10 different facets. If different authors are using the same terms for diverse constructs it becomes very difficult to compare, contrast, and integrate the works of diverse researchers within the field.

It also appears that researchers are sometimes using different terminologies to describe essentially the same constructs. An affective perspective-taking task developed from the work of Denham (1986) is a common measure used in the literature. Yet this same task is used to measure emotion knowledge; emotion understanding and emotion comprehension depending on which researcher is conducting the research (for example, Lindsey & Cowell, 2003; Raikes & Thompson, 2006). If these terms are not intended to be used interchangeably, it would be useful to have specific definitions for each one, according to a consensus in the literature. If they are interchangeable then the question arises of why so many terms are required to describe the same thing.

As noted above, EU is a broad construct which includes many components. Some of these components, however, are also included in common definitions of emotion knowledge. Moreover, definitions of emotion knowledge are sometimes very expansive, encompassing many or all of the components that are listed above as belonging to EU. Susanne Denham has been credited with the original conceptualisation of emotion knowledge, which most commonly includes recognition of emotions, responding to emotion in others and understanding of emotional situations (Denham, 1986). Later definitions of emotion knowledge by other researchers have been expanded to include more advanced skills such as knowledge of display rules as well as causes and effects of emotions (Trentacosta & Izard, 2007). Even more expansively, Izard (2001) outlines 10 facets of emotion knowledge that include the ‘fundamental facet’ of accurate perception as well as understanding causes

of emotions, how emotions, motivation and behaviours relate, emotional ambivalence and understanding familial and cultural norms for emotion. With emotion knowledge being defined so broadly it becomes difficult to determine whether it is in fact distinct from EU or if they are simply synonyms for the same construct.

As noted above, some authors use more than one term (such as both understanding and knowledge) however they do not always make it clear how they are differentiating the terms. For example, Denham and colleagues frequently refer to emotional knowledge, competence and understanding. Emotion knowledge is clearly conceptualised as a component of a broader emotional competence. Emotional competence involves the ability to use emotional interchanges with others in a strategic manner to regulate one's own emotional experiences (Denham, et al., 2003). EU remains undefined, however. Pons and Harris (2005) refer to both emotional comprehension and EU. These seemingly interchangeable concepts incorporate and extend upon a more complex definition of emotion knowledge, which includes many of the skills mentioned by Izard (2001) such as recognition of emotions, understanding situational causes of emotions and rules for displaying emotions. Thus emotion knowledge is subsumed within a broader construct in several definitions.

Emotion knowledge may best be conceptualised as the first stage in the development of a complete EU. Developmentally, the components of the original emotion knowledge paradigm credited to Denham (recognition, response, situation knowledge) are acquired by children in early childhood (Harris 1989; 1993). If these two terms are not intended to be interchangeable, then one logical way to distinguish between them is that the construct of emotion knowledge describes the acquisition of knowledge about emotions that occurs early in development; specifically learning

about emotion recognition, responses and situation. EU subsumes this knowledge into a broader construct that builds upon this early learning.

In summary, despite somewhat different interpretations, the picture of EU that emerges is that of a construct that can be defined as a broad understanding of emotion encompassing multiple components, including those classified as emotion knowledge. These components develop with age and experience in social situations. It is this definition of EU that will be used in the current study.

### *The Development of Emotion Understanding*

Harris (1989, 1993) reviews research investigating the development of EU and outlines this development through different stages of childhood. According to these reviews, development of EU begins during the first year of life, wherein children come to understand that emotions have intentionality, which is that they are generally directed at a particular object or situation.

By around the ages of 2 or 3 years, many children understand that emotions are affected by whether an individual gains what they desire, for example, they are happy if they get what they want and sad if they do not (understanding of desires; Harris, 1989; 1993). By 4 or 5 years of age, children's EU has developed so that the child realises that emotion is elicited not just by the attainment - or failure to attain - a desired outcome, but by the assumed outcome of an event (understanding of beliefs; Harris, 1989; 1993). For example, if two people both want something, such as a cold drink, but one person believes that they will get the drink and the other does not. If neither of them does get a drink, the person who believed they would get one will be more upset than the person who didn't think they would get one in the first place. This understanding is strongly related to children's development of a Theory of Mind – that is the understanding that oneself and others possess mental states (Wellman,

Cross, & Watson, 2001). At 2 or 3 years of age, children understand that people have desires, by 4 or 5 they begin to understand that people also have beliefs, and that these can be false (Wellman, et al., 2001).

Harris reports that between the ages of 4 and 6 years children come to understand that a person may feel one emotion but show a completely different emotion on their face, for example by pretending to be surprised when they are not or putting on a happy face when feeling hurt (understanding of display rules or hiding emotion; Harris, 1989; 1993). As children become older, they also begin to understand the necessary strategies for regulating their emotions. While quite young children can understand the concept of hiding an emotion, the knowledge of how to adjust one's own emotional state develops later. Moreover, this knowledge of how to adjust one's state appears to become more complex and sophisticated over time, with younger children focusing on changing the immediate external context and older children addressing thought processes that are maintaining the emotion (Harris, 1989; 1993).

Harris (1989; 1993) suggests that at around ages 6 or 7, children begin to develop an understanding of emotions within the context of morality and moral judgements. Prior to this, most children will perceive situations within a desire-based framework; a person is happy if they get what they want. By the age of 8 years, however, most children understand that a person may feel bad if they get what they want through dishonest means, for example stealing a sweet or lying about breaking something. Younger children also find the concept of mixed emotions difficult to understand. By the age of 9 or 10 years, however, many children realise that an individual may feel more than one emotion simultaneously, such as both excited and nervous about starting in a new class at school.

The above review indicates that EU follows a clear developmental course. To examine whether theoretically derived components of EU do develop in a predictable manner, Pons et al. (2004) developed the Test of Emotion Comprehension (TEC; see Table 1). The TEC encompasses many of the components included in earlier EU measures; for example, components examined in Denham's affective perspective-taking tasks, Recognition and Situation Knowledge, are subsumed within the TEC (Pons et al., 2004). Also included are understanding of Desires, Beliefs, Reminders, Hiding, Regulation, Mixed Emotions, and Morality. During its development, the TEC was administered to 100 typically developing children divided into five age groups; 3, 5, 7, 9 and 11 years. The study found three clearly identifiable EU developmental phases. Furthermore, their research indicated that a child must master one phase before they can progress to the next (Pons et al., 2004; Pons & Harris, 2005). The phases roughly mirror stages of childhood commonly referred to in developmental literature; early childhood (infancy-5 years old); middle childhood (6-10 years old) and late childhood (10 years old – adolescence). The first phase (occurring at around 5 years of age) included Recognition, External Causes and Reminders; the second phase (occurring around 7 years of age) incorporated Desires, Beliefs and Hiding, and the third phase (occurring around 9-11 years of age) included Regulation, Mixed Emotions and Morality. Most notably, many children understood reminders

Table 1.

*Definitions of Emotion Understanding Terms*

| Component              | Phase | Definition  |
|------------------------|-------|---|
| I. Emotion Recognition | 1     | Recognising and naming emotions from facial cues  |
| II. External Causes    | 1     | Understanding that external situations and events can effect other's emotions.  |
| III. Desires           | 2     | Understanding that people's emotional reactions are influenced by what they desire  |
| IV. Beliefs            | 2     | Understanding that what a person believes will impact upon their emotional reaction to an event.  |
| V. Reminders           | 1     | Understanding the link between memory and emotion, for example, that present events can be reminders of earlier emotional events and thus influence a person's current emotional state. |
| VI. Regulation         | 2     | Understanding of strategies to control emotional reactions.   |
| VII. Hiding            | 3     | Understanding that a person can feel one emotion while displaying a different one on their face.  |
| VIII. Mixed Emotions   | 3     | Understanding that a person can feel more than one emotion simultaneously.  |
| IX. Morality           | 3     | Understanding that morally unacceptable actions can cause negative emotions whereas morally acceptable actions can result in positive emotions.   |

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From Pons et al. (2004)

Phases; 1 = emerges by age 5; 2 = emerges by age 7; 3 = emerges by ages 9-11.

sooner than was predicted, and desires later. The components are still, however, presented in this original order when the TEC is used in research.

A second study with Quechua children in Peru confirmed that older children had greater overall EU than younger children (Tenenbaum, Visscher, Pons & Harris, 2004). The Quecha children had a similar rank-ordering of component mastery as same-age British children indicating that their EU was developing along a similar

trajectory. Relative to the British children, the Quechua children had lower overall scores, however, and there was no difference between younger and older Quechua children on many of the components (Tenenbaum et al., 2004). The authors concluded that this may indicate that Quechua children's EU develops in a similar manner to that of British children, it may do so later however.

In summary, both theory and research suggests that children's EU develops along a set developmental trajectory, with certain components acquired before others. Moreover, there may be phases to children's development of EU.

#### *Emotion Understanding and Socio-Emotional Development*

The associations between EU and children's social, prosocial, and psychological development are well established in the literature (Izard et al., 2001; Southam-Gerow & Kendall, 2002). Many studies only examine one or two components of EU, however. While the number and nature of these components is far from being unequivocally established, research such as that by Pons et al (2004) suggests that EU is multifaceted. Therefore a critical question remains unanswered; how are EU and these various facets of development associated? Is, for example, a general strength across multiple components of EU associated with all-round success in social relationships and sound psychological functioning? Alternatively, EU may consist of a cluster of related components, with each individual component having a unique impact on a distinct facet of socio-emotional development.

Pons and Harris (2005) concluded that delays in EU are global; in other words a child will either perform well on all developmentally-appropriate EU tasks compared with their same age peers, or they will not. Children should therefore not show an inconsistent performance whereby they do well on some age-appropriate components of EU but not others. While Pons and Harris' (2005) research gives support to their

claim, this issue has not yet been explicitly empirically tested. Moreover, other researchers including Harris himself in his 1993 review, state that it should not be expected that all children would show a global strength or weakness in EU. Other research also indicates that certain children (for example those with internalising problems) do have difficulties with some components of EU but not all (Southam-Gerow & Kendall, 2000). As the majority of studies only measure one or two components of EU, at this stage the best claim that can be made is that children with social and psychological difficulties also show delays in some aspects of EU. It cannot be yet claimed that they show a general EU weakness – that is, difficulties across all aspects of emotion understanding within a developmental stage. Furthermore, it cannot be stated that children who show well developed social and prosocial abilities have a general EU ability, that is, that they perform consistently across EU tasks.

The research-based knowledge we have at this stage points to two possible alternatives; the first is that children who are not achieving expected social, psychological and prosocial goals may have consistent difficulties in all aspects of EU, and may manifest less mature socio-emotional functioning than their same-age peers. In addition, children with advanced prosocial or social skills may attain all the expected developmental goals earlier than do their peers. On the other hand, it is possible that not all children follow a set developmental course in terms of EU. That is, children may show strengths or weaknesses in specific areas that are related to their unique socio-emotional strengths or weaknesses (for example; Meerun Terwogt, 1990; Southam-Gerow & Kendall, 2000). A review of previous research (see below) suggests that a general EU strength may be associated with positive prosocial and



social development whereas psychopathology may be associated with unique weaknesses in EU.

*Emotion understanding and prosocial behaviour.* Prosocial behaviour refers to altruistic behaviours such as sharing, taking turns and comforting. Prosocial behaviour has been found to be associated with children's performances on EU tasks. In a study of toddlers (mean age 29 months), Ensor, & Hughes (2005) found maternal ratings of prosocial behaviour on the Strengths and Difficulties Questionnaire (Goodman, 1997) to be significantly related to performance on emotion recognition and labelling tasks. Moreover, while the combination of EU and verbal ability explained more than half the variance in prosocial behaviour, unique predictive effects were found only for EU, which mediated the relationship between prosocial behaviour and verbal ability. This suggests that EU has a distinct and specific association with prosocial behaviour in toddlers.

EU also has an association with prosocial behaviour in preschool-aged children. Cassidy, Werner, Rourke, and Zubernis (2003) found teacher-rated prosocial behaviour and behavioural observation of prosocial behaviour to be positively associated with preschool children's understanding of both mind and emotion. EU was defined as the ability to understand emotional role-taking (that is, the unique emotional reactions of others) and display rules. They also found that children who were knowledgeable about emotional role-taking were more likely to receive help. The authors therefore concluded that emotion understanding not only fosters prosocial behaviour in oneself but also elicits prosocial actions in others (Cassidy et al, 2003). Language ability was also assessed and found to play a strong role in the associations between prosocial behaviour and EU. The association between children's EU and both peer ratings of likeability and eliciting prosocial behaviour in peers remained

when language was controlled for, however (Cassidy et al., 2003). Again a unique association was found between children's EU and prosocial behaviour.

The association between EU and prosocial behaviour also extends into middle childhood, with knowledge of emotional role-taking and display rules positively predicting prosocial behaviour in children in the third and fourth grade (aged between 8 and 10 years old; Garner, 1996). Children who are able to regulate their own emotions may also be more capable of empathic and prosocial behaviour (Eisenberg, Fabes, & Spinrad, 2006). The ability to cope with negative emotions allows children (and adults) to react to other's distress with sympathy, rather than becoming over-aroused and thereby focusing on their own distress (Eisenberg et al., 2006). The research suggests that children's understand of emotions is associated with prosocial behaviour both in themselves and in others through various stages of childhood.

