INTEGRATION OF SOCIAL AND EMOTIONAL INFORMATION PROCESSING WITHIN AN INTERVIEW FORMAT FOR YOUNG CHILDREN: AGE EFFECTS AND ASSOCIATIONS WITH REGULATION AND BEHAVIOUR

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ABSTRACT

The role of emotion within the reformulated Social Information Processing (SIP) Model of Children's Social Adjustment (Crick and Dodge, 1994) has not been well investigated, particularly for young children. A developmental model of SIP and emotion proposed by de Castro (2010), provided the theoretical foundation for the current study to incorporate emotion processing variables into a pre-existing SIP interview for preschool children (SIPI-P, Ziv and Sorongon, 2011). The primary aims of this study were to (1) investigate age differences across social and emotional information processing between early childhood and early primary school aged children, (2) to describe the associations among children's social and emotional information processing and behavioural characteristics, and (3) to replicate and extend the results of Helmsen,Koglin, and Petermann(2012) by examining the relationship between regulation (emotion and behavioural), information processing (social and emotional), and child behavioural difficulties (externalising and internalising). Two cohorts of children were recruited (30 children aged 4 years old and 30 children aged 6 to 7 years old), who were administered an expanded SIPI-P interview and a self-regulation task. In addition, children's parents completed a questionnaire assessing internalising and externalising behaviours and emotion regulation. The results showed very few differences between the two groups of children for SIP, but consistent differences for emotion processing. Younger children rated aggressive responses more favourably, perceived more emotional intensity in the hypothetical vignettes, and showed lower levels of emotional reasoning and perspective taking skills when compared to the older children. Results also showed rather distinct patterns of associations for the two groups between social and emotion processing variables and behavioural and regulatory measures. For the preschool aged children there were consistent substantive associations between behavioural regulation and the social and emotion information processing variables, but very few associations with emotion regulation and internalising or externalising behaviours. For the early primary school aged children, there were several substantive associations between the social and emotion information procesing variables and internalising behaviours, but very few associations with behaviour regulation, emotion

regulation, or externalising behaviours. Finally, when emotion information processing and emotion regulation were jointly tested as predictors of internalising behaviours with the primary school children, the results showed that only emotion regulation remained a significant predictor. Overall, the inclusion of emotion understanding variables in a social information processing interview format demonstrated that parsimonious integration of the two areas is both achievable and successful in yielding useful research information and suggests that the SIP model may be effectively used to explore other domains of social cognition and social competence.

INTRODUCTION

When beginning at preschool or an early childhood centre, young children are placed in an environment that is often unfamiliar. Exposure to large numbers of children of a similar age may well be something that they have not yet had to contend with, and is likely to require some learning to occur in regards to understanding how the social environment operates. Children are provided withopportunities to be introduced to an educational environmentin contexts that are often socially driven, such as kindergarten and preschool, and have important implications for cognitive development (Gauvain, 2007). Cognitve activities involved in the processing of social situations are broadly defined, under the term "social cognition", as "the ability to understand other people", involving the skills of monitoring, predicting and understanding the behaviours and actions of others (Geanagu and Reid, 2006, p544). The cognitive processes relating to how young children understand this environment may well hold relevance as to why some children adapt well, and why others do not. An understanding of how children perceive and interpret their social environment, and how these perceptions develop over time, may enlighten us as to why some children develop more social competence than others.

The present study aims to explore connections between young children's cognitive processes, emotion processes and behaviour in relation to social situations. In order to introduce the specific area of investigationthe concept of social competence will be discussed within a cognitive framework. This will be followed by an explanation of how a model of children's social competence has been developed from within this cognitive framework. In order to tie the concepts of emotion and information processing together a background to emotion and emotion development, and the development of information processing will be outlined.

In discussing the literature related to the use of asocial information processing model of Social Competence the research prior to the reformulation of the aforementioned model (Crick and Dodge, 1994) will be briefly summarised, followed by an outline of the ensuing research that

primarily relates to aggressive behaviour, the extended use of the model to explore different contexts and types of behaviour, and its use with an understudied preschool population Consideration will be given to how the aspect of goal clarification within the reformulated model is linked to emotion and this will lead into a discussion of the incorporation of emotion into the social information processing framework, as well as how information processing and emotion can be viewed within a developmental perspective. In linking the literature to the present study the social information processing model will finally be discussed in terms of its application to community samples and investigation of age differences.

Social Competence

Definitions of children's social competence tend to vary dependent upon the emphasis they place on cognitive skills, behaviour, interpretations of others, and developmental outcomes. Connor and Fraser (2011) described social competence as a foundational skill that allows children to interact and engage with other children in a co-operative manner. Social competence is often thought of as comprising both cognitive and behavioural aspects; multiple steps of mental processing of social information combined with the ability to enact prosocial behaviours (Connor and Fraser, 2011). Current evidence suggests that the skills of cognitive processing and self-regulation develop early in childhood and can be linked either positively or negatively to child developmental outcomes (Connor and Fraser, 2011) such as conduct problems (Dodge and Pettit, 2003; Webster-Stratton and Hammond, 1997), peer acceptance or rejection (Hartup, 1996; Mostow, Izard, Fine and Trentacosta, 2002), and school readiness(Ziv, 2013). Skills such as arousal regulation and ability to sustain focus are identified as key factors in linking cognitive processes with actual behaviour. Social competence can, therefore, be more fully described as cognitive processing of social information combined with self-regulation and enactment of strategies as a response to cues in the social environment (Connor and Fraser, 2011).

These aspects of social competence have often been related separately to individual behaviour (Dodge, Dodge, Pettit, McClaskey, Brown and Gottman,1986; Dodge and Price, 1994;

Huesmann and Guerra, 1997; Keil and Price, 2009, Meece and Mize, 2010). More recent studies have attempted to combine emotional understanding/regulation and social information processing in a bid to gain insight into how they explain competent versus non-competent behaviour, as well as other developmental outcomes in children (Arsenio, Adams and Gold, 2009; Dodge, Laird, Lochman, Zelli and the Conduct Problems Prevention Research Group US, 2002; Horsley, de Castro and Van der Schoot, 2010; Helmsen, Koglin and Petermann, 2012; Numenna, Peets and Salmivalli, 2008;). The current study aims to investigate the use of the reformulated cognitive model of Social Information Processing (Crick and Dodge, 1994) in understanding young children's social behaviour, linking this with both emotional and developmental aspects in children's interpretations of peer social situations.

Cognitive Processing of Social Information

The shift in psychology from a purely behavioural to a more cognitive-behavioural paradigm (Dember, 1974) led to increased focus on mental processes, rather than observable behaviour alone. This shift brought about different ways of thinking about behaviour, with information-processing theories arising during this transition (McDonel,1995). Miller (2002) summarises information processing as a framework, as opposed to a single theory which examines how information flows through the cognitive system, beginning with input and ending with output, with mental operations such as representation, comparison, and assigning of meaning occurring along the way. The stages of processing were initially perceived as linear and sequential, but McClelland and Rumelhart (1986) later proposed that processing could be both general and specific, occur in both directions, and also occur with multiple patterns being processed simultaneously (parallel distributed processing model), though Miller (2002) noted that there are limitations on how much information humans can simultaneously process.

While McDonel (1995) argues that in relation to social competence the framework hinges on the stimuli from the environment, Miller (2002)suggests that information processing theory largely ignores social context. McDonel (1995) proposes that the environmental stimulus acts as the input

to be received, perceived and interpreted before the decision making process (generation of potential responses, matching responses to the required task outcome, selection of the best response, searching for availability of the response within a behavioural repertoire and the evaluation of potential consequences of the selected response) is engaged. This process produces some form of enactment which can then be monitored for resulting consequences. However, Miller (2002) argues that the information processing framework is not well equipped for dealing with more ecological considerations, such as the demands of the wider setting or the needs of the individual, and also doesn't account for the influence of emotion, social understanding and scripts. It was noted, however, that more recent work is starting to branch into the area of social influences in information-processing which traditionally has viewed humans as information-processing systems, focusing on input and output (Miller, 2002).

The Social Information Processing Model of Social Competence in Children

The Social Information Processing (SIP) model is one prevalent model of social cognition which also suggests that there are several steps in the cognitive processing of stimuli within a social situation (Crick and Dodge, 1994). These cognitive steps enable a person to encode, interpret and evaluate social stimuli, which leads to a responsive behaviour. This model has been widely used as a tool to explore social adjustment in children, most commonly in terms of maladjusted SIP patterns and how it relates to aggressive behaviour (Arsenault and Foster, 2012; Arsenio, et al., 2009; Calvete and Orue, 2012a; Calvete and Orue, 2012b; de Castro, 2010; Dodge, et al., 2002, Helmsen, et al., 2012; Hodges, Peets and Salmivalli, 2009; Horsley, et al., 2010; Peets, Hodges and Salmivalli, 2011; Ziv, 2012; Ziv and Sorongon, 2011).

The five processes discussed by Dodge, et al. (1986) as part of the Social Information Processing Model of Social Competence in Children were (1) encoding, (2) representation, (3) response search, (4) response decision, and (5) enactment. It was suggested that these cognitive steps occurred in response to a set of social cues, and could be utilised to measure level of risk for later development of maladaptive social outcomes. These five steps were originally presented in a

linear fashion and it was indicated that they followed a sequential process, though Dodge, et al. (1986) highlighted the fact that, while the steps can hypothetically be separated, they can also be utilised cumulatively.
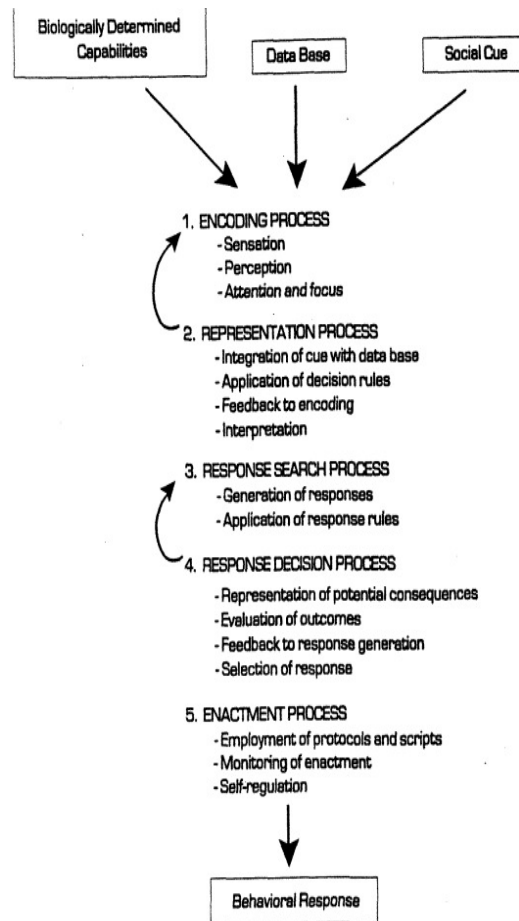
Figure 1. A social information-processing model of children's social adjustment. From "A Social Information Processing Model of Social Competence in Children (p. 84) by K. A. Dodge, 1986, in M. Perlmutter *The Minnesota Symposium on Child Psychology (Vol. 18).* Hillsdale, NJ: Lawrence Erlbaum Associates,

Figure 1: *Social Information Processing Model of Children's Social Adjustment (as presented by Dodge(in Pertmutter, 1986)*
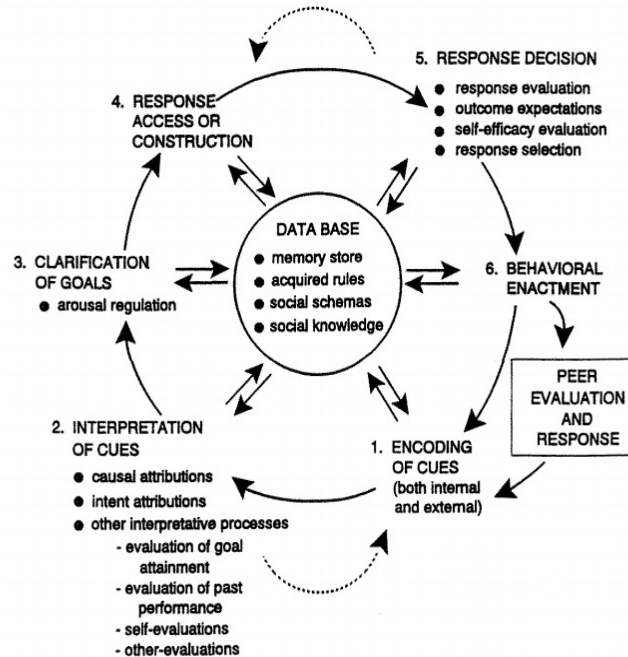
Figure 2. A reformulated social information-processing model of children's social adjustment.

Figure 2: *Reformulated Model of theSocial Information Processing Model of Children's Social Adjustmentas presented by Crick and Dodge (1994).*

The SIP model of social competence in children was later reformulated by Crick and Dodge (1994) as seen in Figure 2. Of note was the introduction of a sixth step, goal clarification, which sat between interpretation (previously termed 'representation') and response access/construction (previously called 'response search'). This addition meant that the steps in the model were now: (1) encoding of cues, (2) interpretation of cues, (3) clarification of goals, (4) response access or construction, (5) response decision, and (6) behavioural enactment. The step of goal clarification was based on the premise that children select a desired outcome for a situation which then has an impact on the types of responses they may generate.

Also mentioned in the SIP model of social competence was the idea of pre-existing abilities and a store of knowledge, however, this was not clearly described in regards to how it operated in the original model. When the model was reformulated, more focus was placed on the

interconnections occurring between a person's cognitive database (made up of memories, acquired rules, social schemas and social knowledge) and the different SIP steps (earlier called 'processes').