As indicated in the previous paragraphs, prior research has found several components of EU to be associated with prosocial behaviour across childhood. Language ability is clearly also playing a role in the associations between these constructs, as indeed it does in a vast majority of developmental facets (Izard et al., 2001). Associations between prosocial behaviour and children's EU have been found to exist over and above language ability, however. Emotional role-taking, recognition of emotions and understanding of display rules in particular have been established to be important in the association between EU and prosocial behaviour. Beyond this, all located studies found some form of association between at least some component of EU and prosocial behaviour. Several components (such as mixed emotions and morality) have not yet been explored in relation to the development of prosocial behaviour, however. Nevertheless, the research suggests that multiple components of EU are associated with prosocial behaviour.

*Emotion understanding and peer relations.* It has been proposed by many theorists and researchers that EU lays a critical foundation for successful social interactions and relationships (Bandura, 1986; Izard, 1971). A large body of previous research supports this claim and has shown that children with high levels of EU are better accepted by their peers. This has been demonstrated in children of differing ages, from toddlers to late childhood (Denham, 1986; Denham et al., 2003; Garner, Dunsmore, & Southam-Gerow; 2008; Mostow, et al., 2002; Schultz et al., 2001).

An association has been found between pretend play, EU and peer relations in toddlers. Dunn & Hughes (2001) found frequent engaging in pretend play to be associated with an improved ability to understand the thoughts and feelings of others, better peer communication and less peer conflict in children with a mean age of 51.8 months (around 4.25 years). Moreover, children who engaged in violent, rather than non-violent, pretend play tended to have greater angry and fewer positive interactions with friends as well as show a higher frequency of antisocial acts such as bullying and teasing. In a follow-up at 6 years old, children with higher rates of violent play had higher rates of antisocial behaviour, more conflict with and refusal to help a friend, displays of anger and lower empathic emotional understanding than children with lower rates of violent play. While this study focused on play, it also shows that there is a link between peer relations (which, in young children, commonly revolve around play; Dunn & Hughes, 2001) and EU.

Further studies with toddlers and young children have found associations between EU and peer relations. Denham, McKinley, Couchoud, & Holt (1990) found that children (mean age 44.55 months-3.6 years-at time one) with greater emotion situation knowledge were rated as more likeable by their peers than were children with less mature emotion situation knowledge. Children who had appropriate

understanding of situations that elicited fear or anger were also considered more likeable. There was a negative relationship between likeability and children's confusion of happy and sad expressions or situations (Denham et al., 1990). These results were found both one and nine months after emotion situation knowledge was initially measured, indicating that the association between emotion situation knowledge and peer relations is stable over time.

Other longitudinal studies have also found that EU measured at one age predicts social success at a later age. Denham et al. (2003) found that emotional competence at ages 3 and 4 predicted both current and future (ages 5 and 6) social competence. Emotional competence was conceptualised as the child's displays of emotional expression, their reactions to other's emotions, their ability to identify emotions in ambiguous and unambiguous situations, their emotion situation knowledge, and possession of emotion regulation skills. Using standard emotion recognition and emotion situation tasks such as the affective perspective-taking tasks devised by Denham, (1986), Schultz et al., (2001) found that underdeveloped emotion situation knowledge at age 4 predicted social problems and withdrawal at age 6. There was also a moderate relationship between accurately labelling emotions and less social withdrawal. These studies show that preschool children's EU can predict the quality of their peer relationships once they enter school.

This association between EU and social relationships has been established in older children as well. Mostow et al. (2002) measured children (mean age 7.5 years) on their understanding of facial expressions, emotion behaviours and emotion situation knowledge as well as social skills and verbal ability. Emotion skills were measured using the Assessment of Children's Emotion Skills (ACES; Schultz, Izard, & Bear, 2002) which examines children's ability to make emotional attributions. The

researchers found that EU mediates the relationship between social skills and verbal ability. This suggests that EU has a unique contribution on the development of social skills above and beyond the contribution of verbal ability. As language and verbal ability has been robustly shown to have a strong influence on multiple facets of development (Izard et al. 2001) this is a significant finding.

Finally, associations between EU and peer relations have been shown to exist across all stages of childhood and adolescence. In a recent meta-analysis, Trentacosta and Fine (in press) examined the relationship between discrete emotion knowledge and social competence in children aged between 3 and 15 years old. Discrete emotion knowledge was defined as “the capacity to understand emotion in facial expressions, behavioural cue and social contexts” (Trentacosta & Fine, in press, p. 1). Across 63 studies they found a mean effect size of  $r = .22$ . This finding suggests that there is a significant, moderate relationship between EU and social ability.

In summary, there is solid evidence that EU is associated with a child’s ability to form and engage in successful peer relationships. Emotion situation knowledge appears to have a particularly strong link with peer relations. This makes intuitive sense, as the ability to interpret and respond appropriately in social situations would seemingly be crucial to developing sound relationships. The study by Denham et al. (2003) suggests that other components of EU may also be important, however. Moreover, no studies to date have examined whether peer relations are associated with only some specific components of EU (such as emotion situation knowledge) or whether positive relations with one’s peers requires developmentally-appropriate success across all aspects of EU. Nevertheless, the above research indicates that successful social interactions are associated with multiple facets of EU.

*Emotion understanding and psychopathology.* There is a paucity of research into emotional understanding amongst populations diagnosed with and at risk of various forms of psychopathology (Southam-Gerow & Kendall, 2002). Nevertheless, the limited existing research has linked underdeveloped EU with difficulties such as autism, internalising and externalising problems. These links have been found in children from early through to late childhood, adolescence and adulthood. For example, children with autism have been shown to have weaknesses in identification of emotional facial expressions and several other areas of EU, including understanding emotions in relation to false beliefs (Baron-Cohen, 1991; Celani, Battacchi, & Arcidiacono, 1999). Nevertheless, these same studies have also shown no difference between children with autism and control children in other areas of EU, such as emotion situation knowledge or understanding of desire-based emotions (Baron-Cohen, 1991; Celani et al., 1999). This finding raises the possibility that psychopathology may be linked with specific gaps in EU and not a weakness in all areas of EU. Autism may be somewhat different to other childhood difficulties, however, in that weaknesses in EU may occur, at least in part, as a result of the autism itself (Baron-Cohen, 1991; Celani et al., 1999). Previous research suggests that EU weaknesses may play a causal role in the development of behavioural and emotional difficulties, however (Fine et al., 2003; Southam-Gerow & Kendall, 2002).

Weaknesses in EU have been shown to predict later internalising difficulties. In a study of economically disadvantaged children, Fine et al. (2003) found that underdeveloped emotion expression labelling and emotion situation knowledge at age 7 predicted self-reported internalising problems at age 11. Emotion expression labelling was examined using drawings and pictures developed by Izard (1971), whereas emotion situation knowledge was assessed using task devised by Cermele,

Ackerman, and Izard (1995; cited in Fine et al. 2003) in which children labelled the emotions of a protagonist in 18 different stories. In a study involving children aged 7-14 with diagnoses of anxiety disorders in the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, fourth edition; American Psychiatric Association; 1994), Southam-Gerow and Kendall (2000) found that these children demonstrated less understanding of hiding (display rules) and changing emotions (regulation), as measured by the Kusche Affective Interview-Revised (KAI-R, Cook, Greenberg, & Kusche, 1994), than did non-anxious children. The groups did not differ on understanding of emotional cues or mixed emotions, however (Southam-Gerow & Kendall, 2000). These findings suggest that while children with internalising problems also show weaknesses in EU, these weaknesses are not uniform. The children may not have difficulties with all aspects of EU, only some.

Weaknesses in EU have also been found to be linked with childhood aggression. To examine these links, Denham et al. (2002) used a combination of the affective perspective-taking tasks developed previously by Denham and colleagues and tasks from the Kindergarten Assessment Test that assessed understanding of mixed emotions and display rules through the use of vignettes (Gross 1993; Gross & Harris, 1988; cited in Denham et al., 2002). Denham et al, (2002) found that underdeveloped EU at ages 3 and 4 were indicative of aggression at ages 5 and 6, particularly in girls. Moreover, girls who were high in aggression at age 3 had difficulties interpreting any ambiguous and some unambiguous emotional information. Underdeveloped EU also impacted on 3 year old boys' aggression both concurrent and future with understanding of basic emotions, mixed emotions and display rules all having an impact. This study indicates that childhood aggression is associated with several components of EU.

This association between weaknesses in some components of EU has been found in children with various forms of psychopathology. Using stories that could evoke mixed emotions in a character, Meerun Terwogt (1990) found that emotionally and behaviourally “disordered” children (this covering a wide range of difficulties) aged 6-7 and 10-11 years acknowledged mixed emotions as frequently as did non-disordered children. Nevertheless, the disordered children were more inclined to deny the existence of any emotions or to state that multiple negative emotions were present when only two were. When disordered children did acknowledge the presence of emotions, they generally rated them at a higher intensity than non-disordered children (Meerun Terwogt, 1990). This study again shows that “disordered” children appear to have greater difficulty in some areas of EU than others. The fact that the study does not differentiate between disorders in children and still finds an inconsistent pattern of EU scores is particularly interesting considering that psychological difficulties often occur co-morbidly, particularly in children (McMahon & Frick, 2007; Southam-Gerow & Chorpita, 2007). This may indicate that some components of EU are associated with a general psychological vulnerability in children.

In their meta-analysis, Trentacosta and Fine examined the relationship between internalising and externalising problems and discrete emotion knowledge (understanding of facial expressions, and behavioural and social signals). Using 19 studies with samples of children with internalising problems and 34 studies with samples of children diagnosed with externalising problems the authors found a mean effect size of  $-.17$  for both internalising and externalising problems. This shows that discrete emotion knowledge has a robust, small to moderate relationship with these two forms of psychopathology.



Collectively, these findings suggest that weaknesses in some components of EU may be associated with certain manifestations of psychopathology. There are several facets of EU (such as understanding of regulation, reminders and morality) that are still to be examined in relation to psychopathology. Understanding of regulation is a particularly intriguing gap in the research literature, as it is well established that many children with emotional and behavioural problems have trouble regulating their emotions (McMahon & Frick, 2007; Southam-Gerow & Chorpita, 2007). Nevertheless, collectively the above findings raise the possibility that children with various forms of psychopathology show distinct and consistent weaknesses in EU. Studies such as those by Meerun Terwogt (1990) and Southam-Gerow and Kendall (2000), wherein weaknesses in only some areas of EU were found, suggest that certain manifestations of psychopathology may be associated with distinct EU difficulties. The studies looking at the associations between aggression and EU however suggest that some manifestations of psychopathology may be associated with more general difficulties in EU. Until more components of EU are examined, however, this remains untested.

*Summary.* Previous research has shown EU to be associated with several key elements of social development; namely peer relations, prosocial behaviour and psychopathology. Development of prosocial behaviour and peer relations appear to be associated with multiple components of EU, whereas studies of psychopathology suggest that certain manifestations of psychopathology may be related to some components of EU but not others. The majority of EU studies have only included one or two components of EU, however. Consequentially, it remains unclear whether children with higher levels of socio-emotional functioning perform well on all tasks developed to assess EU – and conversely, whether children with difficulties in their

socio-emotional functioning (such as poor peer relationships) have difficulties in all tasks or only some. The current study aims to help in elucidating this issue.

### *The Current Study*

As can be seen from the findings reviewed above, there are several outstanding questions in the research investigating the association of EU with children's socio-emotional development. The current study sought to examine some of those questions. This first was whether children with good socio-emotional functioning consistently performed well across a range of tasks assessing EU, or whether they manifested strengths in some components relative to others. The second, conversely, was whether children with difficulties in socio-emotional functioning performed poorly across all tasks assessing EU, or worse on some relative to others. A parallel issue concerned children with internalising and/or externalising problems; whether children with these problems would perform consistently or not in EU tasks and also whether different patterns of EU achievement would emerge for children with differing psychological difficulties. Finally, as can be seen from the research reviewed above, it was also unclear whether there is convergence on differing measures of EU. The current study did not examine every component of EU that has been identified. As there is no broad consensus about what constitutes a component of EU, it would not be possible to unequivocally include all components. Therefore, the study focused on the nine components of EU identified by Pons et al (2004), as covering nine components was still an extension of the standard one or two.

Two tests were used to examine EU. The Test of Emotion Comprehension (TEC; see Appendix A) was selected as it directly measures the nine components of EU outlined above by Pons et al (2004). Measuring multiple components of EU allowed the question of whether overall EU ability or specific components of EU were

more strongly related to social, psychological and prosocial development to be addressed. The Kusche Affective Interview-Revised (KAI-R; see Appendix B) was also included. The KAI-R examines EU by asking open ended, as opposed to forced choice, questions thus more thoroughly probing a child's knowledge of emotions. It allowed for a comprehensive examination of several facets of children's EU (Cook, et al., 1994; Denham et al. 2009). Developmental facets (conduct problems, inattention-hyperactivity, emotional problems, peer problems, and prosocial behaviour) were measured using the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; see Appendix C). This is a short, reliable and widely used measure of behaviour (Dunn & Hughes, 2001; Goodman & Scott, 1999).

The current study examined the associations between EU and socio-emotional development in typically developing children between the ages of 6 and 9 years. If EU is strongly linked to multiple areas of development these links should not only be seen in children at the extreme of the spectrum; those who have already developed psychopathology or are in the 99<sup>th</sup> percentile at their school. These variations should also be identifiable, to a lesser degree, in typically developing children. Children aged between 6 and 9 years old were selected as, developmentally, they should be at various stages of EU but have not mastered all of the targeted components. According to the research by Pons, et al. (2004), the majority of the children should be in the second phase of EU development, choosing children in this age group meant that it was possible to determine if any children were showing delays in EU (for example, a 7 year old that had not mastered the first phase) or, conversely, if any children were performing above their expected level (such as a 7 year old that had mastered all of the phases).