The model proposed that, first, a child needs to encode the cues they are presented with, and that errors can occur within this process due to the fact that different children will attend to different cues, some of which are relevant and some not. Then a child will need to interpret the data they have encoded, which will be connected to prior learning about the world, such as what a particular facial expression means in regards to intention. Based on the cues attended to and the interpretations given, the child must then generate one or more possible responses to the situation. Even if the child can generate many different responses, the responses that are accessed will be consistent with some previously developed rules that connect with the interpretation of the situation. Finally the child will need to evaluate the efficacy and consequences of generated responses before selecting and enacting the behaviour. The assumption is that all these steps occur incredibly rapidly, repeatedly within each social interaction, and sometimes at a non-conscious level. The changes to the model highlighted that the knowledge database could interact in a variety of ways with each step, and this was demonstrated by presentation of the model in a circular format, with the database at the core of the SIP steps. The circularity of the reformulated model also allowed for demonstration that the steps were occurring repeatedly and, while they followed a particular pattern, it was possible to reverse and readdress steps before proceeding forward in the presumed sequential process. This was done in response to criticism from connectionist theorists' arguing that some cognitive processing of social stimuli actually occurs in a parallel format (McClelland and Rumelhart, 1986). The reformulated model also included feedback loops which recognised that individuals may be involved in multiple processing steps at the same time, such as interpreting while continuing to encode environmental cues.

In justifying these changes to the SIP model of social adjustment, Crick and Dodge's (1994) review of the use of SIP models in research into social adjustment, discussed how the impact of social cognitions on social adjustment had been more prominent in previous research, than the role

of social adjustment in influencing social cognitions, and how the reformulated model could take into account this reciprocal relationship. In this regard, the reformulated model clearly accounted for the possibility that internal processing systems interact with the environment in order to produce both individual instances of behaviour. It also outlined how the processing and outcomes of behaviour in turn can contribute to potential changes to the composition of the internal database or to the strengthening of the database, dependent on the decisions made throughout the processing stages and the feedback received or outcome from the enacted behaviour.

Crick and Dodge (1994) recognised that latent mental structures (such as scripts or schemas) made up part of the "social knowledge" in an individual's database. The authors discussed research from cognitive science that highlighted the reliance of heuristics in situations of overwhelming stimuli, and suggested that heuristics can drive more automatic, "on-line" processing in future situations. They indicated that there are differences in children's processing in automatic processing situations, as compared with the more conscious processes that are commonly measured in the study of social cognition. This concept of automatic versus conscious processing was then related to the concept of pre-emptive processing, where processing is rapid, automatic and irrational, and potentially driven by emotionally arousing situations. Hence considerations of emotional regulation are taken into account when thinking about actual situations where people might respond positively or negatively.

Crick and Dodge (1994) discussed the lack of research of emotion in SIP, placing some emphasis on disagreement between theorists about the distinction between the two concepts, but supported the idea that emotions are an integral part of SIP, and gave examples of how emotion would potentially interact with each proposed step of the reformulated model. The authors indicated that very little work had been done from an integrative perspective with SIP and emotion. Crick and Dodge's review (1994) called for more "ecologically valid assessments" of SIP that allow for investigation of the role of active (not just reflective) processing, which may be driven by emotion or pre-emptive/script based processing. Given the emphasis Crick and Dodge (1994) placed on

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emotion regulation, as well as the identified lack of integration of emotion into the study of SIP, the present study attempts to investigate how elements of emotion may be incorporated into an SIP model, that may be of use for further research in this area.

Emotion and Emotional Development

One of the key difficulties in reviewing the integration of emotion and SIP may be the differing ways in which emotion is conceptualised. De Castro (2010) describes three aspects of emotion. First, there is the experiential/cognitive, which represents the actual experience of feeling a particular emotion (the subjective experience or understanding), second is the motoric/behavioural aspect of emotion which is the automatic drive or "action tendency", characteristic of emotion, and third is the neurophysiological aspect which can be measured via levels of physical arousal associated with specific emotions. These distinctions are somewhat in keeping with descriptions of emotional experience outlined by Denham (1998), with recognition of the contribution from cognitive appraisal of emotional situations and arousal (experiential/cognitive), emotion-specific tendencies to act in a certain way (automatic drive), and arousal of the brain and nervous system (neurophysiological)), the combination of which lead to the expression of emotional behaviour and feelings. The measurement of physiological arousal and action tendencies is difficult to measure unless they are specifically applied to practical, real time experiments which are beyond the scope of this study. Therefore, the most suitable presentation of emotional content within the SIP model is that which pertains to the experiential/cognitive aspect. This is the area that most cohesively fits with the cognitive steps of the SIP model and is most likely to capture the interpretations and ideas about experience of social and emotional situations. Given that SIP is a model of social competence, a model of emotional competence may align well in regards to studying the two areas together. Denham's (1998)definition of emotional competence proposes three key components: expression, understanding, and regulation. Expression of emotion was described as including gestures, empathic involvement, display of complex emotions and realisation of the potential for contradiction between internal experience and external

demonstration of emotion. The explanationof emotion understanding included discerning between emotional states in oneself and others, and using vocabulary related to emotion. Finally regulation of emotion entailed the use skills involved in coping with aversive feelings and pleasurable emotion and controlling expression of them, as required, as well as strategic use of emotional expression for different purposes (Denham, 1998).

It is important to note that explanations of emotional intelligence have much overlap with the concepts of emotional competence described above. Mayer, Salovey and Caruso (2004) presented a four branch model of emotional intelligence including the aspects of perception of emotion (recognition of cues indicating different emotions), use of emotion to facilitate thinking (linked to a knowledge base about how humans experience emotion, such as physiological reactions), understanding of emotion, and management of emotion. The connection between emotional intelligence and social competence will be addressed further below.

Though there are various ways of interpreting and measuring emotional competence, the present study has a key focus primarily on the understanding of emotion, due to its cognitive style which can be easily integrated into a social information processing framework. However, the importance of expression of emotion and emotion regulation in regards to influencing or being influenced by SIP processes is acknowledged, with some particular attention also paid to the regulatory aspect in the present study. The inclusion of emotion regulationis prudent given the emphasis placed on regulation within definitions of social competence (Connor and Fraser, 2011).

Denham (1998) describes an interconnected nature to these aspects of emotional competence, whereby an ability to engage in one aspect impacts on the ability to perform in another area. Denham (1998) gave an example whereby a young girl may be in a bad mood consistently, which may well impact on the opportunities she has to learn about a peer's emotions. In contrast, the interconnectedness could present in a positive, competent direction. A child who can regulate emotions and therefore learn more about their own feelings, and another's, may be more likely to feel emotions such as guilt when they upset another child with the emotion regulation upon which

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these skills depend is built up from experience within other emotion driven contexts and utilising

emotion processes (Denham, 1998). The interconnectedness, which is described as "inescapable"

(Denham, 1998, p4), essentially echoes the interconnectedness espoused within Crick and Dodge's

reformulated SIP model (1994) whereby experience and cognitive processes feedback on each other.

This interconnectedness demonstrates how emotional development may occur. Denham

(1998) and de Castro (2010) both discuss the nature of emotional development in children in their

work, suggesting that children demonstrate different skills at different ages or stages. Basset,

Denham, Mincic, and Graling (2012) proposed that emotion knowledge may have a linear

developmental pathway, suggesting that ability to identify and label emotions may lead to

situational understanding of emotion. In a similar line of thinking, Pons, Harris, and de Rosnay (2004)

outlined a developmental perspective of emotional understanding which was just one of the

components identified by Denham (1998) and applied this to children between the ages of 3 and 11

years old. They included a further three aspects within the understanding component: external

understanding, mentalistic understanding and reflective understanding. The three components

were organised hierarchically, based on the cognitive tasks contained within them and children's

performance on these tasks at different ages. External understanding was described as a focus on

external cues such as facial expressions and external causes of emotion, and also referred to the idea

that reminders of emotion can impact current emotional response. This phase of understanding was

identified as the first developmental period within this study, and occurred at around 5 years of age.

Mentalistic understanding included understanding of desires and beliefs, as well as an ability to

distinguish between expressed emotion and experienced emotion and was linked with children

around 7 years of age. Finally, reflective understanding incorporated the ability to think about an

emotionally charged event from more than one perspective and leads to reflection on mixed

feelings, cognitive control strategies, and rumination on emotions, and was most associated with

children around 9 to 11 years of age (Pons, et al., 2004).Tenenbaum, Alfieri, Brooks and Dunne

(2008) describe the reflective process, as discussed above, as being related to regulation,

ambivalence and morality. Denham (1998) suggests that increasing complexity of emotional understanding and experience requires the use of regulatory abilities in ensuring appropriate social interaction and it is suggested that a developmental perspective therefore focuses on the emotional, cognitive and behavioural aspects of emotion regulation. These are the same three aspects that have been identified in relation to overall social competence. It is not surprising then that a description of emotional intelligence, with aspects of both emotion and cognition, clearly has aspects of all these factors. Emotional intelligence "combines ideas that emotion makes thinking more intelligent and that one thinks intelligently about emotions" and includes the skills of accurate perception, appraisal and expression of emotion, access and generation of feelings, understanding of emotion, and ability to regulate emotions in order to foster emotional and intellectual growth (Mayer and Salovey, 1997). Emotional intelligence with its distinctly cognitive influence leading to emotional expression or behaviour also appears to proceed through steps that echo the SIP model proposed by Crick and Dodge (1994). Given the similarities between the cognitive SIP model, and descriptions of emotional intelligence, it seems likely that there will be some relationship in the development of both emotional understanding and social information processing that justifies the analysis of the two aspects in conjunction with each other.

Development of Information Processing

Crick and Dodge (1994) queried the developmental progression and process of SIP, stating that it had not been well addressed and pointed towards the general developmental processes of acquiring cognitive skills, increases in memory capacity, and increased processing speed. They suggested that increases in experiences and socialisation by adults would result in quantitative and qualitative changes to cognitive ability, and that increases in the capacity or speed of processing are demonstrated through improved efficiency and complexity of SIP. Crick and Dodge (1994) also hypothesised that changes to rigidity of processing patterns over time occurred due to neural pathways that are created from early experiences, and that these pathways are repeatedly travelled in subsequent social situations, resulting in more rigidity and resistance to change. They

summarised by suggesting that children become better at processing social information with age and recommended that future research focus on this area.

Regarding the concept of experience, Miller (2002), in describing information-processing theory, proposes that development of patterns can occur as a result of self-modification, whereby children may try out a range of strategies, then select a preference which they tend to use more often. Secondly, development of patterns can occur through response to task-specific demands, where the notion of rules and schemas are applicable to specific domains and are dependent on task-specific stimuli(Miller, 2002). Gauvain (2007) describes this process as adaptation of children's learning to the context within which the development of situational understanding is occurring. In some ways this may be linked to the concept of affordances, whereby the environment affords opportunities and cues that invite particular responses (Gibson, 1979). Gibson (2000b) noted that beyond this broad description we must also have an awareness of how these cues are discriminately perceived and used. Gibson (2000a) also mentions the significance of perception being an interactive process whereby children (specifically infants) seek out information about what is happening in the environment, what objects are and how they can be used, then attributing meaning through the context of the event, what the perceiver is doing at the time of the event, and their state of being at that time. In this sense, what is afforded to the child is essentially connected to many representative ideas that may well be better investigated through a cognitive mode of assessment, as in the social information processing model.

Essentially, experiences provide opportunities to try out actions or behaviours, and receive feedback, that may guide use of those actions or behaviours in the future. This concept of feedback through experience in relation to SIP has been investigated by Lansford, Malone, Dodge, Pettit and Bates (2010). Their study included 585 children who were due to start kindergarten and measured their SIP (i.e. encoding deficits, hostile attributions, aggressive response generation and aggressive response evaluation), social preferences (score for peer ratings of how well liked the child was) and aggression (through a teacher rated report form) in each year for four years. With implementation

of path modelling, Lansford, et al. (2010) found firstly, that SIP is not static and traitlike, and rather itseemed to change as a result of experience and adjustment of behaviour over time. Secondly, the authors found that each construct of Social Preference, SIP, and Aggression affected changes in each other over time in a cascading cycle.

While SIP was not found to be static and unchanging, instead being influenced by experiences and the countering or accommodating behaviour over time, it was emphasised that patterns and connections, once in motion, could become predictors of future problems (Lansford, et al., 2010). This suggests that over time patterns could potentially become more rigid as proposed by Crick and Dodge (1994),or at least become more maladaptive in general, depending on their experiences and responses to these. This was seen in a one year longitudinal study of 429 children aged 7 to 13 years, where patterns of processing in children were found through latent transition analysis. Children were found to have consistently high, consistently low, increasing, or decreasing maladaptive SIP over a one year period (Goldweber, Bradshaw, Goodman, Monahan and Cooley-Strickland, 2011). Key factors identified by Goldweber, et al. (2011) predicting those with consistently high maladaptive SIP was violence exposure and aggressive behaviour, while a key factor contributing to a decrease in maladaptiveness was behaviour regulation. It appears there is a dynamic process between different variables that contributes towards the development of SIP patterns, and Lansford, et al. (2010) pointed to the importance of intervening in a manner that attends to both cognitive and behavioural components. In order to target particular cognitive difficulties (i.e. maladaptive SIP) it would be useful to know at what age different problematic social information processes may occur, and also what is normative. In this regard it might be possible to identify when SIP is not characteristic of a particular age period. The current study has some focus on identifying what is common and what may be unique for children regarding SIP, by comparing preschool aged children with early primary school aged children.

Regarding the effects of memory, Miller (2002) outlines how memory has a large role to play in information processing theory, noting that developmental changes can occur for each step of the

remembering process (encoding, storing and retrieving). Carr (2006) indicates that memory improves with age, due to the use of more effective strategies, but this improvement is also dependent on knowledge about the recall and reconstruction of memory. Knowledge comes from experience, and Gauvain (2007) suggests that both event memories (episodic memories of important experiences) and semantic memory (pertaining to concepts, skills and categories) are influenced by social experience. Carr (2006) states that reconstructive memory is sometimes employed as an alternative to recall. With little knowledge on a topic, children tend to rely on recall alone, but with increasing experience of a situation type, the use of schemas and scripts becomes more effective in filling in gaps of recall, and performance in problem-solving is enhanced by familiarity with the situation (or similar situations). Miller (2002) suggests that strategies relating to memory continue to be developed to the point of being task appropriate, automatic and efficient, and more efficient use of strategies leads to a maximal use of capacity.

While increases in *capacity* are seemingly the most simple and straightforward explanation for improvement in memory, increases in capacity may well be related to improved efficiency, with cognitive skills becoming less challenging through practice, experience and acquisition of knowledge, and therefore taking less cognitive capacity to execute (Miller, 2002). This would alter the speed with which a person can engage in processing of information. As noted by Crick and Dodge (1994), improved complexity and efficiency of SIP are indicative of increase of capacity and speed of processing which will occur over time. With this in mind, the present study will continue to consider the potential effects of memory on the SIP variables, and additionally on emotion processing variables also.