### *Hypotheses*

*Emotion understanding as a construct.* Despite the confusion in terminology with overarching constructs, researchers appear to be in consensus regarding definitions of specific components of EU such as Display Rules and Mixed Emotions (for example; Denham et al, 2009; Pons et al, 2004; Trentacosta & Fine, in press ). It is therefore hypothesised that the two measures of EU (the TEC and the KAI-R) will be found to correlate. In particular, matched subtests (Regulation, Display Rules and Mixed Emotions) should be positively correlated.

*Emotion understanding and social, prosocial and psychological development.* It is hypothesised that a positive association will be found between EU and positive social, prosocial and psychological functioning. Children with higher EU scores will have higher prosocial scores and lower scores on ratings of peer, emotional and behavioural difficulties as assessed by the SDQ. Conversely, children who score lower on the EU measure will also have lower scores on prosocial behaviour and higher scores of peer, emotional and behaviour difficulties.

Secondly, it is hypothesised that children who score higher on the Prosocial Behaviour subscale of the SDQ will also score higher on all subtests of EU administered to them.

It is thirdly hypothesised that children's scores on the Peer Problems subscale of the SDQ will be negatively associated with their scores on all administered subtests of EU.

The fourth hypothesis is that emotional and behavioural difficulties as measured by the SDQ will be found to have stronger associations with some components of EU than others. As aggression has been shown to be associated with multiple aspects components of EU it is predicted that the Conduct Problems subscale of the SDQ will

be associated with Total EU scores. The Total Difficulties, Emotional Problems and Inattention-Hyperactivity subscales of the SDQ, however, will be associated with only some components of EU.

## **Method**

### *Participants*

Consent forms were sent to the parents of 220 children aged between 6 and 9 years old. The children attended three primary schools in the Wellington region. New Zealand schools are given a 'decile' ranking based on the socio-economic status of the neighbourhood they are in; 1 is the lowest ranking and 10 the highest ("Deciles Information", 2008). Of the schools participating in the current study, the first was ranked decile 4, the second decile 7 and the third, decile 10. 47 parents (21%) gave consent for their children to participate. Nine participants could not be included in the final analysis however, as eight parents did not complete the Strengths and Difficulties questionnaire. One child was excluded as language difficulties meant she could not complete the KAI-R. 38 participants were therefore included in the final analysis. 20 participants (53%) were female and 18 (47%) were male. Data were gathered over a three month period. Participation was voluntary and children were given a small token of appreciation for participating.

### *Materials*

As noted above, two tests of EU were included in the current study. Occasionally different terminology is used between the two tests when describing the same construct (for example; both include the component of mixed emotions but while it is called "Mixed Emotions" on the TEC, it is called "Two Feelings at the Same Time" on the KAI-R). For ease of recognition and comparison, some of the subscales have been renamed in the current study so that they are consistent both with

each other, and with what was deemed the most common usage in the literature. The aim of this is to reduce confusion when analysing the results and discussing them in relation to other research.

*The Test of Emotion Comprehension.* The TEC consists of a picture book that contains pictures of faces displaying emotions and cartoon scenarios of emotion situations. Children are told stories pertaining to the pictures and asked how the characters feel. Between one and five questions target each of the nine components of EU identified by Pons et al. (2004). The components are always presented in the same sequence, in order of difficulty as proposed by Pons et al (2004). Some of the components are linked within the same vignette. Children's interest is maintained by keeping the test brief and having the child engage with it by lifting flaps to reveal hidden information. When a vignette is being read the faces of the characters are left blank. After the vignette is read the child is asked to lift a flap to reveal the facial expressions. The child is then asked how the character feels. To answer a question, children must point to one of four pictures of a character showing an emotion (or two emotions in the case of the mixed emotion component). The TEC has two versions, one for boy and one for girls. The stories are identical however the protagonist's names and pictures are altered. The boys' version involves male characters whereas the girls' version has females.

The TEC has been shown to be scalable (Index of consistency  $I = 0.676$ ) and this scale has also been shown to be valid (Coefficient of Reproducibility  $R = 0.904$ ) indicating that success on a later component is associated with success on an earlier one (Pons et al., 2004). As noted above, the components have been found to divide into 3 developmental phases; phase 1 encompassing Recognition, External Causes and Reminders; phase 2 encompassing Desires, Beliefs and Hiding; and phase 3

encompassing Regulation, Mixed Emotions and Morality (Pons et al., 2004). Previous studies have also shown the TEC to have a high test-retest reliability over a period of 3 months (Pons, Harris, & Doudin, 2002). Two subscales of the TEC were renamed for the current study, External Causes (component II) will be referred to as Situation Knowledge and Hiding (component VII) will be referred to as Display Rules.

*Kusche Affective Interview-Revised.* The Kusche Affective Interview-Revised (KAI-R) was developed by Kusche, Beilke, and Greenberg (1988; cited in Cook, et al., 1994). The KAI-R assesses children's EU using open ended questioning, for example, "Tell me about a time that you felt sad and mad at the same time" and "Can you hide your feelings from other people? Why/Why not?" Responses are recorded verbatim and coded after the interviews. The KAI-R was initially developed to investigate the emotional development of elementary school children (ages 6-9 years; Cook et al., 1994) but later studies have included older children as well (for example, Southam-Gerow & Kendall, 2000). The KAI-R was designed to assess children's EU across a wide range of emotions and scenarios. It is intended to assess EU that children have gained from their own experiences as well as metacognitive understanding (Cook et al., 1994). The KAI-R has been used in a number of studies and has been determined to be a reliable and comprehensive assessment (Denham, Wyatt, Bassett, Echeverria, & Knox, 2009; Suveg, Kendall, Comer, & Robin, 2006). The accompanying coding system has been shown to have high levels of inter-rater reliability (Cook et al., 1994).

For the current study four of the seven subsections of the KAI-R were included. These were selected as they paralleled components covered in the TEC. The first included section (Section A – Four Pictures) of the KAI-R asks children to look at four pictures, one at a time, and name all of the emotions that the person in the picture

may be feeling. In the current study this component was named Labelling. The next included section (Section D – Two Feelings at the Same Time) asks children whether it is possible to feel different combinations of feelings simultaneously, for example, “Can someone feel sad and happy at the very same time?” It then asks the child to describe a time when they felt this combination of emotions. This section is named Mixed Emotions in the current study. The third section (Section E – Hiding Feelings) asks the child whether they can hide their feelings and why/why not? It also asks whether other people can hide their feelings from the child and if the child believes there are times when feelings should be hidden. In the current study this section is called Display Rules. Finally, Section F- Changing Feelings, asks the child whether feelings can change and whether the child knows of any strategies they can use to change their feelings. It also shows the child two sets of photos where a person’s feelings have changed and asks the child what might have happened. This section is referred to as Regulation in the current study.

Two coders, including the author, coded the children’s responses according to a coding manual created by Beilke, Kusche, and Greenberg (1989; acquired via personal communication, Mark Greenberg, May 27, 2009). Responses were coded on a 0-3 scale within a cognitive developmental framework as developed by Carol and Steward, (1984; cited in Cook et al., 1994) and Donald & Westerman, (1986; cited in Cook et al., 1994). A score of 0 was given for no response or “I don't know”, 1 indicated a concrete or idiosyncratic level of EU, scores of 2 indicated that the child was giving multiple acceptable answers without a more in-depth understanding of internal states. 3 was scored for answers that were multifaceted and driven by an understanding of the role of internal states and workings in EU. Inter-rater reliability



was coded for one third of responses. Agreement was excellent, with a Cohen's Kappa of .85.

*Strengths and Difficulties Questionnaire.* One parent of each participating child filled out the Strengths and Difficulties Questionnaire parent form (SDQ; Goodman, 1997). The SDQ is a 25 item behavioural measure that assesses conduct problems, inattention-hyperactivity, emotional problems, peer problems, and prosocial behaviour in children aged 4-16 years (Goodman, 1997). Statements are written, for example 'Helpful if someone is hurt, upset or feeling ill' and 'Rather solitary, prefers to play alone'. Parents must rate the accuracy of this statement in regards to their child as being 'Not True' 'Somewhat True' or 'Certainly True'. The scores for Conduct Problems, Inattention-Hyperactivity, Emotional Problems and Peer Problems are summed together to create a Total Difficulties score. Strengths are characterised by the score on the Prosocial Behaviour subscale.

The SDQ shows satisfactory reliability with adequate internal consistency (mean Cronbach's  $\alpha$ .73) and test-retest reliability (mean 0.72 for the parent report form; Goodman, 1997). The SDQ also has a strong correlation with the well-established Child Behaviour Checklist (Achenbach, 1991) with a mean correlation of .87 (Goodman & Scott, 1999). The SDQ has been used extensively with community samples in the United Kingdom and is frequently rated as preferable to other measures by community samples (Dunn & Hughes, 2001; Goodman & Scott, 1999). It is currently available in 63 different languages as well as country-specific versions of the English, Portuguese and Spanish questionnaires. The version used in the current study has been normed on children in Australia. The Australian version was found to have moderate to strong internal and test-retest reliability as well as good internal and

external validity (Hawes & Dadds, 2004). The version of the SDQ used in this study was a pen and paper questionnaire however an online version is also available.

In the current study, as well as looking the Total Difficulties score, each subscale was examined individually to address the question of whether different aspects of development are related to different components of EU.

### *Procedure*

The SDQ was mailed to the parents of each participating child. When all questionnaires were completed and returned, two researchers went into the schools to give the children the TEC and KAI-R. Two children were assessed at the same time, each at opposite ends of the same room, with one researcher administering the TEC while the other administered the KAI-R. The children then swapped between researchers. Delivery of the TEC and the KAI-R was counterbalanced between children. Administration of the EU measures took approximately half an hour per child.

## Results

### *Descriptive Statistics*

The descriptive statistics for all variables are presented in Table 2. As nearly two thirds of the participants were eight years old or above, age was not normally distributed. Therefore all analyses were run with and without log transformations of age (Field, 2009). The same pattern of results was obtained for both sets of analysis. Only the untransformed data are reported below.

*TEC (Pons et al., 2004).* Children demonstrated high abilities on the TEC (for Total Score,  $M = 7.24$  out of a possible 9,  $SD = 1.2$ ). The small SD suggests that there was limited variability between scores. Both Recognition and Emotion Situation had

Table 2.

*Descriptive Data For All Measures*

| Measure                   | Mean  | SD   |
|---------------------------|-------|------|
| Age                       | 8.32  | 0.81 |
| TEC                       |       |      |
| Recognition               | 1.00  | 0.00 |
| Emotion Situation         | 1.00  | 0.00 |
| Desires                   | 0.92  | 0.27 |
| Beliefs                   | 0.66  | 0.48 |
| Reminders                 | 0.84  | 0.37 |
| Regulation                | 0.92  | 0.27 |
| Display Rules             | 0.76  | 0.43 |
| Mixed                     | 0.76  | 0.43 |
| Morality                  | 0.37  | 0.48 |
| Total Score               | 7.24  | 1.20 |
| KAI-R                     |       |      |
| Labelling                 | 4.13  | 1.64 |
| Regulation                | 9.70  | 1.80 |
| Display Rules             | 13.21 | 2.59 |
| Mixed                     | 16.16 | 3.21 |
| Total Score               | 43.21 | 6.23 |
| SDQ                       |       |      |
| Total Difficulties        | 6.97  | 4.88 |
| Conduct Problems          | 1.39  | 1.33 |
| Emotional Problems        | 1.45  | 1.33 |
| Inattention-Hyperactivity | 3.13  | 2.46 |
| Peer Problems             | 1.00  | 1.64 |
| Prosocial Behaviour       | 8.37  | 1.89 |

means of 1 out of 1, suggesting that all children had mastered these components. The lowest mean was on the final component, Morality.

*KAI-R* (Cook *et al.*, 1994). All KAI-R scores were found to be normally distributed. The large SD for the KAI-R total score suggests that there was relatively large degree of variability amongst the scores.

*SDQ (Goodman, 1997).* The mean Total Difficulties score shows that on average parents reported their children as having low- to moderate difficulty. Children were given higher scores on Inattention-Hyperactivity than any other developmental difficulty. The majority of children were reported as behaving prosocially. Upon examination of skewness and kurtosis, the Prosocial subscale was found to be significantly positively skewed (skewness = -1.30). Therefore a log transformation of this variable was conducted, however no significant differences between the transformed and untransformed scale were found. Only the untransformed scores are included below.

*Gender.* Gender was not found to be significantly associated with any other variable in the current study. It therefore not included in any analyses.

#### *Correlations between Emotion Understanding and Children's Strengths and Difficulties*

To assess the hypotheses that components of EU will be associated with social, prosocial and psychological development, Pearson's correlational analyses were conducted (see Table 3). The TEC subscales of Recognition and Emotion Situation were excluded as all children passed these components. Table 3 presents the correlation results.

*Age.* Significant, positive correlations were found between age and the TEC subtests Reminders and Mixed Emotions. Age also significantly, positively correlated with the Peer Problems subscale on the SDQ.

*Tests of Emotion Understanding.* The correlation found between the Total TEC and KAI-R scores was small and not statistically significant. Significant but negative correlations were found between the KAI-R Mixed Emotions and TEC Desires subscale. Significant- negative -correlations were also found between Total KAI-R

Table 3.

Correlation Matrix of Emotion Understanding and Strengths and Difficulties Measures

| Variable                           | 1     | 2     | 3      | 4    | 5     | 6     | 7    | 8     | 9     | 10    | 11   | 12   | 13    | 14   | 15   | 16    | 17    | 18    | 19    | 20 |
|------------------------------------|-------|-------|--------|------|-------|-------|------|-------|-------|-------|------|------|-------|------|------|-------|-------|-------|-------|----|
| 1. Age                             | -     |       |        |      |       |       |      |       |       |       |      |      |       |      |      |       |       |       |       |    |
| 2. Total Difficulties – SDQ        | .13   | -     |        |      |       |       |      |       |       |       |      |      |       |      |      |       |       |       |       |    |
| 3. Conduct Problems – SDQ          | -.12  | .67** | -      |      |       |       |      |       |       |       |      |      |       |      |      |       |       |       |       |    |
| 4. Emotional Problems – SDQ        | .20   | .54** | .16    | -    |       |       |      |       |       |       |      |      |       |      |      |       |       |       |       |    |
| 5. Inattention-Hyperactivity – SDQ | -.02  | .84** | .51**  | .20  | -     |       |      |       |       |       |      |      |       |      |      |       |       |       |       |    |
| 6. Peer Problems – SDQ             | .37*  | .73** | .30    | .36* | .42** | -     |      |       |       |       |      |      |       |      |      |       |       |       |       |    |
| 7. Prosocial Behaviour – SDQ       | .06   | -.22  | -.33*  | .01  | -.12  | -.21  | -    |       |       |       |      |      |       |      |      |       |       |       |       |    |
| 8. Desires - TEC                   | -.17  | .14   | .09    | .32* | -.06  | .18   | -.10 | -     |       |       |      |      |       |      |      |       |       |       |       |    |
| 9. Beliefs – TEC                   | .24   | -.15  | -.25   | -.09 | -.16  | .07   | .02  | .20   | -     |       |      |      |       |      |      |       |       |       |       |    |
| 10. Reminders – TEC                | .47** | -.09  | -.31   | -.07 | .02   | .00   | .09  | -.13  | .14   | -     |      |      |       |      |      |       |       |       |       |    |
| 11. Regulations – TEC              | -.11  | -.10  | -.06   | -.05 | -.02  | -.18  | -.20 | -.09  | -.01  | .14   | -    |      |       |      |      |       |       |       |       |    |
| 12. Display Rules – TEC            | -.21  | .01   | -.02   | -.09 | -.11  | -.04  | -.06 | .07   | .12   | -.07  | -.16 | -    |       |      |      |       |       |       |       |    |
| 13. Mixed – TEC                    | .32** | -.22  | -.40*  | .05  | -.15  | -.15  | -.09 | -.16  | .12   | .61** | .30  | -.02 | -     |      |      |       |       |       |       |    |
| 14. Morality - TEC                 | -.11  | -.06  | -.19   | -.05 | .05   | -.07  | -.27 | .02   | .21   | -.19  | .02  | -.22 | -.09  | -    |      |       |       |       |       |    |
| 15. Total – TEC                    | .17   | -.18  | -.42** | -.03 | -.08  | -.07  | -.20 | .22   | .66** | .52** | .31  | .27  | .58** | .36* | -    |       |       |       |       |    |
| 16. Labelling – KAI-R              | .21   | -.15  | .10    | -.23 | -.20  | -.05  | -.28 | -.22  | -.11  | .12   | .20  | -.30 | .20   | .17  | .03  | -     |       |       |       |    |
| 17. Regulation – KAI-R             | -.07  | -.18  | -.01   | .00  | -.17  | -.27  | -.07 | -.16  | -.09  | -.07  | .23  | .05  | .26   | .03  | .08  | .31   | -     |       |       |    |
| 18. Display Rules – KAI-R          | .15   | -.40* | -.14   | -.21 | -.39* | -.33* | .20  | .13   | -.07  | .04   | -.01 | -.08 | .12   | .07  | -.01 | .16   | .29   | -     |       |    |
| 19. Mixed – KAI-R                  | .17   | -.05  | -.02   | -.02 | .01   | -.12  | .08  | -.32* | .02   | -.05  | .17  | -.19 | .17   | .19  | .03  | .33*  | .21   | .24   | -     |    |
| 20. Total – KAI-R                  | .19   | -.28  | -.04   | -.16 | -.26  | -.30  | .03  | -.32* | -.06  | .00   | .20  | -.19 | .26   | .18  | .04  | .60** | .60** | .70** | .80** | -  |

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

score and the TEC Desires subscale. There were strong and significant correlations between subtests within each measure of EU.

*SDQ.* Total Difficulties on the SDQ was significantly, negatively correlated with Display Rules on the KAI-R. Conduct Problems was significantly, negatively correlated with both Mixed Emotions and Total Score on the TEC. Emotional Problems was significantly, positively correlated with Desires on the TEC. Inattention-Hyperactivity was significantly, negatively correlated with Display Rules on the KAI-R. Peer Problems was also significantly, negatively correlated with Display Rules. The Prosocial Behaviour subscale did not correlate with any components of the TEC or KAI-R.

*Relationships between Total Emotion Understanding Scores and Children's Strengths and Difficulties*

An enter method was used for all regressions (Field, 2009). To test the hypotheses, three multiple linear regressions were conducted to examine whether total scores on either the TEC or the KAI-R predicted scores on the Total Difficulties, Prosocial Behaviour or Peer Problems subscales of the SDQ. Age was entered in the first step for all regressions, as stage of development has consistently been shown to play an important role in EU (Harris, 1993). Both the TEC and the KAI-R were entered in the second step as no *a priori* hypotheses had been made regarding order of entry. Table 4 presents the results of the regressions.

*Total difficulties.* None of the entered variables significantly predicted children's scores on the Total Difficulties scale of the SDQ, although the KAI-R showed a non-significant trend ( $p=.07$ ).

*Prosocial Behaviour.* None of the entered variables significantly predicted children's scores on the Prosocial Behaviour scale of the SDQ. As children's scores

Table 4.

Summary of Multiple Linear Regression Analyses for Emotion Understanding Variables Predicting Children's Overall Difficulties, Prosocial Behaviour, and Peer Problems on the SDQ

| Variable            | B     | SE B | $\beta$ | $R^2$ | Change $R^2$ |
|---------------------|-------|------|---------|-------|--------------|
| Total Difficulties  |       |      |         |       |              |
| Step 1              |       |      |         |       |              |
| Age                 | 1.06  | 1.71 | .102    | .010  | .010         |
| Step 2              |       |      |         |       |              |
| Age                 | 2     | 1.70 | .193    | .144  | .134         |
| KAI-R Total         | -.24  | .125 | -.300   |       |              |
| TEC Total           | -.89  | .666 | -.217   |       |              |
| Prosocial Behaviour |       |      |         |       |              |
| Step 1              |       |      |         |       |              |
| Age                 | .051  | .670 | .013    | .000  | .000         |
| Step 2              |       |      |         |       |              |
| Age                 | .233  | .700 | .058    | .042  | .042         |
| KAI-R Total         | .008  | .052 | .026    |       |              |
| TEC Total           | -.332 | .274 | -.209   |       |              |
| Peer Problems       |       |      |         |       |              |
| Step 1              |       |      |         |       |              |
| Age                 | .733  | .312 | .365    | .133  | .133*        |
| Step 2              |       |      |         |       |              |
| Age                 | .920  | .301 | .458**  | .284  | .151*        |
| KAI-R Total         | -.098 | .039 | -.371*  |       |              |
| TEC Total           | -.185 | .203 | -.135   |       |              |

\*  $p < .05$ ; \*\*  $p < .01$

on the Prosocial Behaviour scale neither correlated with any of the EU variables nor was predicted by them in the regression, it was decided to do no further analyses with this variable.

*Peer Problems.* Age significantly positively predicted scores on the Peer Problems subscale. Over and above age, children's total scores on the KAI-R total significantly negatively predicted Peer Problems scores. These two factors accounted for 28% of variance on the ratings of Peer Problems.

*Relationships between Component Emotion Understanding Scores and Children's Strengths and Difficulties*

Where more than one component of EU was found to associate with a subscale of the SDQ, further multiple regressions were performed. This was to establish the relative predictive validity of each subtest of EU. Table 5 shows the multiple regressions.

*Conduct Problems.* At Step 1, TEC Total Score accounted for 18% of variance on scores Conduct Problems scores on the SDQ. When Mixed Emotions (TEC) was added at Step 2, the model was no longer significant. A simple regression however showed mixed emotions to account for 13% of conduct problems scores when not analysed together with the TEC total score  $R^2 = .16$  ( $F(1,36) = 6.84, p < .05$ ).

*Peer Problems.* At Step 1, Age accounted for 13% of the variance in scores on the Peer Problems subscale of the SDQ. Display Rules (KAI-R) was added at Step two with the model now accounting for 29% of variance on scores of Peer Problems.



Table 5.

Summary of Multiple Linear Regression Analyses for Emotion Understanding Variables Predicting Children's Scores on Subscales of the SDQ

| Variable         | B    | SE B | $\beta$ | $R^2$ | Change $R^2$ |
|------------------|------|------|---------|-------|--------------|
| Conduct Problems |      |      |         |       |              |
| Step 1           |      |      |         |       |              |
| TEC - Total      | -.46 | .168 | -.419** | .18   | .175**       |
| Step 2           |      |      |         |       |              |
| TEC Total        | -.31 | .205 | -.281   | .21   | .036         |
| Mixed            | -.72 | .569 | -.235   |       |              |
| Peer Problems    |      |      |         |       |              |
| Step 1           |      |      |         |       |              |
| Age              | .73  | .312 | .365*   | .133  | .133*        |
| Step 2           |      |      |         |       |              |
| Age              | .85  | .290 | .424**  | .285  | .152**       |
| Display Rules    | -.25 | .092 | -.394** |       |              |

\*  $p < .05$

\*\*  $p = / < .01$

## Discussion

It is well established that children who can accurately understand both their own and other's emotions tend to have higher quality peer relationships, be more altruistic and be at lower risk for developing psychopathology (Denham et al., 2003; Garner, 1996; Schultz et al., 2001; Trentacosta & Fine, in press). What remains to be clarified, however, is the precise nature of these associations. Is good socio-emotional functioning associated with consistent achievement in all developmentally-appropriate measures of emotion understanding, or are certain components of emotion understanding more strongly associated with different aspects of socio-emotional development?

The current study examined the associations between EU and socio-emotional development in typically developing children. 38 children between the ages of 6 and 9 years were given two tests of EU, the Test of Emotion Comprehension (Pons, et al., 2004) and the Kusche Affective Interview-Revised (Cook, et al., 1994). Their parents completed the Strengths and Difficulties Questionnaire (Goodman, 1997). This questionnaire measures children's strengths and difficulties in five areas of development; conduct problems, emotional problems, inattention-hyperactivity, peer problems and prosocial behaviour. The results were analysed to examine whether children's scores in these five aspects of socio-emotional development were more strongly associated with overall scores on EU tests or with specific components within these measures.

### *The Relationship between the Test of Emotion Comprehension and the Kusche Affective Interview – Revised*

The terminology used in the field of research into children's understanding of emotions can at times be inconsistent and unclear. While constructs such as emotion understanding or knowledge are often not clearly defined, however, there appears to be a general consensus on the definitions of components of EU, such as display rules and mixed emotions (for example; Denham et al., 2009; Pons et al., 2004; Trentacosta & Fine, in press). While they used different terminology, the two EU measures in the current study included several of the same components of EU. The components of the KAI-R that were selected were chosen because they mirrored those in the TEC. Therefore it was hypothesised that the two measures would be positively correlated. Instead it was found that the two measures had very little correlation with each other. The only statistically significant relationships

found were small correlations between the Desires component of the TEC and both Mixed Emotions and Total Score on the KAI-R. Importantly, these correlations were negative, suggesting that an increase in knowledge of desires as scored by the TEC is associated with lower scores on both knowledge of mixed emotions and overall EU, as scored by the KAI-R. The Desires subscale is discussed further below.

One possible reason for the lack of statistical association between these measures may be the tasks demands of each. The TEC uses a forced choice format and asks the child to point to the correct response whereas the KAI-R questions are open ended and ask the child to back up their answer with a behavioural response (for example, “Tell me about a time you felt sad and mad at the same time”). Having differing task demands and conceptual approaches to the measurement of a construct can result in two measures producing different results (Wellman & Liu; 2004). Including two measures that used different approaches to examine EU was originally considered a strength of the current study by the researcher, as it was hoped that using the two tests would allow for a more comprehensive examination of children’s EU. Use of these two tests may in fact be a weakness, however. While it may be the case that combining a forced-choice with an open-ended task means that children’s EU is comprehensively examined, the lack of correlation between these measures meant that the results of each had to be analysed individually. Moreover, there was very little similarity between the two EU measures as to how they correlated with the SDQ. For example, the Mixed Emotions components of each measure did not have the same correlations with the SDQ. Interpretations and generalisations of the current findings are therefore tentative at best.

The lack of correlation between these two EU measures does, however, highlight a problem within the field of EU research. That is, that along with vague terminology, the field has produced tests that do not behave the same way when, assumedly, assessing the same constructs. This makes it difficult for researchers to select appropriate measures when designing studies. If, for example, only one measure had been used in the current study, some associations between socio-emotional development and EU would not have emerged. Both the TEC and the KAI-R have been established as valid and reliable measures of EU (Pons et al., 2004; Suveg et al., 2006). No studies could be found that directly assessed the relationship of either measure with any other measure of EU,

however. Furthermore, many articles describing how EU measures have been devised remain as unpublished manuscripts (for example the KAI-R and the ACES; Cook et al., 1994; Schultz et al., 2002). If EU tests are being created in isolation from each other, then the best we can know about them is that each test accurately measures its creators' concept of EU. This does not allow for a solidified and integrated field and provides researchers with limited confidence that they are actually testing the construct they believe they are.