Consideration of effects of experience and memory fits well within the reformulated SIP model of Social Competence. As outlined by Crick and Dodge (1994) a central knowledge base, consisting of memories and social understanding, feeds back to individual SIP steps in the process of paying attention to cues, attributing intentions, selecting strategies based on their likelihood to

attain desired outcome, enacting responses, and evaluating/monitoring the responses through the feedback then provided from the environment.

A final consideration, when looking at development of patterns of information processes, is theory of mind (ToM). Miller (2002) indicates that research into theory of mind is of current interest within the social cognition field, and that a child's understanding of the nature of mental states in self and others, particularly pertaining to mental representation, would influence the child's ability to think about people and their behaviour (Miller, 2002). Some of these important changes occur during preschool years, such as improvements in understanding of false-beliefs (Wellman, Cross and Watson, 2001). Schult (2002) suggests that children as young as 3 years old know that intentions and desires are distinct from each other, but up until the age of 5 years they are not able to consistently identify whether desires or intentions have been satisfied, and demonstrate confusion regarding the connection between intention and action.However, 5 year olds performed better on tasks that suggested they identified the need for some action to occur for an intention to be fulfilled and thereby demonstrated less confusion regarding this connection (Schult, 2002). The second of these concepts, is quite relevant to the step of interpretation within the SIP model, which relates to how children perceive intentions of others. In keeping with that, ToM has indeed been used as a component to measure SIP (though not within the framework of the SIP model) in a study comparing SIP and socio-emotional regulation in 3 to 9 year old, intellectually disabled and typically developing children (Baurain and Nader-Grosbois, 2013). Baurain and Nader-Grosbois (2013) included ToM in regards to understanding of causes and consequences of emotions, and this measure was combined with measures of socio-emotional problems solving to give an overall SIP score. They found that there were some specific bi-directional links between some SIP abilities (both ToM and socio-emotional problem solving) and socio-emotional regulation (particularly behaviour towards social rules, and less so for emotional expressions and social behaviour), with some similarities and some differences between groups. Additionally, similar variables for ToM, socio-emotional problem solving, and socio-emotional regulation significantly changed between age groups when the two

groups of children were compared for developmental age. Although the measures of SIP in this study are defined differently to those used in the SIP model, there is some overlap with variables that will be included in the present study so that we might also see some age differences in these types of variables.

Since the development of the Social Information Processing model of Children's Social Adjustment it has been utilised to address variables that predict SIP such as childhood maltreatment (Keil and Price, 2009), attachment security (Raikes and Thompson, 2008) and parenting practices (Nelson and Coyne, 2009) but it is still recognised that little research has been conducted in regards to how SIP patterns are developed (de Castro, 2010). Some studies have attempted to look at how SIP behaves as a mediator between life experiences and expression of problem behaviour (Dodge and Pettit, 2003). Further to this, Dodge (2011) proposes a model of aggressive behaviour which includes genetic, environmental, and processing mechanisms, and highlights the role of genes and early environment in leading to social information processing, in addition to a situational environment which contributes to the activation of SIP alongside neural activity and psycho-physiological activity

Crick and Dodge's Review of the Social Information processing Model in Research

When Crick and Dodge (1994) proposed the Reformulated Social Informational Processing model of Social Competence, they also addressed some of the limitations and methodological concerns of studying SIP and social adjustment, such as how social adjustment is defined. They indicated that there was difficulty in defining concepts such as acceptance by peers, aggression towards peers, and withdrawal from peer interaction. Practical difficulties were also acknowledged in relation to measures of social adjustment such as peer status and social behaviour; and the types of assessment methods used, such as responding to questions about hypothetical scenarios or memories of real social experience, and self-report. However, in regards to the SIP steps themselves, an examination of psychometric properties by Dodge, et al. (2002) indicated that each

was relevant, with all steps showing internal consistency and discrimination between constructs, suggesting construct validity and relevance for use with the identified population.

In the same study that the reformulated model was introduced, Crick and Dodge (1994) also conducted a comprehensive review of the use of SIP models for research in children's social adjustment prior to that point. The review discussed the research related to the different SIP mechanisms as defined by the reformulated model (Crick and Dodge, 1994) which included encoding (Step 1), attributions of causality and attributions of intent (Step 2: interpretation), clarification of goals (Step 3), response access or construction (Step 4), and response evaluation, outcome expectations, self-efficacy evaluation and response selection (Step 5: response decision). At the time of the Crick and Dodge (1994) review, results were generally clearer for children with maladaptive or aggressive behaviour patterns. Studies suggested that these children tended to focus on aggressive cues or use cues less, were more aggressive in their attributions (when older), endorsed more instrumental goals, generated fewer responses to conflict, their responses were more aggressive in nature and less relevant to achieving goals, they positively evaluated maladaptive behaviour, expected favourable outcomes from aggression, had more self-efficacy beliefs for aggression and selected responses that were more aggressive and less friendly. However, results for children with competent and withdrawn or submissive behaviour patterns were less explored and results were less clear at that time. Therefore it is not surprising that research into social information processing has continued to further explore the use of the SIP model in a range of contexts and applications since that time.

Use of the Reformulated Model in Social Information Processing Research

Since the review by Crick and Doge (1994), the Social Information Processing model has continued to be utilised in a range of ways, in conjunction with various different measures and applied to different contexts in order to gain more understanding between the processing steps and their application to different types of children in different contexts, as well as beginning to explore the links between the different steps. The areas that will be discussed are those of automatic versus

reflective processing, a shift of focus from aggression to competence, the influence of situational and relational contexts on expression of aggression, and modality of aggression (reactive/proactive, overt/relational).

Addressing the initial steps of the SIP model, Horsley, et al. (2010) used electronic eye-tracking measures in a sample of 60 children, 10 to 13 years old, to examine the cues children attend to during the encoding of ambiguous provocation scenarios. By using the eye-tracking method, the study tapped into an aspect of automatic processing that did not depend on reflective processing alone as is traditionally used in the SIP format. Horsley et al. (2010) found that aggressive children were more likely to look longer at non hostile cues (Step 1: encoding), but still attributed more hostile intent (Step 2: interpretation) than non-aggressive peers, suggesting that more attention is paid to schema-inconsistent information, but that this does not alter attribution biases.

Ogelman and Seven (2012) moved away from the study of aggressive behaviour in their study of social competence and peer relationships. Sixty 6 year old children were presented with eleven pictures relating to provocation, peer group entry, social expectations, and response to failure. In conjunction with the pictures, the children were asked questions that measured how accurate their perception of a scenario was, their interpretations of hostility, the number of responses generated, the content of their response decision (e.g aggressive, authority dependent, passive and solution based) and the behaviour selected from the response decision (with the same categories as for content). It was found that higher accuracy or competence in every stage of SIP that was examined was positively associated with variables that measured social competence and peer relations (from teacher ratings). There were also significant negative relationships between more competent encoding, interpretation, and response decisions (number) and teacher ratedmeasures of both reactive and proactive aggression, levels of victimisation and exclusion. Additionally, three of the five SIP measures (encoding, interpretation and number of responses) were also predictive of social competence and peer relations

Several other studies, all with samples drawn from children in their first four years of primary school, have attempted to be more ecologically valid by exploring how the context of social situations influence SIP, by looking at how SIP differs across different "domains". Domains that were identified in these studies included peer provocation situations, peer group entry situations and, in some of the studies, authority-driven situations. In the following studies that used these situational "domains" as the context it was consistently found that individual processing patterns within the domains of peer provocation and peer group entry are associated with actual aggressive behaviour for that domain only (Dodge, et al., 1986; Dodge, et al., 2002; Keil and Price, 2009, Numenna, et al., 2008). However, it was also indicated that the specificity of these domains in predicting behaviour was not as strong as that from the cognitive constructs of SIP (Dodge, et al., 2002).

Further studies have extended ideas of situational context by interviewing children about their information processing for social situations based on like or dislike of a "transgressor" in a hypothetical vignette. The transgressor in a vignette was the person involved in the problematic social scenario from the hypothetical vignettes, aside from the protagonist. In using like and dislike as a relational context, these studies necessarily introduced an aspect of emotion into their research, in terms of "affective ties" that the adolescent participants, (mean age of 14 years old), were making judgements about (Numenna, et al., 2008; Peets, et al., 2011; Peets, Hodges, and Salmivalli, 2013). Like or dislike of the protagonist was determined by ranking of peers, such that children nominated three children they liked and three children they disliked in their classroom, and the names of the nominated peers were then inserted into the hypothetical scenarios (Numenna, et al., 2008; Peets, et al., 2011). In the study conducted by Peets, et al. (2013), rather than being presented with hypothetical scenarios, participants were asked to reflect on remembered social interactions that they had actually experienced with these liked or disliked peers Support was found for the concept that relational schemas influence the encoding of cues, with longer response times for both liked and disliked peers, compared to neutral protagonists (unknown), and also that feelings of like towards a potential protagonist had an effect on social cognitions related to attribution,

anger, and retaliation-driven responses (Numenna, et al., 2008, Peets, et al., 2013). It also impacted on likelihood of depth of anger, which mediated between social cognitive processes and motivation for avoidance and revenge (Peets, et al., 2013). Peets, et al. (2011) also found that social cognitions around expectations of anger and self-efficacy beliefs only predicted an increase in aggression for children who maintained dislike for the transgressor over a one year period. Different aspects of social cognition also appeared to be differentially related to two types of aggression; reactive and proactive. A reputation of reactive aggression, as rated by peers, moderated effects of hostile attribution on change in aggression, and a reputation of proactive aggression, as rated by peers, marginally moderated the effect of self-efficacy beliefs on change of aggression, with the moderating effects increasing as the level of aggression (low to moderate to high) increased (Peets, et al., 2011).

The relationship between SIP and the distinction of reactive and proactive aggression has been examined in other research with adolescents and younger children. Calvete and Orue (2012b) examined how SIP responses are predicted by different schemas (such as justification of violence, mistrust, and narcissism), and how aspects of SIP then predict reactive aggression. In this study, each unique schema predicted biases in different SIP components, but the only component deemed to be a mediator for reactive aggression was response access/construction (Step 4).Arsenio, et al. (2009) introduced some aspects of emotion into their examination of both reactive and proactive aggression by looking at the connections these types of aggression had with SIP, moral reasoning, and emotion attributions. Again, different variables of SIP were related to different forms of aggressive behaviour, as well as different aspects of emotion. Hostile attribution biases (Step 2: interpretation) and ease in enacting aggression (self-efficacy evaluation; Step 5: response decision) were associated with reactive aggression, as well as lower verbal abilities, and these links were mediated by attention problems. Higher expectations for positive emotional and material outcomes (outcome expectations; Step 5: response decision) for aggressive responses were associated with proactive aggression and higher verbal ability. This study only utilised Step 2 and 5 in their measure

of SIP, stating that intent attribution (Step 2) is generally used to assess early-stage information processing that is usually associated with reactive aggression, and outcome expectancy (Step 5) is usually linked with later stage SIP and proactive aggression. However, in this study, two variables (self-efficacy evaluation and outcome evaluation) were used to measure response decision (Step 5), with one variable relating to reactive aggression and the other relating to proactive aggression. This contradicts the assertion that later stage processing is only linked to proactive aggression, as aspects of response decision were linked with both proactive *and* reactiveaggression in this study.

Another distinction made in types of aggression is between overt and relational; overt aggression describes harm of another by way of physical damage or unconcealed threats of damage, and relational aggression describes harm caused through damage to relationships (Crick, 1996). Arsenault and Foster (2012) examined attention shifting and free recall (both aspects of Step 1, encoding) of scenarios with unambiguous overt aggression, relational aggression, or prosocial behaviour (four of each type) presented via video clips in a sample of 96 fourth to sixth grade children (10 to 12 years). Attention shifting was measured by the time taken in moving attention away from the videos to attend to another task (pressing a space bar when a red light was visually detected). Free recall was a percentage measure of the accurate reporting of story elements from the video. It was found that more overtly aggressive children had more difficulty moving their attention to another task when the video presented overt aggression, and that more relationally aggressive children had more difficulty moving their attention when relational aggression was presented. The results were more distinct for relational aggression, as the associations were found with both peer and teacher rated aggression in that group, as opposed to just for peer ratings in the overt group. Additionally, associations between ratings of relational aggression and attention shifting were not explained by level of overt aggression, whereas associations with overt aggression did not hold once relational aggression was controlled. . This adds to the evidence that supports the possibility that schemas play a role in altering how attention is paid to particular cues in the process of encoding.However, these results do contradict findings by Horsley et al. (2010), discussed earlier,

which suggested that attention is paid to schema-inconsistent info rather than schema consistent information.Schema consistency for encoding is not a focus of the present study, but Crick (1996) has suggested that such schemas are relatively stable over time.

The SIP model has clearly been used in a variety of ways to further enhance our understanding of how different types of children process social information in a range of contexts. The interplay between SIP variables and other variables relating to situational context, relational context, type of aggression, and schemas, as well as the range of methods used to measure these, highlights the value but also some of the complexity involved in utilising the SIP model in research. The present study has a focus on keeping the method of SIP measurement as streamlined as possible for this reason.This is particularly relevant to the use of the SIP model with preschool aged children who are a much less studied population in regards to social information-processing (Schultz, Ambike, Logie, Bohner, Stapleton, VanderWalde, Min and Betkowski, 2010). Crick and Dodge (1994) attributed this to assessment difficulties with this age group.

Social Information Processing Research with Preschool Children

Working with preschool children may afford difficulties that are less apparent than when working with older children. The key concerns in SIP research with this age group will be considered, and then attempts which have aimed to address some of these concerns will be discussed. Followed by this, an overview of findings from previous social information processing research within this age group is presented.

As described in the above section, attemps have been made to use SIP in various ways that relate to ecologically valid applications for the reformulated SIP model with primary-school aged children and adolescents. However methods for doing so have often relied on a child's ability to read either scenarios or questions which would not apply so easily to a younger population (Meece and Mize, 2010). Other methods for SIP measurement that have been used with older children include use of video-vignettes which have employed an acted format (Arsenault and Foster, 2012; Dodge and Price, 1994; Keil and Price, 2009),or cartoon format (Horsley, et al., 2010). The above

studies have taken steps to balance race and gender in order to eliminate effects of bias and the development of such vignettes can be costly and time consuming (Crick and Dodge, 1994). However,the use of such methods to demonstrate scenarios with familiar and concrete stimulus materials (such as building with wooden blocks, or playing with puzzles) has previously demonstrated some success in allowing preschool aged children to determine between intentional and unintentional action (Katsurada and Sugawara, 1998). This suggests that video methods that are more specifically tailored to younger children would be useful, but such methods are often lengthy processes to engage in, with Katsurada and Sugawara (1998) utilising 14 videos with follow up interview questions, each taking 10 to 15 minutes to complete. Some children had to continue with the task on a different day if they were not able to complete all of the vignettes in one session. This is not ideal for either the child's comfort nor the reliable collection of data.