Future research in this area could be helpful in clarifying the precise nature of the construct of EU and its measures. For example, a comprehensive meta-analysis that included a wide range of measures and methodologies may aid in identifying commonalities and disparities within the literature.

*Children's Scores on the Test of Emotion Comprehension and the Kusche Affective Interview – Revised*

The average Total Score for children on the TEC was 7.24 out of 9. There was a small standard deviation indicating that many of the children's scores were not very different from this. As each developmental phase, as outlined by Pons et al., (2004), is comprised of three components of EU, this would suggest that many of the children in the current study were in the third phase of EU development. This was unexpected as the children were aged between 6 and 9 years old and Pons et al. found that mastery of the third phase usually occurred around the ages of 9-11 years. The high scores and limited variability may account for the lack of associations between TEC and SDQ scores in the current study. The TEC has not been normed on children in New Zealand and the current findings may be highlighting some differences between these children and the British children included in other studies of the TEC (such as Pons et al., 2002; 2004). With the current results it cannot be determined what the source of this difference is. It may be, for example, that New Zealand children develop EU earlier than British children. Alternatively, the New Zealand children may have been more familiar with the test format, or may have been involved in research more frequently, which would make them more comfortable with the testing situation. Finally, while many consent forms were sent out, only a very small number of parents returned them. These may have been parents who were interested in emotions and talked more about them with their

children. The current sample of children could potentially have more developed EU than their same-age peers, thus misrepresenting the population as a whole. Children's Total Scores on the KAI-R had a much larger variation, however. This suggests that, in the current study, the KAI-R was more sensitive to the differences between the children.

#### *The Associations Between Emotion Understanding and Socio-Emotional Development*

Previous research has established that there is a strong and robust association between children's understanding of emotions and their social, prosocial and psychological development (Izard et al., 2001; Southam-Gerow & Kendall, 2002). It was therefore hypothesised that an association would be found between EU scores on both the TEC and KAI-R and social, prosocial and psychological development as scored by the SDQ. Based on previous research indicating that these areas of development are associated with multiple components of EU, it was expected that correlations would have been seen between both the Prosocial Behaviour and Peer Problems scores on the SDQ and Total Scores on both EU measures. These hypotheses were not supported, however. It was also hypothesised that correlations would be found between Total Difficulties, Emotional Problems, Inattention-Hyperactivity and Conduct Problems and specific components of EU. This was supported for all but the Total Difficulties scores. A non-significant trend was found that suggested that Total Scores on the KAI-R may predict Total Difficulties on the SDQ.

#### *Emotion Understanding and Prosocial Behaviour.*

Previous research has found an association between prosocial behaviour and several components of EU (Cassidy et al, 2003; Garner 1996). As multiple EU factors had been previously found to be associated with prosocial behaviour, it was hypothesised in the current study that prosocial behaviour would be associated with an overall strength in the measures of EU. This hypothesis was not supported. In fact no significant associations were found between prosocial behaviour as measured by the SDQ and any of the components of EU.

One potential reason for the lack of association between prosocial behaviour and EU in the current study may be that all of the children had mastered the Recognition component of the TEC. Recognition of emotions is one of the most researched components of EU with regards to prosocial behaviour and the two variables have consistently been found to be associated (Ensor & Hughes,

2005). Studies that have found associations between recognition of emotions and prosocial behaviour have tended to focus on children in toddlerhood and early childhood, however (for example; Cassidy et al, 2003; Ensor & Hughes, 2005). It was not unexpected that all of the children in the current study would have mastered the Recognition component of the TEC as by the age of 6 most children will be in the second phase of emotional development (Pons et al., 2005). What was more surprising was that the current study did not find an association between understanding of display rules and Prosocial Behaviour scores, as studies of prosocial behaviour in middle childhood have found associations between these variables (Garner, 1996).

A potential reason for the lack of association between display rules and prosocial behaviour in the current study may be that prosocial display rules were not specifically targeted. A distinction has been made in previous research between types of display rules based on the motivation behind these displays. Prosocial display rules are distinguished from other types of display rule such as self-protective and norm maintaining (Banerjee & Yuill, 1999; Garner, 1996; Jones, Abbey, & Cumberland, 1998). When people utilise prosocial display rules they generally do so to spare the feelings of others, as opposed to doing so to avoid bringing trouble to themselves (self-protective) or simply because it is what is expected of them (norm maintaining; Jones et al, 1998). Understandably, therefore, prosocial display rules have been found to be associated with prosocial behaviour (Garner, 1996; Jones et al., 1998). Self-protective display rules, on the other hand, have been found to be associated less with prosocial behaviour and more with situations requiring the need for self preservation - such as a hostile family environment (Jones et al., 1998). Therefore, it is plausible that different types of display rules may in fact be uniquely associated with different aspects of socio-emotional development. The display rule asked about in the TEC revolves around a child with no marbles to play with putting on a happy face while being teased by another child that does have marbles. This unlikely to be considered a prosocial display rule. The KAI-R also does not specifically target prosocial display rules. This may explain the lack of association between these variables in the current study. Future research that explicitly examines how prosocial behaviour relates to different types of display rules would help in addressing this issue.

One aspect of the current study to consider is that the Prosocial Behaviour scores in the analysis were positively skewed. Despite the fact that transforming the data appeared to have no impact on the analyses, this could be a factor contributing to the lack of significant results. Furthermore, there was little variance; the majority of the children had high Prosocial Behaviour scores. This makes it difficult to detect any differences amongst the children. The SDQ has been shown to be effective in distinguishing between high and low risk samples (Goodman & Scott, 1999). When studying prosocial behaviour in a typically developing sample, however, a prosocial measure designed to detect greater variance in this population may provide more elucidation.

#### *Emotion Understanding and Peer Relations*

Previous research had shown several components of EU such as, emotion recognition, emotion situation knowledge, and regulation skills to be associated with peer relations (Denham et al., 2003; Mostow et al., 2002). It was therefore hypothesised that the Peer Problems subscale of the SDQ would be negatively associated with Total Scores on the TEC and KAI-R. This was not supported. Age and Display Rules, as measured by the KAI-R, were associated with Peer Problems on the SDQ, however.

*Age.* Age showed a positive association with the Peer Problems scale, suggesting that peer problems increase as children get older. The move from early to middle childhood is a time when developmental tasks change (Masten & Coatsworth, 1998). In early childhood (from 2-6 years old) children are developing skills in such areas as language, attachment and self-control (Masten & Coatsworth, 1998). When children reach middle childhood (around the ages of 6-12) they become more focused on developing socially and academically (Masten & Coatsworth, 1998). The children in the current study were either transitioning into or in the earlier stages of middle childhood. Potentially at this time they are seeking to create strong and satisfying social relationships but may not yet possess all the skills required to do so. This may be a reason for the positive association between peer problems and age in the current study.

*Display Rules.* Display Rules as measured by the KAI-R was negatively associated with Peer Problems on the SDQ in the current study. This indicates that as knowledge of display rules increases, peer problems decrease. This association was found to exist over and above the effects of

age. Previous studies have also found understanding of display rules to be associated with positive peer interactions in children of various ages (Liew, Eisenberg, & Reiser, 2003; McDowell & Parke, 2000).

Display Rules are cultural conventions about how one should react in social situations (Grusec, 1991; Jones et al., 1998). For example, one is expected to smile when receiving a disappointing gift or minimise the amount of anger displayed when a friend accidentally breaks a favourite toy. It is unsurprising that knowledge of this will help children to successfully negotiate social situations. Children who understand the need to mask emotions in order to maintain a social equilibrium tend to be viewed by others as more socially competent (Liew et al., 2003). Children who are capable of masking both negative emotions (such as anger or disappointment) and positive emotions (such as pride when winning a competition or excitement in an inappropriate situation) are less likely to offend or hurt the feelings of others (McDowell & Parke, 2003). This in turn may make them more appealing friends. The current study provides further support for the established association between knowledge of display rules and peer relations.

#### *Emotion Understanding and Psychopathology*

*Conduct problems and overall EU.* Understanding of mixed emotions and overall EU as scored by the TEC were found to be negatively associated with parental ratings of conduct problems. This indicates that as knowledge of these concepts increases, rates of conduct problems decrease. Moreover, total EU score was found to be associated with Conduct Problems scores over and above the contribution made by scores on Mixed Emotions. This suggests that, while understanding of mixed emotions is associated with conduct problems, the strongest association is between conduct problems and children's overall understanding of emotions. Furthermore, age was not found to be associated with Conduct Problems scores. This indicates that the association between conduct problems and emotion understanding is not dependant on a child's age. These findings are consistent with previous research that has found multiple components of EU to be associated with aggression in children of various ages (Denham et al., 2002). The findings suggest that children with behavioural and aggression problems may have trouble difficulty with multiple aspects of EU.



Exploration into the proposal that conduct problems are associated with difficulties in multiple areas of EU would be beneficial. Specifically, replicating the current study but including multiple measures of conduct problems and measures of EU that extensively examine multiple components to help determine the nature of the association between these constructs.

*Emotional problems and desires.* The Desires subscale was positively associated with Emotional Problems on the SDQ. This would suggest that knowledge of desires (that is, that people are happy when they get something that they want and sad when they do not) is associated with an increased risk for emotional problems. This finding is inconsistent with previous literature which indicates that an increased understanding of emotions decreases the risk of internalising problems (Fine et al. 2003; Southam-Gerow & Kendall, 2000).

One potential reason for these unexpected findings may be that the Desires subscale did not operate as would be expected in the current study. Besides being positively correlated with Emotional Problems, the Desires subscale was negatively correlated with Mixed Emotions and Total Score on the KAI-R. These associations are the opposite of what would have been expected. Children's scores on the Desires subscale were high in the current study, with a mean of 0.92 out of a possible 1. This suggests that the majority of the children understood this concept. Furthermore, the current study had a small sample size. These, or other unidentified factors, may have contributed to a spurious effect with regards to this association, that is, an incorrect finding. On the other hand, no other study could be found that explicitly examined the relationship between understanding of desires in emotions and internalising problems, or indeed any other facet of socio-emotional development. Potentially, children with internalising problems such as anxiety may be more aware of the desires of others, or more focused upon desires.

It is clear that further study of this component of EU would be worthwhile. Children's understanding of desires is a well researched phenomenon in the field of Theory of Mind (see Wellman, et al., 2001). It has been established that the understanding that other people have, and act on, desires in an integral part of overall Theory of Mind development (Wellman et al., 2001). The current study indicates that further research about children's understanding of desires with regards to emotions and how this relates to socio-emotional development would also be valuable.

*Inattention-Hyperactivity and display rules.* A negative association was found between Display Rules as measured by the KAI-R and Inattention-Hyperactivity on the SDQ. That is, as children's knowledge of displaying a different emotion than the one they are feeling increases, problems with attention and hyperactivity decrease. Plausibly, children that have difficulty with focusing and attending may also have difficulty learning and using appropriate display rules. To be able to engage in display rules a child must be able to switch their attention away from the item or situation that is causing the emotional reaction, the attention system therefore being a key factor in making socially appropriate displays (Eisenberg, Smith, Sadovsky & Spinrad, 2004; Simonds, Kieras, Rueda & Rothbart, 2007). In a study examining the associations between effortful control, executive attention and display rules, Simonds et al. (2007) found that efficacy with executive attention (that is, being able to select where to attend when conflicting information is being presented) was associated with children's ability to use display rules. This indicates that attentional capacities play a role in children's ability to effectively use display rules.

While there are numerous studies on children's attentional capacity and disorders of attention such as Attention-Deficit/Hyperactivity Disorder; no study could be found that examined these difficulties in relation to understanding of display rules. The findings of the current study indicate that this would be an informative area of research.

#### *The Role of Display Rules in Socio-Emotional Development*

The EU component of Display Rules on the KAI-R was the only subscale to be associated with multiple aspects of development in the current study. Display Rules was also the only component to be associated with Total Difficulty, potentially because it was also the only scale to be associated with more than one subscale.

It has been suggested in the literature that display rules is an intricate component of EU that integrates several other facets such as recognition of emotions, situation knowledge and emotional role-taking (Jones et al., 1998). Indeed, to accurately understand a situation in which display rules are used, a child must first be aware of what emotion is being felt as well as whether it would be considered acceptable in the current situation and if not, what an acceptable alternative would be.

Potentially, the reason why Display Rules was found to be associated with numerous aspects of development is because it is such a complex construct that incorporates multiple forms of EU.

As mentioned above, there are multiple types of display rules (Jones et al, 1998). The Display Rules component of the KAI-R does not specify what type of display rule (such as prosocial, self-protective or norm maintaining) the child is required to discuss, however. It is possible that the choice of display rule a child makes, or most easily retrieves, could be related to their unique developmental strengths and weaknesses. For example, children who lack knowledge of norm maintaining display rules may therefore have difficulties with peer relationships as they are unable to act in ways that maintain social equilibrium. Future research examining the associations between different types of display rules and various aspects of development would be highly beneficial, particularly given the apparently strong association between these variables found in the current study.

#### *The Nature of Emotion Understanding*

The findings of the current study indicate that specific components of EU are uniquely associated with diverse areas of social, prosocial and psychological development in children. This is consistent with previous research that has found children with psychopathology to have weaknesses in distinct components of EU (Meerun Terwogt, 1990; Southam-Gerow & Kendall, 2002).

All of the children in the current study mastered the first two components of EU, Recognition and Situation Knowledge, even those with identified weaknesses on the SDQ. Previous studies have found these earlier developing components of EU to be associated with multiple aspects of socio-emotional development (Denham et al., 1990; Ensor & Hughes, 2005; Fine et al., 2003; Mostow et al., 2002; Trentacosta & Fine, in press). It may be that simpler components are always, or often, associated with socio-emotional development because they represent a foundation knowledge; one that is necessary for the development of the more advanced facets of EU. It is these advanced facets, however, that may prove to have unique associations with various aspects of development, such as display rules being associated with peer problems and inattention-hyperactivity. With regards to children's age and developmental phase, it would be expected that the first phase would

be associated with numerous aspects of socio-emotional development while later phases would show more distinctive associations.