Meece and Mize (2010) also went to some length to address some of the above concerns in their study which investigated multiple aspects of SIP and the relationship these steps had with peer acceptance and social interaction styles of 128 children between 3 and 6 year old. Particular care was taken in this study to ensure the acted video-vignettes depicted children of a similar age, in familiar preschool settings, with common materials and common social themes. They also used puppets and props to facilitate enactment of responses (Meece and Mize, 2010). Again, the video measures were costly and time consuming, and very demanding of children's attentional capacity, however the use of puppets and props may well be of benefit in accessing behavioural enactment (Step 5) responses in the SIP model.

Some studies have successfully utilised simpler methods for studying SIP in preschool age children. Raikes, Virmani, Thompson, and Hatton (2013) evaluatedthe longitudinal effects of attachment security and SIP (hostile attribution bias and social problem solving) on changes in peer conflict over the transitional period between preschool and first grade in a normative community sample of 942 children. Cartoon drawings of ambiguous events with stories were used to elicit perceptions of intention and stories of social problems were used to elicit problem solving responses

in children 54 months of age. These SIP measures were used alongside measures of attachment relationships (at 15, 24 and 36 months) to determine their influence on the changes in peer conflict between 54 and 84 months. Another study with 193 German preschool children 3 to 5 years of age also used relatively simple methods with line drawings of hypothetical vignettes and questions related to interpretation (Step 1), response generation (Step 4) and response decision (Step 5) administered in conjunction with the drawings (Helmsen, et al., 2012). This study examined the mediating role of SIP between emotion regulation and aggressive behaviour, and will be discussed further in the 'Emotion and SIP' section below.

Some of the methods used in the studies outlined above were lengthy, while others utilised a simpler format for assessment, though these often consisted of a collection of different measures for different SIP steps. In response to the acknowledged challenges of studying SIP in preschool aged children, Ziv and Sorongon (2011) recently developed an assessment tool called the Social Information Processing Interview – Preschool (SIPI-P) to be used with preschool aged children (aged 48 to 61 months) which aimed to be highly reliable, as well as compact and efficient such that it could be used on a wide scale and with a diverse range of child populations. They developed an interview that was based on a storybook format (a familiar and concrete stimulus material) that included stories relating to social situations with themes that were pertinent to preschool age children, such as joining in playing withplaydoh, or having someone change the channel while they were watching it. One of the distinguishing factors for the SIPI-P was that all steps were assessed within one measurement tool.

The SIPI-P was based on the Social Information Processing Interview (SIPI) developed by Dodge and Price (1994) and followed the same multistep framework of the SIP model, incorporating questions related to encoding, interpretation, response generation, and response evaluation on the assumption that each step could independently be associated with individual differences and should therefore be measured separately. The original SIPI included three types of scenarios. Peer group entry involved rebuffed attempts to initiate play with a group of peers, peer provocation involved a

clear provocation from another child against the protagonist, such as taking their turn in a game, and authority directed scenarios involved direction from an adult for the protagonist to partake in an unpleasant task such as cleaning up or staying after school. Portrayals of hostile, non-hostile, and ambiguous intentions were balanced between the three scenario types in the SIPI. In contrast, the SIPI-P included only peer provocation and peer rejection, and only stories of ambiguous or non-hostile intentions were depicted (Ziv and Sorongon, 2011). This resulted in the important fact that the SIPI-P was a much shorter measurement tool that would be better suited for use with younger children who would be likely to have shorter attention spans.

Regardless of the method used, all of the studies outlined above, have demonstrated the ability to use SIP measures with preschool children, and have been utilised in demonstrating some patterns of social information processing and relationships with behaviour . The two studies that used video-taped vignettes both found associations between measures of aggressive behaviour (and measures of competence also in the second study) with most SIP variables included in their studies. The Katsurada and Sugawara study (1998) with 68 children ranging from approximately 3 ½ to 4 ½ years old, found that hostile/aggressive preschool children, as rated by teachers, demonstrated more hostile attribution biases compared to less aggressive children. Meece and Mize (2010) found that the measures designed to assess young children in relation to competence and aggression are not just a reflection of verbal ability or maturity, and that hostile attribution (Step 2, interpretation) and quality of response generation (Step 4, response access/construction), but not recall of relevant cues (Step 1, encoding), were uniquely related to teacher ratings of competence and aggression in a group of 128 3 to 6 year old children.

In one of the studies with a simpler format, Raikes, et al. (2013), elicited perceptions of intention and problem solving responses in children 54 months of age. These measures, alongside earlier measures of attachment relationships, were used to determine the influence of SIP and attachment on peer conflict and increase or decrease in peer conflict between the ages of 54 and 84 months (over a period of school transition). Of the social information processing variables, social

problem solving was only significantly associated with attachment security or demographic variables, whereas hostile attribution bias was associated with the demographic variables (gender and family income-to-needs ratio) as well as peer conflict at all time points (54 months, Kindergarten and Grade 1). It was also found that peer conflict tended to decrease over time, but SIP was associated with slightly steeper declines of this type of conflict. In other words, while peer conflict seems to decrease over time regardless of other factors, lower hostility in attributions and competence in problem solving (composite of scores for number of responses, number of prosocial responses, and variety of responses) contributed to more decline in conflict than for children who were more hostile and less competent (Raikes, et al., 2013). In a study that examined the influence of early childhood (preschool age) SIP on later externalising problems (first grade), not explained by shared associations with family risk, Runions and Keating (2007) used vignettes which were read aloud to 893 children In assessing hostile attributions of intent (HAI) four ambiguous and gender-tailored verbal vignettes were presented at preschool age (54 months) which were followed by questions pertaining to the concept of whether the other child had "wanted to" do something or had caused the event "accidentally". At Grade 1 hostile attributions were measured with eight gender-tailored scenarios, accompanied by stick figure drawings, four of which depicted physical transgressions and four which demonstrated overt social rejection. These were then followed by an open ended question asking why the other child had behaved in the way described. Aggressive response planning (ARP) was also measured at Grade 1 level, through an open ended question asking what the child would do in response to the eight scenarios (that were presented for hostile attributions). Performance on the measure of HAI at preschool age was found to be a predictor of later problem behaviours, more so than the measure of HAI for children in Grade 1. Additional findings from this study showed that the preschool children who made more benign attributions of intent scored higher for cognitive performance, and in first grade interpreted fewer hostile attributions (HAI), were less aggressive in their response planning (ARP), and were rated lower for externalising tendencies by their parents.

Similarly to the Runions and Keating (2007) study, Raikes and Thompson (2008) assessed negative attributions at 4 ½ old and again in first grade, using similar methods across both waves of data collection (ambiguous cartoon pictures), but with alterations for the older group (more stories, and open questions instead of forced-choice questions). Social problem solving was also assessed, only at 4 ½ years, and aggressive problem solving solutions to ambiguous scenarios was assessed, only at first grade. At time 1 the children were presented with stories followed by a question about what they would do to achieve a particular goal related to each story. At time 2, the same cartoons from the attribution questions were used, and after children responded to the attribution questions they were asked what they would do in response to the other child's behaviour.   These measures, deemed to be aspects of social information processing, related to thoughts and feelings about peers, and were utilised as dependent varaibles which were to be predicted by earlier measures of attachment and parenting quality. While the aim of the study was to use early attachment and parenting measures to predict SIP measures, some patterns within earlier and later processing were evident. Earlier negative attributions were not associated with socially competent responses at that time, but were associated with negative attributions and aggressive responses in first grade. Socially competent responses at 4 ½ years were also associated with both first grade SIP measures, though negatively, as would be expected. Both later measures (negative attributions and aggressive responses) were also significantly associated with each other.

Coy, Speltz, DeKleyn and Jones (2001) tracked their participants over a two year period and used three different assessment measures at each time point in order to accommodate the changing capabilities of the children over the course of the study. The participants in the study were 168 preschool boys, 88 with Oppositional Defiant Disorder and 80 who were defined as "non-disruptive". The measure for the boys when they were preschool age was the Challenging Situations Task (CST; Denham, Bouril and Belouad, 1994; cited in Coy, et al., 2001) which only assessed aggressive solutions (equivalent to the SIP step of response generation), followed by Cartoon Stories (Dodge, 1980) which assessed hostile attributions and aggressive solutions (equivalent to interpretation and

response generation), and finally Videotaped Stories (VTS; Dodge and Coie, 1987) which incorporated relevance of cues (encoding), hostile attributions (interpretation), aggressive solutions (problem-solving/response generation) and ratings of responses on a scale of very bad to very good (evaluation). The assessments over timeranged from simple line drawings with "what" questions through to more complex video scenarios with "why" questions. Stories in all three measures were selected for ambiguity related to a provocative scenario with negative outcomes. Coy, et al. (2001) found that at all three points in time, the boys in the clinical group were twice as likely to produce aggressive solutions, but that this tendency towards aggressive problem solving did not yield any associations with aggressive ratings on the Child Behaviour Checklist. The only other SIP step that was relevant in distinguishing between the clinic and non-clinic group was encoding, whereby the clinic referred boys had less accurate recall for the story. However, it was noted that the meaningfulness of this finding was limited due to the narrow range of the scale used for encoding and the fact that the difference between the two groups was only 0.6 SD. There were moderate correlations between verbal IQ and language skills with problem solving and encoding, but comorbid ADHD (in the clinical group) did not affect social-cognitive processes.

The SIPI-P tool, developed by Ziv and Sorongon (2011) was initially used to relate SIP steps to socio-demographic risk and problem behaviour in a community sample of 196 preschool children (aged 4 to 5 years) from a metropolitan area. Ziv and Sorongon (2011) found that positive evaluation of an aggressive response alone was predicted by parent measures of socio-demographic risk, predicted externalising behaviours (aggression and hyperactivity) as measured by teacher ratings, and mediated the link between risk and aggressive behaviour, but not hyperactive behaviour. In this study the SIPI-P showed moderate togood internal consistency reliability for interpretation of intent (hostile attributions), for response generation (positive), and for response evaluation (positive for aggressive responses).

Ziv (2012) also used the SIPI-P tool to investigate the links between exposure to violence, SIP, and problem behaviour in a sample of 256 preschool children (aged 4 to 5 years). The results

showed that children exposed to violence (as measured by parent/grandparent reports) at an earlier age attributed more hostility, generated more aggressive responses, and gave more positive evaluations of aggressive and inept responses at a later age than children not reported to have been exposed to violence. SIP, through positive responses of aggressive and inept responses, fully mediated links between exposure to violence and problem behaviour, though both aggressive response generation and positive evaluation of an aggressive response partially mediated between exposure to violence and externalising behaviours, and only positive evaluation of an inept response partially mediated between exposure to violence and internalising behaviour. Internal consistency reliability was also moderate to good for intent attributions (hostile), response construction (aggressive), and positive evaluation of responses (aggressive and inept).

The SIPI-P was also utilised to examine social competence and school readiness in a sample of 198 preschool children (Ziv, 2013). Associations were found directly between SIP (as well as social competence) and school readiness. Additionally social competence also partially mediated between SIP (specifically steps of response construction/generation and response decision/evaluation) and measures of school readiness, suggesting that mental processes may be transformed into social skills, which then promote school readiness (Ziv, 2013).   Internal consistency reliability was moderate to good for intent attributions (benign), response construction (positive), and positive response evaluation (for non-competent responses).

The studies outlined above have investigated a range of SIP steps in preschool children. This has included an examination of the relationship between SIP variables and other variables such as behaviour (internalising and externalising; conflict), SIP at later times (change from preschool to early primary school) and school readiness, and has at times examined the role of SIP in mediation between factors. It has been found that hostile attribution biases and quality of response generation in preschool children is associated with aggression (Coy, et al., 2001; Meece and Mize, 2010), and they also marginally influence the decline of peer conflict beyond the effects of time (Raikes, et al., 2013). Hostile attribution biases in preschool have also been linked with later

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problem behaviour, and later hostile attributions and aggressive responding (Raikes and Thompson, 2008; Runions and Keating, 2007). Finally, the comprehensive SIPI-P has been utilised to demonstrate how different variables play different roles when looking at patterns of prediction and mediation (Ziv, 2012; Ziv, 2013; Ziv and Sorongon, 2011).

Goal Clarification and Emotion

The research studies that have been reviewed above, with children of preschool age through to adolescence, have selected and used SIP steps appropriate to their purposes, but few studies have chosen to include the additional step to the reformulated model, goal clarification, which Crick and Dodge (1994) highlighted as an important consideration within SIP.While links between emotion and all SIP steps are described in the reformulated model, therole of emotion seems to be quite relevant within the goal clarification step, with Crick and Dodge (1994) referring to goals as "focused arousal states" (p.76) that orient people towards particular outcomes. Indeed, it has been found that emotions of fear and anger can be linked to approach and avoidance behaviour, in order to address superordinate goals of dominance or submission in a study with 118 adults with four between-subjects conditions (Bossuyt, Moors, and de Houwer, 2014). While it is suggested that children come to social situations with individual "goal tendencies" (Crick and Dodge, 1994, p.76) that are driven by processes of temperament, social modelling, or cultural norms, emotions may influence the types of goals that are formulated in response to the stimuli they encounter. The goal clarification step itself is described as an "arousal-regulating process" (Crick and Dodge, 1994, p.81), suggesting that response to environmental cues in the moment hinges on arousal and arousal regulation. Since the introduction of this step, it has been utilised in research far less than any of the other steps, despite its relevance in explaining differences in social competence and aggression (Harper, Lemerise and Caverly, 2010; Samson, Ojanen and Hollo, 2012).

Many studies have selected particular aspects of SIP that are chosen due to their connection with the studies' particular purpose, generally without explicitly addressing the goal clarification step (Arsenault and Foster, 2012; Calvete and Orue, 2012b; Helmsen, et al., 2012; Horsley, et al., 2010;

Meece and Mize, 2010; Numenna, et al., 2008; Peets, et al. 2011; Ziv, 2013). In particular Arsenio and colleagues (2009) described the SIP model as beginning with Step 1 and 2 (encoding and interpretation), did not mention Step 3 (goal clarification), and ending with Steps 4, 5 and 6 (generation, selection and enactment of responses). This clear dismissal of the goal clarification step may be due to the study's justification in selecting one early stage SIP step (attribution biases; Step 2: interpretation), which is described as often being associated with reactive aggression, and one late stage step (outcome expectancies; Step 4: response decision), which is often associated with proactive aggression (Arsenio, et al., 2009). In the outline of the SIP model, Ziv (2012) identified goal clarification as Step 3 in the process, however the goal clarification step was not acknowledged by Ziv and Sorongon (2011) and was therefore not incorporated in the SIPI-P which was used in other studies (Ziv, 2012; Ziv, 2013). This was possibly due to the fact that the SIPI-P was modelled on the SIPI (Dodge and Price, 1994), which was based on the original SIP model, rather than the reformulated one (Crick and Dodge, 1994).

Other studies have seemingly attempted to address all SIP steps, but have neglected the goal clarification step without providing rationale for doing so (Keil and Price, 2009; Ziv and Sorongon, 2011). It is possible that this is due to challenges in assessing goal clarification, but it is also interesting to note that the area of emotion in relation to behaviour problems (often studied solely with SIP) has been similarly neglected in the literature (de Castro, 2010), and attempts to integrate the two traditions of research (SIP and emotionality and regulation) related to children's social competence, have been minimal (Lemerise and Arsenio, 2000). Given that Crick and Dodge (1994) suggested that goal clarification is connected to emotional arousal, this lack of integration may well have contributed to the neglect of both areas. However, a few studies have looked into the area of emotion and SIP, and also included the use of goal clarification.

One study with early primary school aged children (Dodge, et al., 2002) attempted to include the concept of goal clarification (labelled "goal setting/orientation"), in regards to endorsement of instrumental and social goals, in conjunction with aspects of emotion, though this was related to

emotion understanding (identification of emotions and appropriate matching of emotions to own experiences), rather than arousal as suggested by Crick and Dodge (1994). Dodge, et al. (2002) proposed that difficulties in understanding of emotion may lead to a failure to adopt social goals, which is a contributing factor towards predicting aggressive behaviour. Through confirmatory factor analysis it was found that emotion understanding demonstrated both convergent and discriminant validities with the constructs of intent attributions, social goals, response generation and response evaluation and the five factor model of which it was a part, had superior fit with the data as compared with other likely models. This is a key finding for the present study as it indicates that emotion understanding measures fit well within an SIP model, and that these measures also provide information that is distinct from information that is provided by the goal clarification step.

In contrast, a study with 480 first through third grade children (ages 6 to 8 years) used concepts of emotional arousal to explore the effects of mood induction on social information processing (Harper, et al., 2010). They found that anger tended to increase focus on instrumental goals as opposed to social ones, andthat some children seemed to be more susceptible to the effects of angry mood induction (low accepted-aggressive children). Goal-orientation was also associated with decisions made in their responses to ambiguous scenarios, with instrumental goals being linked to lower positive evaluations of competent responses, and higher self-efficacy for hostility in the hypothetical scenarios. Peets, et al. (2013) also found that adolescents were more likely to endorse revenge and avoidance goals (with higher ratings) for a disliked peer, and also when more anger was felt towards their liked peers in remembered altercations at the time of the incident, and at a later date.Lemerise and Arsenio (2000) explain how just the step of goal clarification alone can be altered by differences in both emotionality and emotion regulation, suggesting that feelings of anger in a child may result in selection of an avoidant goal (in order to regulate the emotions), or a revenge or dominance driven goal (due to aggressive tendencies which are unable to be regulated). Descriptions are also given of how emotion can integrate with other SIP steps (Crick and Dodge,

1994; Lemerise and Arsenio, 2000). Overall, however, there seems to be minimal use of emotion measures when trying to assess the influence of emotion on SIP.

Emotion and Social Information Processing

Some studies have successfully demonstrated the utility of emotion research in the field of social competence, though not through specifically targeting the SIP model framework. For example, Mostow, et al. (2002) described their longitudinal study as being based on principles of Differential Emotions Theory (DET) and Social Information Processing (SIP) theory which they used to draw together emotional, cognitive and behavioural factors, which had not been connected in prior research in regards to peer acceptance. In their study, with 201 early elementary school children (mean age = 7 years, 5 months), emotion was measured through the accuracy of children's understanding of facial expressions, and emotion perception (expectations of emotional response to scenarios). The social aspects were measured through teacher report on the Social Skills Rating System (SSRS) for the subscales of co-operation, assertion and self-control. This measure did not specifically utilise the steps of SIP as outlined by Crick and Dodge (1994), though the measures could be considered as ratings of behavioural enactment (the final step in the SIP model), as there may have had been overlap with the selected behavioural measures in regards to responding to peers and dealing with conflicts. They may also have had some aspects linked to emotional-regulation in the self-control subscale. Measures of problem behaviour included externalising, internalising and hyperactivity, while verbal, academic and socioeconomic measures were assessed as covariates. Despite the lack of clearly cognitive SIP measures, this study found important relationships between emotion knowledge and social skills. Their cross-lag path analysis between Time 1 and Time 2 measures of emotion knowledge and social skills demonstrated that earlier emotion knowledge predicted later social skills, but early social skills did not predict later emotion knowledge. Additionally, in an integrated model of the effects of emotional, cognitive and behavioural factors on later same-sex peer acceptance, later social skills (or social competence) at Time 2 mediated the link

between early emotion knowledge (Time 1) and peer acceptance (Time 2), and early emotion knowledge (Time 1) mediatedthe link between verbal abilityand later social skills (Time 2).

Regarding younger children, Garner and Waajid (2012) found that emotion knowledge (both expression identification and situational emotion knowledge) were associated with social competence at home (through parent ratings of preschoolers co-operation, comforting and perspective-taking behaviour). In addition to the emotion knowledge variables, measures of self-regulation were also included as independent variables. These were teacher-rated attentional control and behavioural observations of positive emotionality. Outcome measures were that of cognitive competence, social competence at home, and classroom behaviour problems. Aside from the clear links demonstrated between emotion knowledge and social competence at home, emotion knowledge also predicted cognitive competence (related to learning). It appeared that the key aspect in predicting competence (cognitive and social) was the situation knowledge aspect of emotion knowledge.Self-regulation also predicted behaviour problems but neither of the two competence variables (cognitive or social), with the attentional control component being related to cognitive competence, and the positive emotionality component being related to social competence and behaviour problems. This study highlights the complexity involved in relating social competence to emotion as well as regulatory abilities.

A study by Leerkes, Paradise, O'Brien, and Calkins (2008) also considered elements of both emotional and cognitive process (understanding and control for both) in an attempt to provide a more cohesive picture of how they are related to current measures of both social and academic skills, and also how much unique contribution or overlap they demonstrate in terms of development. The sample consisted of 141 3 year old children, and measures were quite varied and extensive. Emotion understanding was measured with three tasks: Labelling of Emotions, Affective Perspective Taking, and Knowledge of Emotion Causes.Emotional control was also measured through the Emotion Regulation Checklist (ERC; Shields and Cicchetti, 1998) and measures for behaviour, cognitive understanding, and cognitive control.The measures were compared to ratings

for academic and socio-emotional functioning and socio-emotional problems. Again, this study did not incorporate any specific social information processing steps, but results showed that emotion understanding was significantly associated with academic success, and emotion control processes were negatively associated with socio-emotional problems, which suggested benefit in differentiation for the processes of understanding and control. Leerkes, et al. (2008) put forward a four factor model which proposed inter-relatedness of emotion understanding, emotion control, cognitive understanding, and cognitive control. Empirical support was much stronger for this model, than the either of the two-factor models which included only emotion (combination of emotion understanding and control) and cognition (combination of cognitive understanding and control) or understanding (emotional and cognitive) and control (emotional and cognitive).

The above studies clearly demonstrated links between emotion and social-cognitive processes, but did not directly fit within an SIP framework. However, Lemerise and Arsenio (2000) have proposed an integrated model of emotion processes and cognition in SIP, stating that integration of emotion and social information processing would increase the explanatory power of the SIP model. They noted that emotion understanding concepts (such as emotion recognition and emotion expectations) as well as contextual factors (affective nature of the relationship and affective cues given from the peer) sat within the SIP steps, but other aspects of emotion such as emotionality or temperament, mood, and emotion regulation were also incorporated as background processes to the SIP steps.

A few studies have incorporated aspects of emotion alongside social information processing specifically. For example, Calvete and Orue (2012b) found that schemas such as justification of violence, mistrust, and narcissism differentially predict emotion (expectations of an angry emotional response) and SIP (hostile attributions and aggressive response access) in adolescents.Numenna, et al. (2008) assessed the impact of like or dislike of an interaction partner on emotion and SIPand found that exposure to liked interaction partners (as contrasted with unliked partners) was

associated with less hostility in attributions (SIP Step 1: interpretation), more anger (emotion), and more retaliative responses (related to SIP Step 5: response decision).

In one of the few studies that has addressed both cognitive and emotional aspects of SIP in preschool aged children, Denham, Way, Kalb, Warren-Khot and Bassett (2013) noted that there are very few practical tools that allow direct assessment of these processes, despite evidence indicating that cognitive and emotional aspects of SIP account for a large amount of variance in behavioural and social outcomes (Crick and Dodge, 1994), and that several studies have shown that SIP patterns emerge prior to school. In their study, Denham, et al. (2013) used a pictorial forced-choice measure whereby the pictures depicted clear transgressions, and children were asked how they would feel (with four emotion options; happy, sad, angry and just okay), then what they would do (with four behaviour response choices; competent, aggressive, crying and passive). This was completed with 298 4 year olds. The most common responses were sad and angry emotions, and competent and passive behaviours. Associations were found that linked sad emotions with competent behaviour choices, and angry emotions with aggressive behaviour choices. Additionally, sad emotion and competent behaviour choices appeared to contribute to variance for school adjustment and academic readiness, both at the time of SIP assessment at four years, and later in their first year of primary school. These results highlighted the scope for including emotion in SIP measures, and supported the use for such a measure in preschool aged children.

Schultz, et al. (2010) aimed to develop and validate a tool for assessing both social and emotional aspects of information processing with preschool children, called the Schultz Test of Emotion Processing – Preliminary Version (STEP-P). They used audio-visual methods similar to Meece and Mize (2010) which resulted in an assessment tool comprised of 62 videos, mixed for age, race, and gender. Each video was followed by one to eight questions relating to the SIP steps of Encoding, Interpretation, Response Access and Response Decision (and at some points emotions of characters in the story). The test mostly utilised a perspective taking approach, whereby the child described the intention of the other party, what the protagonist would do (or feel as in the emotion

questions), and what they thought the response of the other characters would be (and also make some moral judgements on whether aggressive behaviour was warranted). In validating this tool with a group of 125 preschool children, some unique patterns for specific groups were found. Socially competent children tended to attribute more sadness to provoked victims, to find aggressive behaviour morally unacceptable, and to evaluate aggressive behaviour less positively, with girls in this group also labelling emotions more accurately. In contrast, disruptive children tended to generate more physically aggressive solutions, with boys in that group also assigning less benign attributions than other children (Schultz, et al., 2010).

The study by De Castro, Merk, Koops, Veerman and Bosch (2005) is one of few that has incorporated both emotion understanding (attributions for expectation of emotions in self and other) and emotion regulation in relation to SIP. They used hypothetical vignettes to assess SIP (hostile attribution, aggressive response generation, and evaluation) as well as separate measures of emotion attributions and emotion regulation in association with teacher reports of aggressive behaviour for 7 to 13 year old boys (54 referred for behaviour problems, 30 non-referred). De Castro, et al., (2005) found that aggressive boys demonstrated differences across all areas (SIP, emotion attributions and emotion regulation). They were more hostile in their attributions of intent (SIP Step 2: interpretation), had more aggressive response generation (SIP step 4: response access), and were less negative in their evaluations of aggressive responses (SIP step 5: response decision). The groups did not differ for recall of the story (Step 1: encoding) or for endorsement of prosocial responses (Step 5: response evaluation). They also attributed more happiness but less guilt (emotion attributions for other), and reported more anger, but not sadness or happiness (emotion attributions for self) than the comparison group. Finally, they generated less adaptive emotion regulation strategies, with fewer solutions and distractions, and more often referred to other people in the regulation of their emotion(emotion regulation). In considering the independent contributions of SIP and emotion in aggression scores (averaged from three rating scales), it was found that SIP varaibles explained 11% of the variance though this was entirely due to hostile intent

attributions , and emotion variables (attributions and regulation) explained 16% of variance beyond this and this was entirely due to the adaptive emotion regulation scores. It should be noted that emotion regulation scores were achieved via a cognitive process (asking a child to come up with strategies to manage their hypothetical emotions) rather than measured by ratings of behaviour. This potentially places the emotion regulation measure more in the emotion understanding category which should be kept in mind.

De Castro, et al. (2005) also examined the relationship between SIP and emotion variables with the distinct measures of reactive and proactive aggression. Reactive aggression was uniquely related to SIP through hostile attributions of intent (SIP Step 2: interpretation) and aggressive response generation (SIP Step 4: response access), and was related to emotion attribution through expectation of less sadness in others and anger in oneself. Proactive aggression was uniquely related to SIP through more positive evaluations of aggressive responses (SIP Step 5: response evaluation). Emotion regulation was negatively associated with both kinds of aggression. Peets, et al. (2011) also examined the relationship of SIP and emotion (through expected feelings of anger) with reactive and proactive aggression. Results from the Peets, et al. (2011) study indicated that expectations of anger in ten and eleven year olds were more strongly correlated with reactive aggression, and this was also also associated with hostile attributions (SIP step 2: interpretation), whereas proactive aggression was associated with self-efficacy evaluation for aggression (SIP step 5: response decision).