Therefore if the current study were to be replicated with the methodological limitations (discussed below) addressed, it would be expected that more basic components of EU such as recognition and emotion situation knowledge would be found to be associated with all of the examined aspects of development whereas more complex components such as regulation and mixed emotions would be associated with only some. On the other hand, some of the components that incorporate many of the more basic components, such as display rules, may also prove to be associated with multiple aspects of development as they incorporate so many of the fundamental components.

Potentially this would indicate that there are in fact two distinct constructs present in the current study; emotion knowledge and EU. Emotion knowledge, in its classic definition of recognition of emotions, responding to emotion in others and understanding of emotional situations, is broadly and robustly associated with multiple aspects of development. EU, on the other hand, is a separate construct that builds upon earlier emotion knowledge and has subsequent unique associations with development. This also is an area for future research.

#### *Application*

The findings of the current study indicate that certain components of EU are associated with distinct aspects of development. The real-world implication of this finding is that programmes designed to train children in EU so as to aid their overall development (such as PATHS, Promoting Alternative Thinking Strategies, Domitrovichk, Cortes, & Greenberg, 2007) can be targeted towards identified specific weaknesses rather than EU as a whole. This would allow for training programmes that are more efficient with regards to both time and resources.

#### *Limitations*

A major limitation in the current study is the very modest sample size. The scores of only 38 children were included. This gives the study restricted statistical power meaning that some results that would be significant with a larger sample are not with a smaller one. Moreover, limited analyses can be done on a small sample. Replication of the current study with a much larger sample

would help to both confirm the current findings, dispel any spurious findings, and uncover any that were not found in the current study due to the small sample.

The inclusion of children aged 6-9 years old meant that all of the children had mastered the first two components of the TEC, Recognition and Situation Knowledge. Part of the reason the current study did not find such robust associations between EU and socio-emotional development may be that these two components could not be examined. It would be expected that these two components would be found to be associated with multiple aspects of socio-emotional development. Replication of the current study with younger children would help to identify if this is the case.

### *Future Research*

The findings of the current study point to several gaps in the literature. Firstly, it highlights that research aimed at integrating the field of EU would be very valuable. The current results also emphasise that there is extensive research that can still be done to examine the associations between emotion understanding and socio-emotional development.

The current study did not include a measure of language ability as several studies have found associations between EU and socio-emotional development over and above the contribution made by language. Nevertheless, language ability has consistently been shown to be associated with both EU and socio-emotional development. A replication of the current study that controlled for language ability may help to further clarify the unique associations between EU and socio-emotional development.

Research examining how more basic components of EU may associate with socio-emotional development in comparison with more complex components would be highly informative. This would help to identify whether these two types of EU components play different roles with regards to children's socio-emotional development.

### *Conclusions*

Children's understanding of emotions was found to be associated with certain aspects of socio-emotional development; peer problems, conduct problems, emotional problems and inattention-hyperactivity as scored on the Strengths and Difficulties Questionnaire (Goodman,

1997). Only some components of EU were related to these aspects of development, however. This suggests that children's developmental strengths and difficulties are associated with their emotional understanding in very specific ways. Emotional understanding has been consistently shown to not only be associated with children's socio-emotional development, but to also predict children's success or not in these areas. Therefore this finding has wide-reaching implications for future research. If future research can clarify the precise nature of the relationships between facets of socio-emotional development and components of emotion understanding, this will help us to comprehend how EU can help children develop optimally. If researchers can know how and why specific components influence different types of development, they can subsequently uncover both why the weaknesses are associated and how they can be corrected.

The current study also highlights that work needs to be done in the field of emotion understanding as a whole in order to refine the terminology that is currently being used. A more streamlined field with fewer, and more clearly defined concepts, would allow researchers to communicate easier. This will aid the development of effective, informative and useful concepts and measures.

## References

- Achenbach, T. M. (1991). *Manual for the Child Behaviour Checklist/4-18 and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*. Arlington: American Psychiatric Association.
- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*. N.J.: Prentice-Hall.
- Banerjee, R., & Yuill, N. (1999) Children's understanding of self-presentational display rules: Associations with mental-state understanding. *The British Journal of Developmental Psychology*, 17, 111-124.
- Baron-Cohen, S. (1991). Do people with autism understand what causes emotion? *Child Development*, 62, 385-395.
- Cassidy, K.W., Werner, R.S., Rourke, M., Zubernis, L.S. & Balaraman, G. (2003). The relationship between psychological understanding and positive social behaviours, *Social Development*, 12, 198-221.
- Celani, G., Battacchi, M.W. & Arcidiacono, L. (1999). The understanding of the emotional meaning of facial expressions in people with autism.
- Cook, E.T., Greenberg, M.T., & Kusche, C.A. (1994). The relations between emotional understanding, intellectual functioning, and disruptive behaviour problems in elementary-school-aged children, *Journal of Abnormal Child Psychology*, 22, 205-219.
- Crick, N.R., & Dodge, K.A. (1996). Social information-processing mechanisms in reactive and proactive aggression. *Child Development*, 67, 993-1002.
- Deciles Information. (2008, August 8). Ministry of Education. Retrieved August 22, 2009, from <http://www.minedu.govt.nz/NZEducation/EducationPolicies/Schools/SchoolOperations/Resourcing/OperationalFunding/Deciles/DecilesInformation.aspx>
- Denham, S.A. (1986). Social cognition, prosocial behaviour and emotion in preschoolers: Contextual validation. *Child development*, 57, 194-201.

- Denham, S.A., Blair, K., DeMudler, E., Levitas, J., Sawyer, K., Auerbach-Major, S., Queenan, P. (2003). Preschool emotional competence: Pathway to social competence? *Child Development, 74*, 238-256.
- Denham, S.A., Caverly, S., Schmidt, M., Blair, K., DeMudler, E., Caal, S., Hamada, H., Mason, T. (2002). Preschool understanding of emotions: Contributions to classroom anger and aggression. *Journal of Child Psychology and Psychiatry, 43*, 901-916.
- Denham, S.A., McKinley, M., Couchoud, E.A. & Holt, R. (1990). Emotional and behavioural of preschool peer ratings. *Child Development, 61*, 1145-1152.
- Denham, S.A., Wyatt, T.M., Bassett, H.H., Echeverria, D., & Knox, S.S. (2009). Assessing social-emotional development in children from a longitudinal perspective. *Journal of Epidemiology and Community Health, 63*, 37-52.
- Domitrovich, C.E., Cortes, R.C., & Greenberg, M.T. (2007). Improving young children's social and emotional competence: A randomized trial of the preschool "PATHS" curriculum. *The Journal of Primary Prevention, 28*, 67-91.
- Dunn, J. & Hughes C. (2001). "I got some swords and you're dead!": Violent fantasy, antisocial behaviour, friendship and moral sensibility in young children. *Child Development, 72*, 491-505.
- Eisenberg, N., Fabes, R A, Spinrad, T L. (2006). Prosocial Development. In N. Eisenberg (Ed.), W. Damon, & R.M. Lerner (Series Eds.) *Handbook of child psychology: Vol. 3, Social, emotional, and personality development* (6<sup>th</sup> Ed.; pp 646-718). New Jersey: Wiley.
- Eisenberg, N., Smith, C.L., Sadovsky, A., Spinrad, T.L. (2004). Effortful control: Relations with emotion regulation, adjustment, and socialization in childhood. In R.F. Baumeister, & K.D. Vohs (Eds.) *Handbook of self regulation: Research, theory, and applications* (pp 259-282). New York: Guilford Press.
- Ensor, R. & Hughes, C. (2005). More than talk: Relations between emotion understanding and positive behaviour in toddlers, *British Journal of Developmental Psychology, 23*, 343-363.
- Field, A. (2009). *Discovering Statistics Using SPSS: Third edition*. London: Sage.



- Fine, S.E., Izard, C.E., Mostow, A.J., Trentacosta, C.J., & Ackerman, B.P. (2003). First grade emotion knowledge as a predictor of fifth grade self-reported internalizing behaviors in children from economically disadvantaged families. *Development and Psychopathology, 15*, 331-342.
- Garner, P.W. (1996). The relations of emotional role taking, affective/moral attribution, and emotional display rule knowledge to low-income school-age children's social competence. *Journal of Applied Developmental Psychology, 17*, 19-36.
- Garner, P.W. (1999). Continuity in emotion knowledge from preschool to middle-childhood and relation to emotion socialization, *Motivation and Emotion, 23*, 247-266.
- Garner, P.W., Dunsmore, J.C., & Southam-Gerow, M. (2008). Mother-child conversations about emotions: Linkages to child aggression and prosocial behaviour. *Social Development, 17*, 259-277.
- Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry, 38*, 581-586.
- Goodman, R. & Scott, S. (1999). Comparing the Strengths and Difficulties questionnaire and the Child Behavior Checklist: Is small beautiful? *Journal of Abnormal Child Psychology, 27*, 17-24.
- Grusec, J.E. (1991). Socializing concern for others in the home. *Developmental Psychology, 27*, 338-342.
- Harris, P.L. (1989). *Children and Emotion: The Development of Psychological Understanding*. Oxford: Blackwell.
- Harris, P.L. (1993). Individual differences in understanding emotions: The role of attachment status and psychological discourse. *Attachment and Human Development, 1*, 307-324.
- Hawes, D.J., & Dadds, M.R. (2004). Australian data and psychometric properties of the strengths and difficulties questionnaire. *Australian and New Zealand Journal of Psychiatry, 38*, 644-651.
- Izard C.E. (1971). *The Face of Emotion*. New York: Appleton.
- Izard, C.E. (2001). Emotional intelligence of adaptive emotions? *Emotion, 1*, 249-257.

- Jones, D.C., Abbey B.B., & Cumberland, A. (1998). The development of display rule knowledge: Linkages with family expressiveness and social competence. *Child Development, 69*, 1209-1222.
- Liew, J., Eisenberg, N., & Reiser, M. (2003). Preschoolers' effortful control and negative emotionality, immediate reactions to disappointment, and quality of social functioning. *Journal of Experimental Child Psychology, 89*, 298-319.
- Lindsey, E.W & Colwell, M.J. (2003). Preschoolers' emotional competence: Links to pretend and physical play. *Child Study Journal, 33*, 39-52.
- Masten, A.S., & Coatsworth, J.D. (1998). The development of competence in favorable and unfavorable environments: Lessons from research on successful children. *American Psychologist, 53*, 205-220.
- McDowell, D.J., & Parke, R.D. (2000). Differential knowledge of display rules for positive and negative emotions: Influences from parents, influences on peers. *Social Development, 9*, 415-432.
- McMahon, R.J., & Frick, P.J. (2007). Conduct and oppositional disorders. In E.J. Mash & R. A. Barkley (Eds.). *Assessment of Childhood Disorders*. (pp. 132-183). New York: Guilford Press.
- Meerun Terwogt, M. (1990). Disordered children's acknowledgement of multiple emotions. *The Journal of General Psychology, 117*, 59-69.
- Miller, A.L., Gouley, K.K., Seifer, R., Zakriski, A., Equia, M., Vergnani, M. (2005). Emotion knowledge skills in low-income elementary school children: Associations with social status and peer experiences. *Social Development, 14*, 637-651.
- Moffitt, T.E., & Caspi, A., (2001). Childhood predictors differentiate life-course persistent and adolescence-limited antisocial pathways among males and females. *Development and Psychopathology, 12*, 355-375.
- Mostow, A.J., Izard, C.E., Fine, S. & Trentacosta, C.J. (2002). Modelling emotional, cognitive, and behavioural predictors of peer acceptance. *Child Development, 73*, 1775-1787.

- Pons, F. & Harris, P.L. (2005). Longitudinal change and longitudinal stability of individual differences in children's emotion understanding. *Cognition and Emotion*, 19, 1158-1174.
- Pons, F., Harris, P.L. & de Rosnay, M. (2004). Emotion comprehension between 3 and 11 years: Developmental periods and hierarchical organization. *European Journal of Developmental Psychology*, 1, 127-152.
- Pons, F., Harris, P.L., & Doudin, P.A., (2002). Teaching emotion understanding. *European Journal of Psychology of Education*, 17, 293-304.
- Raikes, R.A. & Thompson, H.A. (2006). Family emotional climate, attachment security and young children's emotion knowledge in a high risk sample. *British Journal of Developmental Psychology*, 24, 89-104.
- Schultz, D., Izard, C.E., Ackerman, B.P. & Youngstrom, E.A. (2001). Emotion knowledge in economically disadvantaged children: Self-regulatory antecedents and relations to social difficulties and withdrawal. *Development and Psychopathology*, 13, 53-67.
- Schultz, D., Izard, C.E., & Bear, G. (2004). Children's emotional processing: Relations to emotionality and aggression. *Development and Psychopathology*, 16, 371-387.
- Simonds, J., Kieras, J., Rueda, M., & Rothbart, M. (2007). Effortful control, executive attention, and emotional regulation in 7-10-year-old-children. *Cognitive Development*, 22, 474-488.
- Southam-Gerow, M. A., & Chorpita, B. F. (2007). Anxiety in children and adolescents. In E.J. Mash & R. A. Barkley (Eds.). *Assessment of Childhood Disorders*. (pp. 347-397). New York: Guilford Press.
- Southam-Gerow, M.A. & Kendall, P.C. (2000). A preliminary study of the emotion understanding of youths referred for treatment of anxiety disorders. *Journal of Clinical Child Psychology*, 29, 319-327.
- Southam-Gerow, M.A., & Kendall, P.C. (2002). Emotion regulation and understanding: Implications for child psychopathology and therapy. *Clinical Psychology Review*, 22, 189-222.
- Sullivan, M.W., Bennett, D.S., Carpenter, K. & Lewis, M. (2008). Emotion knowledge in young neglected children. *Child Maltreatment*, 13, 301-306.