As discussed earlier, Arsenio, et al. (2009) justified his choices for inclusion of SIP steps on the basis of early and late stage processing which he noted are often associated with reactive and proactive aggression respectively. The two studies outlined above lend some support to this with SIP step 5 (late stage processing) being linked to proactive aggression and SIP step 2 (early stage processing) being linked to reactive aggression (de Castro, et al., 2005; Peets, et al., 2011). An anomaly to this theory is the associations between SIP step 4 (mid to late stage processing) and reactive aggression. Regarding emotion variables, expectation for emotion (self and/or other) was

associated with reactive aggression alone (de Castro, et al., 2005; Peets, et al., 2011), whereas emotion regulation was negatively associated with both forms of aggression, though this was only measured in one of the studies (de Castro, et al., 2005).

As with the two studies described above, Helmsen, et al. (2012) also included both emotion and SIP steps though this was with a younger population of preschool children aged 42-67 months. The study was quite unique in its direct attempt to measure emotion regulation as a predictor of aggression, via mediation of SIP. One hundred and ninety three German preschool children (mean age = 55 months) at 16 rural and urban early childhood centres were included in thestudy. Social information processing data was collected via interviews that utilised line drawings of hypothetical vignettes and questions related to interpretation (Did the other child want this to happen?), response generation (What could the child do?; What else?) and response decision (What would you do?). Significant associations were found between maladaptive SIP, though only positive evaluation of aggressive responses (SIP Step 5, response decision), and aggression. They found that while SIP did not mediate the link between emotion regulation and aggression, emotion regulation and SIP were inter-related, whereby children with poorer emotion regulation generated and selected responses that were more aggressive and positively evaluated outcomes of aggressive responses. They also found some evidence that aggressive behaviour was predicted by both poorer emotion regulation and social information processing.

Two other studies have examined the mediating role of social-cognitive processes with older children. The first was in relation to latent SIP structures rather than specific SIP steps. Musher-Eizenman, Boxer, Danner, Dubow, Goldstein and Heretick (2004) found that script/schema based measures such as aggressive fantasizing and retaliation approval mediated between anger control and physical aggression. Crozier, Dodge, Fontaine, Lansford, Bates, Pettit and Levenson (2008) did use specific SIP steps (hostile attributions, aggressive response generation and positive evaluation of aggression) and found them to mediate between a physical measure of arousal (heart rate) in relation to provocation (which is linked to emotion regulation throughthe processes required in

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order to regulate the arousal) and measures of antisocial behaviour in fourth to sixth grade children and adolescents. These studies add to the impetus for further exploration of SIP in a mediatory role, particularly between regulation and behaviour, and this is an area of interest for the current study.

It is clear that the above studies have attempted to incorporate emotion aspects into SIP research, and that there are a multitude of ways of doing this. This can be explained by the fact that there are varying ways to define and measure emotion or aspects of it. In addition, when a researcher picks any particular aspect of emotion, they may then relate it to one SIP step (as with Denham, et al.,2013) or several SIP steps (Schultz, et al., 2010; Helmsen, et al., 2012). This makes for a very complicated picture of how emotion may be understood in relation to SIP. Studies have shown that methods of measuring both emotion and cognitive aspects of social information processing are fit for use with a preschool-age population, and despite the fact that methods for doing so are often very diverse with different variables being measured in different ways (Leerkes, et al., 2008), and sometimes lengthy (Schultz, et al., 2010), there is still good evidence to suggest that combining the two is a worthwhile pursuit. There was also support for the incorporation of measures of both emotional and cognitive regulation within social competence research (Leerkes, et al., 2008). The study by Helmsen et al. (2012) was quite unique, in their use of both emotion understanding and emotion regulation in relation to behaviour in preschool aged children and also in its attempts to integrate emotion into the SIP interview process. De Castro (2010) comments that, in order to encourage more research into this area, where there is a clear deficit, we need to find a "parsimonious" way of integrating emotion into the SIP model, and theorised that emotion and SIP can be integrated from within a developmental perspective.

Developmental Perspective of Social Information Processing and Emotion

De Castro (2010) argued that SIP models have not addressed the development of information processing abilityover time and his hypothesis starts from a point of considering the contrast between the more traditional, reflective aspects commonly used in assessing information processing, and the fast, automatic processing that is more likely to be emotionally driven. De

Castro (2010) puts forth a tentative developmental model of SIP and emotion, suggesting that strong negative emotionality can restrict the reflective processes that are a fundamental part of the social information-processing model. He proposes that dual-processing can occur in social situations, with *emotionalprocessing* occurring initially, whereby basic cues are encoded and these potentially activate or restrict emotional action tendencies. De Castro (2010) describes action tendencies as a specific drive to perform a specific reaction. Lazarus (1991), in his theory of emotion, suggests that action tendencies flow from motivation, beliefs and appraisal of significance, and result in physiological changes that cause emotions to become "hot" (p994). If the emotional response is high, and emotional action tendencies are activated, then a person is less likely to engage in further cognitive processing. If action tendencies are restricted then a person may engage in further processing. De Castro (2010) suggests that the emotional action tendencies remain in these situations, but more regulation is employed through use of more elaborate information processing skills. This type of processing is termed *reflective processing* due to the employment of reappraisal regarding social stimuli. In this style of processing, cues may be readdressed (including the interpretation of intent and the emotional state of others), desire for particular oucomes may be considered, and this leads to generation of a response followed by enactment, if a response option is positively evaluated, or generation of another response if the response option is negatively evaluated. De Castro (2010) suggested that this ability to regulate emotional action tendencies through improved social information processing is developed through transactions of maturational and social learning processes, and that reflective SIP skills do not replace emotional processing, but instead adjust emotional responses based on understanding of social appropriateness.

De Castro (2010) proposed that these processes contribute to the development of particular styles or patterns of aggression or non-aggression, with most children beginning with a reactive, emotional style associated with more aggressive responding and then developing a more reflective, and thereby less aggressive, style as they get older. De Castro (2010) suggests that social information processing is very basic in the early developmental stages, where aggressive behaviour

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is more prominent, but that it increases in complexity over time, with aggressive behaviour decreasing accordingly. In recognition that aggression is normative at a young age (de Castro, 2010; Meece and Mize, 2010), it is suggested that a developmental model would benefit from examining how SIP changes to make children *less* aggressive as they get older rather than more aggressive, as is more commonly studied (de Castro, 2010). De Castro (2010) highlights that our perspective on how SIP develops should be re-focused on how competence improves. For example, rather than questioning how hostile attribution bias is developed, we should ask how children learn to perceive benign intent and how they respond to that, as well as examining the processes of testing out alternate responses, aside from aggression, that can be developed and reinforced.

As mentioned previously, reactive aggression and proactive aggression have previously been recognised as being linked to early and late stage processing (Arsenio, et al., 2009). Within de Castro's (2010) developmental model of SIP and emotion, reactive aggression is characterised by lower levels of emotional control which results in a person becoming stuck in the emotional processing (early) phase of the SIP model, with emotional action tendencies being activated. On the other hand, proactive aggression is characterised by atypical reflective processing, more likely to occur in the later phases of the SIP model. The atypical processing has potential for perceptions of outcomes being distorted, leading to increased likelihood of a more planned out, proactively aggressive response.

Helmsen, et al. (2012) suggested that strong emotion or low emotion regulation can lead to a "derailing" of cognitive thought, whereby later SIP steps are less likely to be implemented due to the restriction of secondary appraisal, that de Castro (2010) stated was necessary in order to employ reflective processing. Crick and Dodge (1994) described this pre-emptive or script-based processing as "rapid, automatic, irrational and probably classically conditioned" (p.79), noting that it occurs without conscious cognition, and is often in response to situations which induce high emotional arousal. Helmsen, et al. (2012) argued that this suggestion does not match with Lemerise and Arsenio's integrated model (2000), which claimed that SIP would mediate between emotion and

behaviour. However, Lemerise and Arsenio (2000) did acknowledge pre-emptive processing, though they did not go into detail of how such processing would occur. Lemerise and Arsenio (2000) also indicated that most risk for behaviour problems is present when emotion regulation is low *and* emotionality is high. This distinction, resulting in potentially different emotion expression, could have differential effects on individual patterns of SIP, thereby altering how SIP mediates the link between emotion and behaviour.

Clearly the role of SIP in relation to emotion and behaviour is quite complex, incorporating concepts of emotionality, emotion regulation and emotion understanding. This provides good rationale for why further exploration into the development of SIP, in conjunction with emotion, would be of interest.While the ideal way to tackle the question of how SIP and emotion is developed would be to look at change over time, the current study is time-limited and will therefore use a cross-sectional methodology to examine differences in age groups. This will provide an opportunity to compare and contrast patterns of social and emotional information processing across two groups of children only a couple of years apart.

The Study of Social Information Processing in Normative Populations

In examining what is normative for SIP and emotion, we begin to delve into the question that de Castro (2010) raised, regarding how competence may develop. While the vast majority of SIP research with children to this point has focused on aggressive behaviour (Arsenault and Foster, 2012; Arsenio, et al., 2009; Calvete and Orue, 2012b; de Castro, 2010; Dodge, et al., 2002, Helmsen, et al., 2012; Hodges, et al., 2009; Horsley, et al., 2010; Peets, et al., 2011; Ziv, 2012; Ziv and Sorongon, 2011), there have been a few studies that indicate that SIP research can be effectively used in relation to problem behaviour not related to aggression, such as withdrawn/inept behaviour (Ziv, 2012), or prosocial behaviour and competence (Dodge, et al., 1986; Dodge and Price, 1994; Meece and Mize, 2010; Ogelman and Seven, 2012; Ziv, 2013). Results from these studies suggest distinct SIP patterns play a role in these types of behaviours.It is also recognised that much research on SIP is based on comparing level or type of aggression (Arsenault and Foster, 2012; Arsenio, et al.,

2009; Calvete and Orue, 2012b; Horsley, et al., 2010; Meece and Mize, 2010; Peets, et al., 2011), or in populations at risk for problem behaviour (Helmsen, et al., 2012). However, the SIP model can also be utilised successfully in normative populations (Dodge and Price, 1994; Dodge, et al., 2002; Ziv and Sorongon, 2011; Ziv, 2013).

One of the first studies that investigated positive social behaviour in a large (*N* =259) normative, "non-clinical" sample was Dodge and Price (1994). The children in this study were 6 (grade 1), 7 (grade 2) and 8year olds (grade 3) from general classrooms in the mid-south of the United States. Twenty-seven video-recorded vignettes depicted three domains (peer-group entry, peer provocation and authority-directive), three types of intention (hostile, non-hostile and ambiguous), and three types of behavioural responses (aggressive, inept and competent) from the protagonist. Viewing of each vignette was followed by interview questions, occurring over two one-hour long sessions and teacher and peer evaluations of social competence were also collected.

Significant associations were found for the first prediction that correlations would be found between patterns of SIP and behavioural competence. The associations were moderate, which fitted with the expectation that results, while significant, would not be as strong as in previous studies where comparison groups had more extreme differences. The second prediction, that each of the five SIP steps (encoding, interpretation, response access/construction, response decision and behavioural enactment) would be significantly correlated with competent performance in the three social domains, was somewhat supported with all five steps associated with at least one contextual domain (e.g peer-group entry, peer provocation or authority directive). The third prediction, that each step of the model would be incremental, so that the aggregated prediction would be larger than each single measure, was also supported. But the fourth prediction, that the relationship between SIP and behaviour would be stronger within domains than across them such that SIP variables in one domain would be able to predict behaviour in scenarios that belonged to that same domain, but they would not be likely to predict behaviour in another domain;this hypothesis was less supported as correlations across the domains were all significant. SIP variables were distinctly

related to either the authority-directive domain or the peer domains, however no distinction was observed between the peer-group entry and the peer provocation domains. This was attributed to either overlap in types of behaviour for these domains or a high degree of rater bias(from teacher and peer ratings). The fifth hypothesis proposed that age differences would be present in regards to processing patterns and relations between processing and behaviour. The results indicated that significant differences occurred between age groups (first grade compared to third grade). The older children were more competent in use of skill based behaviour, and there were relationships between processing patterns and actual behaviour in terms of magnitude of the effect on behaviour, complexity of incremental effects, and particular processing patterns (particularly those associated with peer, but not authority-directive domains).

Dodge and Price (1994) distinguished between SIP variables that represented personality-type individual differences (e.g.hostile bias, aggressive or inept response generation, and self-efficacy for interpersonal or instrumental outcomes), and skill-based variables (e.g.more relevant hostile and non-hostile cue encoding, more accuracy in attributing hostile intent, greater number of responses generated for scenarios, less endorsement of aggressive response - both interpersonal andinstrumental, and greaterenactment skills for their intended strategies). They expected to find age differences for skill-based processing with stronger and more sophisticated patterns in older children, as well as increases in knowledge base and number of strategies generated, and improvement of processing skills and more complexity in processing. The results from Dodge and Price (1994) indicated that older children generally demonstrated greater proficiency for all seven skill based variables but were generally not or only slightly more advanced in any of the designated "non-skill" processing variables. All results indicated that variables associated with skill-based processing increased with age (grade level) and were all significant, though effects were sometimes small and this was attributed to an expectation that variance within a "normal" population would be less extreme than when comparing "clinical" and "non-clinical" groups. Dodge and Price (1994) proposed that as skill develops with age, it becomes more utilised and, therefore, more relevant to

predicting behaviour, or alternatively, the demands of the environment provide opportunities where it is more necessary for the skill to develop.In either sense, the consideration of how social information processes are developed is of significance.

In response to the results from their longitudinal study (over a four year time period) with early primary aged children, Lansford, et al. (2010) suggested that SIP is not static and traitlike , rather changing in response to experience over time. This is not entirely inconsistent with Dodge and Price's (1994) results, in the sense that Dodge and Price also acknowledge some change between ages, particularly for skill based variables. In regards to personality-based variables, while Dodge and Price (1994) did not find any changes between ages, Lansford, et al. (2010) did find change in SIP over time. This may be due to the differing research designs utilised by these two studies, where longitudinal designs more easily accommodate comparisons of changes in individual difference, but cross-sectional designs can only compare means of groups (which may very well be comprised of individuals who differ considerably in terms of personality). Use of composite SIP scores (Lansford, et al., 2010) rather than distinct variables related to individual SIP steps (Dodge and Price, 1994) may also account for differences between the results in these studies. We would therefore expect some aspects in the present study to be related to age, particularly those skill based ones as identified by Dodge and Price (1994).Given that Lansford, et al., (2010) also found that social preference, SIP, and aggression effected changes in each other over time in a cascading cycle whereby behaviour may be adjusted over time in response to experience and adjustment of behaviour, it is important to keep in mind the role of other variables in the process of developing SIP, and how these other variables may also change with age.

Age Differences for Emotion

An important consideration regarding the effects of age is how it is associated with emotion, given that de Castro's proposal of SIP development (2010) incorporates emotion, and that it plays a key role in the present study. That is why aspects of emotion processing will be incorporated within the SIP measure in the present study. Emotion regulation is also important within the model of SIP

and emotion integration proposed by Lemerise and Arsenio (2000). While a full review of age differences for these areas is beyond the scope of the present study, some broad understanding will potentially assist in understanding some of the associations that may occur.

Regarding the effects of age on emotion processing, increasing age (between 4 and 15 years) has been associated with increased ability and speed in matching facial expressions with emotions , particularly the basic ones such as happy, fearful, and sad (Herba, Landau, Russell, Ecker and Phillips, 2006). Older age, in a group of 3 to 6 year olds, has also been associated with improved ability to name basic emotional expressions, match emotional expressions with labels of basic and complex emotions, and to match expressions with situations and causes (Morgan, Izard and King, 2010). In this regard we would expect the current study to also reflect some changes in emotion processing between age groups, with increased ability and complexity being demonstrated in the older group for variables associated with emotion knowledge or understanding.

In a review of six studies Cole (2014) suggests that emotion regulation develops across the lifespan but also indicates that the process of emotion regulation development is complex. Although specific developmental (age-based) differences were identified in the use of emotion regulation strategies for sadness, fear, and anger between adolescence (from 11 years) and middle adulthood (Zimmerman and Iwanski, 2014) these were not consistently associated with increase in age. Cole (2014) notes that simpler developmental models that describe the age effects on emotional regulation ability do not sufficiently explain the dynamic process by which emotion may be influenced by function.Cole (2014) also highlighted the role of contextual factors in influencing emotion regulation development, with parental socialisation indicated as important in the development of emotion regulation in children aged 4 to 5 years old (Meyer, Raikes, Virmani, Waters and Thompson, 2014).

Summary and Present Study

Despite the variety of research that has examined SIP patterns in children, covering a range of ages and areas, there has continued to be a neglect of emotion in SIP literature. De Castro (2010) proposed that there was a need for a simple integration of the two traditions, and suggested this could be done by viewing strong emotion as having the potential to result in automatic responses driven by physiological arousal (action tendencies) that prevent the continued cognitive processing that would otherwise have occurred. This restriction of later stage, reflective processing theoretically results in patterns of reactive aggression, whereas an ability to reflect more objectively leads to competent social behaviour, or potentially more instrumental and proactive aggression if maladjustments in later SIP (which are connected to individual differences) are present (de Castro, 2010). From this point of view, it is suggested that the best way to view development of SIP is by examining how naturally aggressive behaviour, as is common in young children, decreases with socialisation. Given the developmental perspective, it is logical that this would be studied in a typically developing "normative" population. Attempts to investigate the effects of age, in normative populations, on patterns of SIP have resulted in some clear distinctions for abilities related to skill-based aspects of SIP, with less distinction for variables linked to more individual, personality-based variables (Dodge and Price, 1994). This separation of skill-based and personality-influenced SIP variables may inform as to how skill and personality influence the development of individual SIP patterns.

Given that a developmental approach to SIP is under-studied (de Castro, 2010) the current study seeks to explore this area by examining age-based differences in SIP patterns. SIP patterns are less studied in relation to emotion, so the exploration of age differences will also incorporate aspects of emotion. There are clear links between emotion, development and SIP in de Castro's theory (2010). Early childhood is generally less studied in all areas of SIP, though changes are likely to occur during the transition between preschool and school ages due to increased exposure to peer

interaction and general progression with theory of mind cognition. It is, therefore, suggested that clear distinctions in patterns of SIP should be evident between preschool and early primary school aged children, making them ideal candidates for conducting pilot testing of a tool designed for researching SIP and emotion processes.

Since Crick and Dodge revised the original model of SIP, research into SIP patterns in children and adolescents has investigated automatic encoding through eye tracking methods, has examined the impact of social or emotional context (situational domains or affective ties with interaction partners), and has investigated how SIP relates to different types of aggression. In preschool aged children, SIP patterns are less studied due to restraints of time and assessment feasibility, and also due to considerations of language ability and ability to interpret and reflect upon intention. In response to this, the Social Information Processing Interview for preschool children (SIPI-P, Ziv and Sorongon, 2011) was developed, providing a simple, reliable, and comprehensive assessment of SIP steps in preschool aged children. The SIPI-P uses a story book format, which adheres to the pictorial interview structure that is identified as an established method for use with preschoolers (Helmsmen, et al., 2011), and provides familiar, concrete stimuli which was endorsed by Katsurada and Sugawara (1998). Other methods for studying SIP in preschool aged children have included video-vignettes and puppets and pictures (Meece and Mize, 2010), and while these have been recognised as effective, they are both very time consuming in terms of organisation and the amount of time that is required for the children to be interviewed. The SIPI-P is an easily administered instrument for use with preschool children that is quick to administer and provides a good basis for incorporating emotion aspects into one simple activity that measures multiple variables. The tool also addressed issues of ecological validity through use of cartoon bears in the scenarios, which avoided previously laborious efforts in terms of balancing race and gender of within video vignettes.

The neglect of emotion in studying SIP also seems associated with a neglect of the added step of goal clarification (in the reformulated model) which heavily relies on the idea of arousal and

regulation, which have clear links with emotion. Some research has investigated emotion and SIP, generally focusing on emotion expectancies (Arsenio, et al., 2009; Calvete and Orue, 2012b; Numenna, et al., 2008; Peets, et al., 2011; Peets, et al., 2013) with a few studies branching into research with preschool aged children (Denham, et al., 2013; Schultz, et al., 2010), and one particular study with preschool children (Helmsen, et al., 2012) connected emotion regulation difficulties to distinct SIP variables. This study highlighted some of the difficulties in understanding the relationship between SIP and emotion, with both aspects contributing towards aggressive behaviour but SIP did not play a mediating role as previously hypothesized (Lemerise and Arsenio, 2000). The mediatory role of SIP, between emotion and behaviour, has also been demonstrated in older children where latent SIP structures mediated between control of anger and physically aggressive behaviour (Musher-Eizenman, et al., 2004) and SIP steps mediated between physical measures of reactivity/arousal (heart rate in response to provocation) and antisocial behaviour (Crozier, et al., 2008). However, it is the Helmsen, et al. study (2012) that is of particular interest due to its inclusion of both emotion understanding and emotion regulation, to its application to a preschool population, and for its attempts to integrate emotion into the SIP interview process which the present study also seeks to do.

In light of the discussion above, the overall purpose of the present study is to investigate the possibility of parsimoniously integrating aspects of emotion processing into a SIP interview framework. This integration of emotion processing and SIP will be utilised to address the following objectives:

1) To identify possible age differences in emotion processing and social information processing, as well as behavioural characteristics, across early childhood (4 years old) and early primary school aged children (6 to 7 years).

2) To examine associations between children's social and emotional information processing of hypothetical vignettes and measures of behavioural characteristics, as well as the role of emotion in patterns of social information processing.

3) To attempt to replicate and extend the analysis of Helmsen and colleagues (2012), by examining the associations between emotion regulation *and* self-regulation, social *and* emotion information processing, and child behavioural difficulties (SDQ externalising *and* internalising).

METHOD

Participants

An information sheet detailing the purpose and structure of the research was sent to various schools and kindergartens for consideration by Principals and Boards of Trustees. A kindergarten organisation consented to facilitate the research and recruited two kindergarten sites to participate. In addition, one school with three Year 2 classrooms also agreed to be involved with the project. The information sheets were given to the teachers of the relevant classrooms and kindergartens to review. The researcher then met with the head teacher and syndicate leader at the kindergartens and primary schools respectively to go over the details of how the interviews would be conducted onsite and to plan the dissemination and collection of information sheets and consent forms to parents of the children in the relevant age brackets. Information packs containing letters outlining the aims of the study and procedures for confidentiality, as well as consent forms, were sent out to 73 parents of 4 year olds (also children due to turn 4 that month) in kindergartens, and 90 parents of Year 2 students aged 6 to 7 years old. Thirty consents were returned from the parents at kindergartens, 10 at one site and 20 at the other, and 30 consent forms were returned from the primary school.However, some of the parents of children who participated in the study did not complete the parent-report questionnaires, and one child at a kindergarten declined to be interviewed. Therefore the sample sizes of children who completed the SIPI interview were 29 early childhood (54.52 (4.33) months) and 30 early primary (86.33(3.64) months), but these groups were reduced to 25 in each group when parent-reported data was included.A more detailed description

and comparison of the two groups of children and parent demographics is provided in the first section of the Results chapter.

Procedure

Once parental consents for child participation had been received, the interviewer arranged times to meet with the children on school or early learning centre grounds, and also sent out an email link or postal pack to parents which included another information sheet and consent form, questions about demographic data, and the parent-report questionnaires of children's behaviour and emotion regulation.

Child Interview: Self-Regulation Task and Social Information Processing Interview

On meeting with each child, the interviewer spent a few minutes building rapport then outlined the nature of the self-regulation task, anddescribed the story content and style of questions in the social information processing interview.Verbal assent from all the children was obtained before formally beginning the interview.

The first activity in the interview was the Heads-Toes-Knees-Shoulders (HTKS) task, which is a Simon-says type activity that assesses behavioural regulation.The instructions, behaviours, and scoring are reported in detail below. After the behavioural task was completed, the interviewer showed each child the SIPI-P interview storybook and reminded the child of the task. Again, each child was asked if they would like to continue, and if they agreed, the first story was read. The child was presented four different stories;two peer-provocation scenarios and two peer-entry scenarios. The interview questions asked about children's perceptions on the story were incorporated into each scenario following guidelines from the SIPI-P Assessor's Guide (Ziv and Sorongon, 2011). The behavioural task and interview took approximately 30 minutes per child and at the end of each interview the child was thanked for their help and given a gratuity of a pencil and stickers.

Parent Questionnaires and Demographic Information

As outlined above, parents were sent an email link to the two questionnaires or posted paper copies, depending on the option they selected in the initial consent forms for their child's

participation. Parents were also asked to provide basic demographic information regarding age, gender, ethnicity and first language for themselves and their child, as well as information regarding socio-economic status, including occupations and highest educational qualification gained in the household.

Ethical Considerations

An application was lodged with the University of Canterbury Human Ethics Committee for review and was approved (Appendix A). As described above, informed consent was first obtained from the school and early learning centre, before recruiting parents and children. Information provided to the educational organizations and parents included the aim of the research project and an outline of the tasks. All aspects of the study were fully disclosed to both parents and children and no deception was employed at any stage. The information page also described matters of confidentiality and storageof private data (security, access, and length of time). Informed assent was also obtained from each child who participated and numerous opportunities to opt out were provided to children throughout the course of the interview. One child did not assent to the interview after her parents provided written consent, and none of the children who started the interview opted out when given the opportunity to stop. Children were also informed that there were no right or wrong answers in order to alleviate any perceived pressure to get answers right. The assessment was relatively short and was presented in an age appropriate storybook format. The interviewer was alert to tiredness in the children and provided a break when required, though this happened on only a couple of occasions. The stories in the assessment measure (SIPI-P with adaptations) were hypothetical, and covered themes that are common to preschool or primary school settings.

Measures

This section provides an explanation of the coding of the Social Information Processing Interview - Preschool version (SIPI-P; Ziv and Sorongon, 2011) as well as the modifications

introduced for the present study. Table 1 presents a summary of the changes to the SIPI-P, which

will be described in further detail below.

Table 1: *Coding of Social and Emotion Processing Variables (Original and Revised)*

SIP Variable	Original Coding	Revised Coding
RECALL	Not used due to poor psychometric properties	0 = denial of story point (prompted) 1 = prompted recall of each point 2 = unprompted recall of each point **Possible range**: 0 to 26
HOSTILE ATTRIBUTION (forced choice)	0 = benign 1 = hostile **Possible range**: 0 to 4	0 = benign 1 = hostile **Possible range**: 0 to 4
HOSTILE ATTRIBUTION (free)	Not in original	0 = don't know/ambiguous intentions -1 = benign intentions 1 = hostile intentions **Possible range** = 0 to 8 (from -4 to 4)
POSITIVE RESPONSE GENERATION	0 = aggressive/inept (non-competent) 1 = competent **Possible range**: 0 to 8 (from -4 to 4 with non-competent scores subtracted from competent)	0 = don't know/unrelated or illogical response 1 = inept/hostile/other 2 = competent help-seeking 3 = competent independent **Possible range**: 0 to 12
POSITIVE RESPONSE EVALUATION	0 = negative evaluation 1 = positive evaluation (3 questions per response type, 3 response types: aggressive/competent/inept) **Possible range:** 0 to 36 (after negative subtracted from positive)	0 = don't know 1 = negative evaluation 2 = positive evaluation (3 questions per response type, 3 response types: aggressive/competent/inept) **Possible range:** 0 to 24
Emotion Variable	**Original Coding**	**Revised Coding**
EMOTIONAL INTENSITY	Not in original	0 = don't know/neutral emotion 1 = a little 2 = a lot **Possible range:** 0 to 8
EMOTION JUSTIFICATION	Not in original	0 = don't know/illogical or unrelated 1 = logical and related **Possible range:** 0 to 4
EMOTION PERSPECTIVE TAKING *(Match)*	Not in original	0 = don't know/illogical or unrelated 1 = action related to emotion match 2 = appropriately matched emotion (3 response types per story) **Possible range:** 0 to 24
EMOTION PERSPECTIVE TAKING *(Level)*	Not in original	0 = don't know/illogical or unrelated 1 = primary emotion 2 = self-conscious emotion/awareness (3 response types per story) **Possible range:** 0 to 24

Revised Social Information Processing Interview (see Appendix B)

The main data collected in this study was gathered by utilising the already existing measure, the Social Information Processing Interview – Preschool (SIPI-P; Ziv and Sorongon, 2011), with minor revisions in order to extend some of the SIP steps within the original interview format, as well as to streamline the collection of both Social Information Processing and Emotion Processing data while considering children's interest levels and attention span. The revised SIPI assessed the following aspects of children's social and emotional information processing:

Encoding – Recall. While the original SIPI-P showed good psychometric properties during pilot testing, this was not the case for the open-ended encoding question "What happened in the story, from the beginning to the end?" (Ziv and Sorongon, 2011). While this step was not utilised in studies by Ziv and colleagues (Ziv and Sorongon, 2011;Ziv, 2012; Ziv, 2013) due to poor psychometric properties it was decided that the current study would retain the question, as it may highlight some clear developmental changes between age groups and in this regard, and may also provide a good comparison point for determining links between recall/encoding and other SIP steps. Therefore, as no direction had been given in regards to the scoring of the encoding question in the SIPI-P, a scoring system was created whereby free recall of each main point of the story was awarded a 2, recall of each story point with prompts was awarded a 1, and denial of a main story point with prompts was awarded a 0. Each story had a different number of main points, but the highest achievable score across the four stories was 26, with higher scores reflecting superior ability to recall main points in the story, without need for prompts. In the present study, the internal consistency reliability of the Recall variable was good (alpha=0.91).