- Suveg, C., Kendall, P.C., Comer, J.S., & Robin, J. (2006). Emotion-focused cognitive-behavioral therapy for anxious youth: A multiple-baseline evaluation. *Journal of Contemporary Psychotherapy, 36*, 77-85.
- Sy, S.R., DeMeis, D.K., & Scheinfeld, R.E. (2003). Pre-school children's understanding of the emotional consequences for failure to act prosocially. *The British Journal of Developmental Psychology, 21*, 259-272.
- Tenenbaum, H.R., Visscher, P., Pons, F., & Harris, P.L. (2004). Emotion understanding in Quechua children from an agro-pastoralist village. *International Journal of Behavioural Development, 22*, 471-478.
- Trentacosta, C.J., & Fine S.E. (in press). Emotion knowledge, social competence, and behaviour problems in childhood and adolescence: A meta-analytic review. *Social Development*.
- Trentacosta, C.J. & Izard, C.E. (2007). Kindergarten children's emotional competence as a predictor of their academic competence in first grade. *Emotion, 7*, 77-88.
- Wellman, H. M., Cross, D., & Watson, J. (2001). Meta-analysis of theory of mind development: The truth about false belief. *Child Development, 73*, 655-684.
- Wellman, H.M., & Liu, D. (2004). Scaling of theory of mind tasks. *Child Development, 75*, 523-541.

## Appendix A

## The Test of Emotion Comprehension (script)

**TEST OF EMOTION COMPREHENSION (TEC)  
PROCEDURE**

**Preliminary remarks**

- The tone of story presentation should be emotionally neutral.
- Always report on-line the child's answer in the score sheet. If the child gives more than one answer note their order.
- Never ask the child to justify his/her answer (only at the end if necessary)
- Component I: If the child fails to produce a response then the examiner points to each picture in turn (left to right, top to bottom) and asks, while pointing: *Is this one (target emotion)?*
- Component I: If the child responds positively to two or more of the pictures then the examiner asks, while pointing to the options: *Choose the best one for (target emotion)!*
- Components II to IX: Always point the different characters and objects involved in the story. In the current procedure names have been attributed to the characters (e.g. Tom, Sarah). However, that's optional.
- Components II to IX: Always point and name the four possible answers.
- Components II to IX: If the child just names the answer then the experimenter has to ask him/her to point the answer. The child does not need to name the answer.
- Components II to IX: Always show the possible answers after the presentation of the story.
- Component II to IX: If the child fails to produce a response then the examiner points to each picture in turn (left to right, top to bottom) and asks, while pointing: *Do you think he (she) is...?*
- Component II to IX: If the child responds positively to two or more of the pictures then the examiner asks, while pointing to the options: *Choose the one that you think is best!*

**Introduction**

*Thank you for helping me with my work. I am going to show you some pictures and then ask you some questions. For every question give me the answer that you think is best by pointing to the picture that you choose. If there is something that you don't understand just tell me, okay? (go to page 1)*

### Component I: Recognition (pp. 1-5)

*Let's look at these four pictures. Can you point to the person who feels:*

- (p.1) *sad?*
- (p.2) *happy?*
- (p.3) *angry?*
- (p.4) *alright?*
- (p.5) *scared?*

### Transition

*Okay, now we are going to see some stories. I want you to listen to the whole story and then I'll ask you a question. Wait until I've shown you all the pictures before you point to the answer. (go to page 6)*

### Component II: External causes (pp.6-10)

(p.6) Turtle

*This boy (girl) is looking at his (her) little turtle, which has just died.*

*How is this boy (girl) feeling? Is he (she) happy, sad, angry or alright?*

(p.7) Birthday

*This boy (girl) is getting a birthday present.*

*How is this boy (girl) feeling? Is he (she) happy, sad, alright or scared?*

(p.8) Brother

*This boy (girl) is trying to do a drawing but his (her) little brother (sister) is stopping him (her).*

*How is this boy (girl) feeling? Is he (she) happy, alright, angry or scared?*

(p.9) Bus

*This boy (girl) is standing at the bus stop.*

*How is this boy (girl) feeling? Is he (she) happy, sad, angry or alright?*

(p.10) Monster

*This boy (girl) is being chased by a monster.*

*How is this boy (girl) feeling? Is he (she) happy, alright, angry or scared?*

**Component III: Desires (pp.11-12)**

(p.11) Coca-cola

*This is Tom (Sarah) and this is Peter (Helen). Tom (Sarah) and Peter (Helen) are very thirsty. Tom (Sarah) likes Coca-Cola very much and Peter (Helen) hates Coca-Cola.*

Control question

*Does Tom (Sarah) like Coca Cola?*

*Does Peter (Helen) like Coca-Cola?*

Positive feedback: *That's right, Tom (Sarah) likes Coca-Cola / That's right, Peter (Helen) doesn't like Coca-Cola.*

Negative feedback: *Well actually, Tom (Sarah) likes Coca-Cola (help) / Well actually, Peter (Helen) doesn't like Coca-Cola. (help)*

*Can you open the box for me? There is Coca Cola in the box!*

*How is Tom (Sarah) feeling when he (she) sees Coca Cola? Is he (she) happy, sad, alright or scared?*

*How is Peter (Helen) feeling when he (she) sees Coca Cola? Is he (she) happy, sad, alright or scared?*

(p.12) Salad

*This is Tom (Sarah) and this is Peter (Helen). Tom (Sarah) and Peter (Helen) are very hungry. Tom (Sarah) hates lettuce and Peter (Helen) likes lettuce very much.*

Control question

*Does Tom (Sarah) like lettuce?*

*Does Peter (Helen) like lettuce?*

Positive feedback: *That's right, Tom (Sarah) doesn't like lettuce / That's right, Peter (Helen) likes lettuce.*

Negative feedback: *Well actually, Tom (Sarah) doesn't like lettuce (help) / Well actually, Peter (Helen) likes lettuce. (help)*

*Can you open the box for me? There is lettuce in the box!*

*How is Tom (Sarah) feeling when he (she) sees lettuce? Is he (she) happy, sad, alright or scared?*

*How is Peter (Helen) feeling when he (she) sees lettuce? Is he (she) happy, sad, alright or scared?*

### Component IV: Beliefs (p.13)

(p.13) *This is Tom's (Sarah's) rabbit. It is eating a carrot. It likes carrots very much. Can you look behind the bushes? It's a fox. The fox is hiding behind the bushes because he wants to eat the rabbit. Can you put the bushes back on so that the rabbit can't see that the fox is hiding behind the bushes?*

#### Control question

*Does the rabbit know the fox is hiding behind the bushes?*

Positive feedback: *That's right, the rabbit doesn't know the fox is hiding behind the bushes*

Negative feedback: *Well actually, the rabbit doesn't know the fox is hiding behind in the bushes ("help")*

*How is the rabbit feeling? Is it happy, alright, angry or scared?*

### Component V: Reminders (pp.14-17)

(p.14) *Tom (Sarah) is very sad because the fox ate his rabbit...*

(p.15) *... Later on that night Tom (Sarah) goes to bed. The next day...*

#### Control question

(p.16) *...Tom (Sarah) is looking at his (her) photo album. He (She) is looking at a picture of his (her) best friend.*

*How is Tom (Sarah) feeling when he (she) is looking at the picture of his (her) best friend? Is he (she) happy, sad, alright or scared?*

Positive feedback: *That's right, Tom (Sarah) is felling happy when he (she) is looking at the picture of his (her) best friend!*

Negative feedback: *Well actually, Tom (Sarah) is felling happy when he (she) is looking at the picture of his (her) best friend! (help)*

(p.17) *...and now Tom (Sarah) is looking at a picture of his (her) rabbit.*

*How is Tom (Sarah) feeling when he (she) is looking at the picture of his (her) rabbit ? Is he (she) happy, sad, alright or scared?*



### Component VI: Regulations (p.18)

(p.18) *Tom (Sarah) is looking at a picture of his (her) rabbit. Tom (Sarah) is very sad because his (her) rabbit was eaten by the fox.*

*What is the best way for Tom (Sarah) to stop himself (herself) being sad?*

- *Can Tom (Sarah) cover his (her) eyes to stop himself (herself) being sad!*
- *Can Tom (Sarah) go outside to stop himself (herself) being sad!*
- *Can Tom (Sarah) think about something else to stop himself (herself) being sad!*
- *Is there nothing Tom (Sarah) can do to stop himself (herself) being sad!*

Option (if the child says that Tom (Sarah) may buy a new Rabbit)

*Yes, he (she) can get a new rabbit but Tom (Sarah) is very sad about losing his (her) rabbit. He (She) liked his (her) rabbit very much. What is the best way for Tom (Sarah) to stop himself (herself) being sad about his (her) rabbit?*

### Component VII: Appearance & Reality (p.19)

(p.19) *This is Tom (Sarah) and this is Daniel (Dorothy). Daniel (Dorothy) is teasing Tom (Sarah) because Daniel (Dorothy) has lots of marbles and Tom (Sarah) doesn't have any. Tom (Sarah) is smiling because he (she) doesn't want to show Daniel (Dorothy) how he (she) is feeling inside.*

*How is Tom (Sarah) feeling inside? Is he (she) happy, alright, angry or scared?*

### Component VIII: Mixed (p.20)

(p.20) *Tom (Sarah) is looking at the new bicycle that he (she) just got for his (her) birthday. But at the same time, Tom (Sarah) thinks he (she) might fall off and hurt himself (herself) because he (she) has never ridden a bicycle before.*

*So, how is Tom (Sarah) feeling? Is he (she) happy, sad and scared, happy and scared or scared?*

**Component IX: Morality (pp.21-23)**

(p.21) *Tom (Sarah) is visiting his (her) friend Peter (Helen). Tom (Sarah) is waiting on his (her) own in the kitchen. Tom (Sarah) sees a jar with some chocolate biscuits in it. He (She) really wants to eat a chocolate biscuit. He (She) loves them.*

Control question

*Is it alright for Tom (Sarah) to eat a chocolate biscuit straight away or should he (she) wait to ask Peter's (Helen's) mummy?*

Positive feedback: *That's right, he (she) should wait because it's naughty to take something without asking.*

Negative feedback: *Well actually, he (she) should wait because it's naughty to take something without asking (help).*

*Tom (Sarah) touches the lid of the jar but he (she) manages to stop himself (herself) from opening it. He (She) doesn't eat a chocolate biscuit because he (she) hasn't asked yet.*

*How does Tom (Sarah) feel when he (she) stops himself (herself)?*

- *Does he (she) feel happy because he (she) stopped himself (herself)?*
- *Does he (she) feel sad because he (she) stopped himself (herself)?*
- *Does he (she) feel angry because he (she) stopped himself (herself)?*
- *Does he (she) feel just alright because he (she) stopped himself (herself)?*

(p.22) *After a little while Tom (Sarah) can't stop himself (herself) from eating a chocolate biscuit.*

(p.23) *Later, Tom (Sarah) goes home. Tom (Sarah) remembers that he (she) ate a chocolate biscuit without asking. He (She) wonders if he (she) should tell his (her) mummy about it. In the end he (she) never tells her about taking the chocolate biscuit.*

*How does Tom (Sarah) feel about that?*

- *Does he (she) feel happy about not telling his (her) mummy?*
- *Does he (she) feel sad about not telling his (her) mummy?*
- *Does he (she) feel angry about not telling his (her) mummy?*
- *Does he (she) feel alright about not telling his (her) mummy?*

## Appendix B

### The Kusche Affective Interview - Revised (script; Sections A; D-F)

#### SECTION A

1. I'M GOING TO SHOW YOU FOUR PICTURES. I'D LIKE YOU TO LOOK CAREFULLY AT EACH PICTURE AND TELL ME HOW YOU THINK THE PERSON IN EACH PICTURE FEELS.

- a. HERE'S THE FIRST PICTURE. Hand the first picture to the child and allow the child time to look at the photograph. HOW DO YOU THINK THAT BOY FEELS?

Record responses.

After any response:

GOOD. YOU THINK THAT BOY FEELS \_\_\_\_\_. (Repeat the child's exact response.)

LOOK AT THIS BOY AGAIN. ARE THERE ANY OTHER WAYS YOU THINK HE IS FEELING? Record all responses. Be sure the child is finished before proceeding to the next picture.

- b. OK, NOW HERE'S THE SECOND PICTURE. (Hand the second photograph to the child.) HOW DO YOU THINK THAT GIRL FEELS? Record responses.

GOOD. YOU THINK THAT GIRL FEELS \_\_\_\_\_. (Repeat the child's exact response.)

LOOK AT THIS GIRL AGAIN. ARE THERE ANY OTHER WAYS YOU THINK SHE IS FEELING?

- c. HERE'S THE NEXT PICTURE. HOW DO YOU THINK THAT MAN FEELS?

(Record responses.)

GOOD. YOU THINK THAT MAN FEELS \_\_\_\_\_. (Repeat the child's exact response.)

LOOK AT THIS MAN AGAIN. ARE THERE ANY OTHER WAYS YOU THINK

HE IS FEELING?

d. HERE'S THE LAST PICTURE. HOW DO YOU THINK THAT WOMAN FEELS?

Record responses.)

GOOD. YOU THINK THAT WOMAN FEELS \_\_\_\_\_. (Repeat the child's exact response.)

LOOK AT THIS WOMAN AGAIN. ARE THERE ANY OTHER WAYS YOU THINK SHE IS FEELING?

#### SECTION D

5. CAN SOMEONE FEEL SAD AND MAD AT THE VERY SAME TIME? Circle yes or no as appropriate.

If no, WHY NOT?

If yes, TELL ME ABOUT A TIME WHEN YOU FELT SAD AND MAD AT THE VERY SAME TIME.

If child cannot give an example of self, say OK, TELL ME ABOUT A TIME WHEN SOMEONE ELSE FELT SAD AND MAD AT THE VERY SAME TIME.

6. CAN SOMEONE FEEL SAD AND HAPPY AT THE VERY SAME TIME? Circle yes or no as appropriate.

If no, WHY NOT?

If yes, TELL ME ABOUT A TIME WHEN YOU FELT SAD AND HAPPY AT THE VERY SAME TIME.

If child cannot give an example of self, say OK, TELL ME ABOUT A TIME WHEN SOMEONE ELSE FELT SAD AND HAPPY AT THE VERY SAME TIME.

7. CAN SOMEONE FEEL CALM AND NERVOUS AT THE VERY SAME TIME? Circle yes or no as appropriate.

If no, WHY NOT?

If yes, TELL ME ABOUT A TIME WHEN YOU FELT CALM AND NERVOUS AT THE VERY SAME TIME.

If child cannot give an example of self, say OK, TELL ME ABOUT A TIME WHEN

SOMEONE ELSE FELT CALM AND NERVOUS AT THE VERY SAME TIME.

8. CAN SOMEONE LOVE SOMEONE ELSE AND BE ANGRY WITH THAT PERSON AT THE VERY SAME TIME? Circle yes or no as appropriate.

If no, WHY NOT?

If yes, TELL ME ABOUT A TIME WHEN YOU LOVED SOMEONE AND FELT ANGRY WITH THAT PERSON AT THE VERY SAME TIME.

If child cannot give an example of self, say, OK, TELL ME ABOUT A TIME WHEN SOMEONE ELSE LOVED ANOTHER PERSON AND FELT ANGRY WITH THAT PERSON AT THE VERY SAME TIME.

#### SECTION E

9. CAN YOU HIDE YOUR FEELINGS? Circle yes or no as appropriate.

If no, WHY NOT?

If yes, HOW CAN YOU DO THAT? or WHAT HAPPENS?

10. CAN OTHER PEOPLE HIDE THEIR FEELINGS FROM YOU? Circle yes or no as appropriate.

If no, WHY NOT?

If yes, HOW CAN THEY DO THAT? or WHAT HAPPENS?

11. DO YOU THINK THERE ARE TIMES WHEN PEOPLE SHOULD HIDE THEIR FEELINGS? Circle yes or no as appropriate.

If no, ask: HOW COME? OR WHY NOT?

- a. If yes, ask WHEN SHOULD PEOPLE HIDE THEIR FEELINGS? Continue to probe with ANY OTHER TIMES? until the child says no.

- b. Then ask, WHY SHOULD PEOPLE HIDE THEIR FEELINGS? Continue to probe with, ANY OTHER REASONS? until the child says no. If the child responds with, "I already told you.", record ITY and proceed to the next question.

#### SECTION F

12. CAN FEELINGS CHANGE? Circle yes or no as appropriate. OK, SUPPOSE YOU WERE FEELING UPSET. COULD YOUR FEELINGS CHANGE? Circle yes or no as

appropriate.

If no, HOW COME?

If yes, TELL ME WHAT WOULD HAPPEN.

If the child responded that feelings cannot change or if the child has not given any internal locus of control responses, say, IF YOU FELT UPSET, COULD YOU DO ANYTHING TO MAKE YOUR FEELINGS CHANGE?

If the child responded that feelings cannot change or if the child has not given any external locus of control responses, ask, IF YOU FELT UPSET, COULD ANYTHING HAPPEN TO MAKE YOUR FEELINGS CHANGE?

13. HERE IS A PICTURE OF A BOY WHO FELT HAPPY. Show the child the first picture.

LATER, THIS SAME BOY FELT SAD. Show the second picture. HIS FEELINGS CHANGED. HOW DO YOU THINK THIS HAPPENED?

Continue to probe until the child says no.

14. HERE IS A PICTURE OF A GIRL WHO FELT JEALOUS. Show the child the first picture.

LATER, THIS SAME GIRL FELT HAPPY. Show the second picture. HER FEELINGS CHANGED. HOW DO YOU THINK THIS HAPPENED?

Continue to probe with ANYTHING ELSE? until the child says no.

## Appendix C

### The Strengths and Difficulties Questionnaire

Male/Female

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of your child's behaviour over the last six months.

Your child's name .....

Date of birth.....

| Not<br>True | Somewhat<br>True | Certainly<br>True |
|-------------|------------------|-------------------|
|-------------|------------------|-------------------|

Considerate of other people's feelings

Restless, overactive, cannot stay still for long

Often complains of headaches, stomach-aches or sickness

Shares readily with other children, for example toys, treats, pencils

Often loses temper

Rather solitary, prefers to play alone

Generally well behaved, usually does what adults request

Many worries or often seems worried

Helpful if someone is hurt, upset or feeling ill

Constantly fidgeting or squirming

Has at least one good friend

Often fights with other children or bullies them

Often unhappy, depressed or tearful

Generally liked by other children

Easily distracted, concentration wanders

Nervous or clingy in new situations, easily loses confidence

Kind to younger children

Often lies or cheats

Picked on or bullied by other children

Often volunteers to help others (parents, teachers, other children)

Thinks things out before acting

Steals from home, school or elsewhere

Gets along better with adults than with other children

Many fears, easily scared

Good attention span, sees chores or homework through to the end

Do you have any other comments or concerns?

Overall, do you think that your child has difficulties in one or more of the following areas:  
emotions, concentration, behaviour or being able to get on with other people?

| No                       | Yes-<br>minor<br>difficulties | Yes-<br>definite<br>difficulties | Yes-<br>severe<br>difficulties |
|--------------------------|-------------------------------|----------------------------------|--------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/>      | <input type="checkbox"/>         | <input type="checkbox"/>       |

If you have answered "Yes", please answer the following questions about these difficulties:

- How long have these difficulties been present?

| Less than<br>a month     | 1-5<br>months            | 6-12<br>months           | Over<br>a year           |
|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- Do the difficulties upset or distress your child?

| Not<br>at all            | Only a<br>little         | Quite<br>a lot           | A great<br>deal          |
|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- Do the difficulties interfere with your child's everyday life in the following areas?

|                    | Not<br>at all            | Only a<br>little         | Quite<br>a lot           | A great<br>deal          |
|--------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| HOME LIFE          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| FRIENDSHIPS        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| CLASSROOM LEARNING | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| LEISURE ACTIVITIES | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- Do the difficulties put a burden on you or the family as a whole?

| Not<br>at all            | Only a<br>little         | Quite<br>a lot           | A great<br>deal          |
|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Signature .....

Date .....

Mother/Father/Other (please specify:)

**Thank you very much for your help**



## Appendix D

## Principal's Letter



## Young Children's Understanding of Emotion and Their Behaviour

Dear Principal,

I am following up the phone call to you by Dr Karen Salmon, School of Psychology, and write to invite eight year old children in your school to participate in a study examining the relationship between children's understanding of emotions and their behaviour, as reported by their parents. I have attached the information sheet that would be sent to parents, some of which I have duplicated for you below. I have also attached the questionnaire that I will ask parents to complete and the information that will be given to the children.

What is the purpose of the research?

- Previous studies have shown that a good understanding of emotions helps children to perform at their best in school, social situations and management of their own emotions. What remains unknown is if a general understanding of emotions or a particular type of emotion understanding, for example recognition of emotions or understanding the role of beliefs in emotions, is most important.
- Enhancing our knowledge of children's emotion understanding means that researchers are able to design more effective tools so that parents and teachers can help children in improving their understanding.
- This research aims to discover whether there is a connection between children's understanding of emotions in different areas and their behaviour as reported by their parents. This will help us to determine whether certain forms of emotion understanding need to be addressed to help children develop prosocial behaviours.

Who is conducting the research?

- Brylee Lamb is a Masters student from the School of Psychology. Dr. Karen Salmon will be supervising the project. This project has been approved by the University ethics committee.

What is involved if you give consent for children in your school to participate?

- All research directly involving children will be conducted on school grounds.

- Parents will be sent a questionnaire asking about how their child behaves and interacts with others.
- Children will be asked to participate in a task which involves telling the child short stories then having them show how the characters are feeling by pointing to pictures of faces with different emotions.
- Children will be seen individually by me. Each child will be absent from their classroom for approximately twenty minutes dependant on how long it takes them to complete the task. While no staff involvement is required to conduct the research, I would require a small, quiet room in which to give children the task. There would also be some minor disruption to classrooms with children coming and going. I would ask teachers to hand out and collect the information and consent forms that are sent to parents.
- Written consent will be gathered from parents before any child can participate in the study. Children will be asked to give verbal assent on the day.

What happens to the information gathered?

- The information gathered will be used in a Masters thesis. The study may be published in an academic journal or presented at a scientific conference. Any information provided by parents and children will be kept strictly confidential.
- All information gathered, including the completed questionnaires, will be kept in a locked, secure place for five years following this study. After this the information will be destroyed.

We would be more than happy to discuss the proposed research with you in more detail and answer any questions that you may have. We would also be more than happy to come into your school and discuss the research with you further in person. Any questions may be directed to the Supervisor of the project, Dr Karen Salmon, ph 463 9528, [Karen.Salmon@vuw.ac.nz](mailto:Karen.Salmon@vuw.ac.nz) or myself [Brylee.lamb@vuw.ac.nz](mailto:Brylee.lamb@vuw.ac.nz), ph 463 5233 ext 8074.

Thank you for taking the time to consider this request.  
Brylee Lamb

Appendix E  
Parent's Letter



Brylee Lamb  
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Dear Parent/Guardian,

You and your child are invited to take part in a study looking at ways in which children's understanding of emotions is associated with their behaviour.

**What is the purpose of the research?**

- Previous studies have shown that a good understanding of emotions helps children to perform at their best in school, social situations and management of their own emotions. What remains unknown is if a general understanding of emotions or a particular type of emotion understanding, for example recognition of emotions or understanding the role of beliefs in emotions, is most important.
- Enhancing our knowledge of children's emotion understanding means that researchers are able to design more effective tools so that parents and teachers can help children in improving their understanding.
- This research aims to discover whether there is a connection between children's understanding of emotions in different areas and their behaviour as reported by their parents. This will help us to determine whether certain forms of emotion understanding need to be addressed to help children develop prosocial behaviours.

**Who is conducting the research?**

- Brylee Lamb is a Masters student from the School of Psychology. Dr. Karen Salmon will be supervising the project. This project has been approved by the University ethics committee.

**What is involved if you agree to participate?**

- You will be asked to fill out a questionnaire about how your child behaves and interacts with others. This questionnaire will help to identify children's styles of interaction as well as any particular strengths or difficulties they may currently have. The results of these questionnaires will be kept entirely confidential.
- Your child will spend about twenty minutes with the experimenter doing some tasks that assess their understanding of emotions. The first task involves telling the child short stories then having them show how the characters are feeling by pointing to pictures of faces with different emotions. The second task involves asking your child open-ended questions such as "Tell me about a time when you felt happy". This is to look at how children talk about emotions. Your child's responses to these questions will be recorded on a Dictaphone so that the researcher can listen to them later. Your child will also be given a short task to examine their vocabulary as this is strongly linked with understanding of emotions. The tasks will be performed at your child's school.

### **Privacy and Confidentiality**

- The consent form and all data collected will be kept for five years after publication.
- All information you provide will be kept strictly confidential. Once information has been gathered from the emotion understanding task each child will be assigned a code number so that the researchers will not be able to identify them.
- All information gathered, including the completed questionnaires, will be kept in a locked, secure place for five years following this study. After this the information will be destroyed.

### **What happens to the information you provide?**

- The information gathered will be used in a Masters thesis. The study may be published in an academic journal or presented at a scientific conference. Neither you nor your child will be identified in the research or any subsequent projects or publications.
- You and your child will receive a summary of the general results of the study once it has been completed.

Please note that participation in the study is entirely voluntary and you are welcome to withdraw at any time. If you wish for more information on this study or have any questions please feel free to contact us.

Thank you for your consideration,  
Brylee Lamb

Appendix F  
Parental Consent Form

**Consent to participate in *Children's Understanding of Emotions Study***

*If you wish to take part in the proposed study please read the following information carefully and sign in the space provided.*

I have read the information provided about the proposed study and am aware of what is involved in participating. I understand that the study is entirely voluntary and that I do not have to take part in it. If I wish to stop at anytime I can and my information will be destroyed and not included in the study. I have been given the opportunity to ask any questions that I have about the study.

I understand that all the information I or my child gives is confidential and will only be used for the purposes of the current study. Neither I nor my child will be identified in the study.

I have been given the chance to ask questions about the study and these have been answered to my satisfaction.

I agree to participate in the study.

I give consent for my child to participate in the study.

\_\_\_\_\_  
Parent/Guardian's Name (please print)

\_\_\_\_\_  
Signature

Date   /   /

Contact Details

Phone Number \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Child's Name \_\_\_\_\_

Child's Date of Birth   /   /

Child's Gender, please circle male/female

Child's Ethnicity \_\_\_\_\_

Is English your child's first language? Please circle   yes/no