Interpretation – Hostile Attribution Score. Attributions were originally assessed in the SIPI-P with the question "Were the other kids mean or not mean?" This was coded as 0 for 'not mean' (benign) and 1 for 'mean' (hostile) and these scores were summed over the four stories, giving a total out of 4. This item was retained in the same format and with the same coding for the present study. Ziv and Sorongon (2011) did not find any significant associations between hostile attributions

and measures of behaviour, despite previous evidence to suggest a link,and believed that the wording of the question could possibly have had a priming effect towards hostility. Therefore, the present study added an extra variable, *Hostile Attributions (free)* that aimed to gather more information about the nature of attributions that the forced choice question didn't provide.In the attempt to elicit more information regarding children's perceptions of intent an open-ended question "Why did the other child do that?" was asked prior to the above hostile attribution question, now named *Hostile Attributions (forced choice)*. This extra item was included to increase opportunities for assessing interpretation of intent and also to highlight inconsistencies in children's responses that may help inform as to whether difficulties are related to priming or inability to understand differences between intention and outcome.

Due to the qualitative nature of this question,and also a note made by Ziv, Oppenheim and Sagi-Schwartz (2004) that responses can be considered ambiguous due to interpretation being both positive and negative, a coding system was developed to accommodate three types of responses given by children. Therefore, for the present study a third category 0 for a 'don't know' was included and allocated to allow for any ambiguous responses. This coding system for the present study enabled inclusion of any response that indicated the child was confused by the question or where it was difficult for the researcher to determine whether any particular attribution was either negative or positive.For example,in a responsewhere a child says that the other children didn't answer the protagonist because they were "being silly", it is difficult to determine whether the child would interpret "being silly" as mean or not. Some responses may also incorporate aspects of both benign and hostile attributions which could not be coded one way or another, such as a response where thechild indicates that the children didn't answer because the protagonist was "too little" (benign) or "they didn't like him" (hostile).

A score of-1 was given for any response that indicated benign intentions, and a score of1 was recorded for any response that conveyed any hostile intentions such as anger or intention to intentionally exclude, cause harm to or annoy someone.In this scenario, a child may believe that the

other children didn't respond because "they were concentrating" which would be coded as benign, whereas another child may believe it was because the other children "didn't want her to play" which would be coded as hostile. These scores were totalled across the four stories, giving a possible range of -4 to 4. Since all of the stories tended to be benign or ambiguous in terms of the intention of the characters, the higher scores represented greater attributions of hostile intent, and were scored in the same direction as the original forced-choice attribution item, whereas a negative score indicated more benign attributions. This score was then converted to a scale ranging from 0-8, to avoid use of a negative scale. In the present study, the internal consistency reliability of the interpretation variables was poor for both free attributions (alpha=0.34) and for forced choice attributions (alpha = 0.58).

Response Access – Positive Response Generation Score. As in the original SIPI-P format, this step was assessed through an open ended question "What would you say or do if this happened to you"? Ziv and Sorongon's original coding system for the SIPI-P (2011) categorised responses as competent, aggressive, and inept, with a competent response coded as 1, and aggressive and inept responses coded as 0 (not competent). The total was calculated for each scale (across the fourstories), and then the non-competent responses were subtracted from the competent ones, with the score ranging from -4 to 4 (this was then translated to a range of 0-8).For the present study,two adjustments were made that deviated from the original system described in the SIPI-P Assessor's Guide (Ziv and Sorongon, 2011).

Firstly, the items which were scored as non-competentoriginally included inept responses (internalising or externalising of sad emotions, withdrawing or avoiding behaviour or misinterpretation of rules or expected social behaviour) and hostile responses (internalising or externalising of anger or being suggestive of threatening or physically aggressive behaviour). For this study, the 'other' option was incorporated into this category also. This was based on descriptions within the original SIPI-P Assessor'sGuide which advised that some responses may initially seem to be competent, but should actually be coded as 'other', if they are likely to result in a quick solution

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but are not likely to result in positive social outcomes.Examples such as "I'll change it (the channel) back" were given, whereby the action may well result in further conflict. As this example, or variations of it, was given by several of the children in the present study it was deemed necessary to incorporate such responses into the coding system. Advice was not given in the Assessor's Guide on scoring this 'other' category;however, based on the fact that a logical action was being taken but the outcomes were not likely to be socially positive, the category was coded as 1, thereby also representing a "non-competent" response alongside hostile and inept responses.

The second adjustment within the response generation coding system was the division of "competent" responses into two categories. The rationale behind this was againbased on information given in the SIPI-P Assessor's Guide. It was suggested that some pre-schoolers may respond in ways that are likely to be an implementation of socially accepted rules within a kindergarten setting, such as telling teachers or walking away in order to avoid confrontations. Given that this distinction was outlined, it was assumed that some qualitative differences may well be evident between preschool aged and Year 2 children, so a coding system that distinguished competent-help seeking responses from competent-independent responses would more accurately reflect the qualitatively different nature between the types of responses. Help-seeking competent responses included statements such as "tell Mummy and Daddy", "ask my Mum" or "go and tell the teacher", whereby the child would enlist help from an authority figure. Independent competent responses included statements such as "say stop" or "say 'I had the remote control first, you can have a turn after me'", where the child indicated they would attempt to solve the problem directly with the other party.

Therefore, based on the above rationale and to allow for clearer distinctions between qualitative information given between the different age groups, the coding system was adapted such that a 0 was given to "don't know" or illogical/unrelated responses, a 1 was given for inept/hostile/other responses, a 2 was allocated to a competent/proactive response that incorporated help-seeking aspects, and a 3 was given to responses that were competent/proactive

and also independent. The sum of these scores across the four stories results in a maximum score of 12, with higher scores indicating a tendency to generate more competent and prosocial responses overall. The internal consistency reliability for this measure was adequate (alpha= .77).

Response Decision – Positive Response Evaluation Score. Response evaluation was measured through three closed questions relating to three possible responses (competent, aggressive and inept). The questions were:

1) Was that a good or bad thing to say or do (referring to a character in the story)?

2) If you did that, do you think the other children would like you?

3) Do you think the other children would let you play if you did that?

In the SIPI-P (Ziv and Sorongon, 2011) the responses for this stepwere originally coded as 1 for positive evaluation ("good" or "yes") or 0 for negative evaluation ("bad" or "no"), with the score derived from three questions,forthree response typesinfour stories, giving a range of 0 to 36 once negative responses were subtracted from positive responses. Again the questions for this step remained the same in the present study, but coding was altered to accommodate a "don't know" response, whereby a 0 would be allocated. The answers were scored with a 1 or a 2, dependent on a negative or positive evaluation respectively, and a total was calculated out of 6for the three questions, and then summed for each response type across the four stories, with an overall evaluation score given out of 24 (3 questions x 4 stories) for each overall evaluation of competent responses, overall evaluation of aggressive response and overall evaluation of inept responses.The internal consistency reliability was somewhat low, but acceptable (alpha = .68) for overall evaluation of competent responses, poor for aggressive responses (alpha = 0.59), and good for inept responses (alpha -= .80).

<u>Emotion Processing in the Revised SIPI (see Appendix B)</u>

The steps that were included in this study are based around evaluative aspects of emotion; expectations of emotional reaction, expected intensity of emotional reaction, the ability to rationalise why a particular emotionwould be felt,and the ability to take the emotional perspective

of another in regards to inept,aggressive, and competent behaviours directed at that person.In keeping with distinctions made by Pons, et al. (2004) these items generally fit into the constructs of external and mentalistic understanding of emotion, whereas reflective understanding was addressed through measures of emotion regulation gathered from parents (to be described in detail below). Some aspects of emotion (including a check for general emotion identification at the beginning) have been included in the SIPI-P but have not yet been utilised for research purposes. The SIPI-P was adapted to address the areas of emotion outlined above by modifying the format of these questions and adding a few additional questions.

Emotion Identification. This item was retained in an identical format to the original SIPI-P, whereby six pictures depicting facial expressions for different emotions were presented to participantsand the participants were asked to point to the picture that showed five emotions (happy, sad, surprised, afraid and angry). This item was only used as a check to ensure participants had the basic understanding of different emotions that would allow them to answer later questions in the interview, and was easily completed by all children with all children accurately identifying four or five of the items.

Emotion Intensity. After reading each scenario, the child was asked how they would feel in response to the hypothetical scenario. They were then asked to indicate the intensity of that emotion on a dichotomous scale (either "a little" or "a lot"). The level of intensity was coded with 1 for "a little", and 2 for "a lot". Zero was allocated to those children who indicated a neutral emotion (by pointing at the neutral facial expression or saying something such as "doesn't care" or "doesn't really mind")as this is indicative of low intensity.These scores were summed across the four stories, with a maximum score of 8, and scores of 5 or more reflecting greater anticipation of intense emotion. Internal consistency reliability was somewhat low, but acceptable (alpha = 0.68) for the expectation of emotional intensity variable.

*Emotion Justification.*The participating children were then asked an open-ended question about why they would feel the emotion they identified in response to the scenario. This attempted

to elicit information about a child's ability to rationalise their initial hypothetical emotional reaction. Responses were also coded as being either logical and connected to the scenario with a score of 1, or illogical and unrelated with a score of 0. A "don't know" response was also scored with a 0, as it suggested an inability to rationalise the emotional response. The scores for the four stories were totalled, giving a maximum score of 4, with higher scores indicative of an ability to give logical justifications for emotional expectations. Internal consistency reliability was good (alpha = 0.86) for the emotion justification variable.

Emotion Perspective Taking. Response evaluation was measured through three closed questions relating to three possible responses (competent, aggressive and inept). In the original SIPI-P,three questions were asked after the presentation of the story characters' potential responses in the response evaluation section of the SIPI-P. The questions that elicited evaluation of response types were:

1) Was that a good or bad thing to say or do (referring to a character in the story)?

2) If you did that, do you think the other children would like you?

3) Do you think the other children would let you play if you did that?

In order to also elicit information on children's ability to take the perspective of another character, in regards to evaluating the emotional impact of an action,an extra question was asked after the above 3 questions for each response type (competent, aggressive and inept),"How would the other child feel if Lisa/Michaeldid (indicated response)?" This single question led to the development of 2variables.

The first variable was labelled *Emotion Perspective Taking – Match* and highlightedwhether the child could anticipate a likely emotional reaction for the different types of responses (aggressive, inept, and competent) depicted in the stories. If the child identified an emotion that appropriately matched the response (e.g. a negative emotion such as fear or anger identified after a threat of being hit) it was coded with a 2.If they identified an inappropriately matched emotion, an illogical responseor a "don't know" response it wascoded as0. An action or something that might suggest an

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emotion that might fit a scenario (such as "he would cry" suggesting sadness) or is related to an outcome of the protagonist's response (such as "they will help fix it" or "move over and let them play" suggesting a positive emotion that matches), but did not directly answer the question with a clear emotion, was coded with a 1. The scores were added across the four stories according to each response type (aggressive, inept and competent), giving anoverall range from 0 to 8 for each response type. Then these three scores were totalled for an overall score, for all response types across the four stories, with a maximum score of 24, and higher scores reflecting a more positive evaluation of the response type in question.Internal consistency reliability was good (alpha = 0.83) for the Emotion Perspective Taking - Match variable.

The second variable was labelled *Emotion Perspective Taking – Level* which addressed the depth of emotion processing by distinguishing between primary and secondary emotions. As described above, early in the interview children were asked to identify primary emotions from a set of example pictures (happy, sad, surprised, afraid, angry and neutral/doesn't care). However, in response to this question of how the other character in the story would feel after Michael's/Lisa's response, the example emotion pictures were not included to see what types of emotions children identified on their own. Coding was structured so that a "don't know" or illogical/nonsensical response was given a 0. A response that indicated one of the "primary" emotions (as identified on the pictorial emotional responses sheet earlier in the interview), or a variation of one of them (such as "ok" or "doesn't mind" instead of "doesn't care" or "grumpy" instead of "angry") was given a coding of 1. This also included the use of terms such as "good" or "bad" that didn't show any particular indication of processing other than that of an emotion being generally positive or negative. A response that reflected children's use of self-conscious emotions
(e.g., embarrassed, jealous, nervous, disappointed or indicative of feelings of remorse/guilt, such as saying "sorry", "bad inside" or "sad with themselves", or suggestive of accommodation/reparative measures such as saying "would say sorry for doing that" or "she could say 'I'll help you clean it up'") was given a score of 2. For each response type (aggressive, inept, and competent), there was a

maximum score of 8 for each story. These three scores were totalled for an overall score, for all response types across the four stories, with a maximum score of 24, and higher scores reflecting a tendency to use more depth of processing when taking the emotional perspective of another character. Internal consistency reliability was good (alpha = 0.81) for the Emotion Perspective Taking - Level variable.

The Heads-Toes-Knees-Shoulders task (Ponitz, McClelland, Jewkes, Connor, Farris and Morrison, 2008) (see Appendix C)

The Heads-Toes-Knees-Shoulders (HTKS) task was administered with the participating children prior to beginning the SIPI-P interview. The HTKS task aims to measure a child's ability to integrate attention, working memory, and inhibitory control and in the test phase requires a child to complete an action that is opposite to that which is directed (Wanless, Ponitz, Lan, Chen, Chen, Sung, et al., 2011). To prepare children for the test phase, the child is at first instructed to copy what the researcher does, and is theninformed that the game will become "a bit silly", where the child then needs to do the opposite of what is instructed. There are several practice trials in this phase, whereby retraining can occur up to three times to ensure that the child understands the rules of the game. The first 10 items in the test phase of the task involve only two body parts (heads and toes) and the second 10 items involve all four body parts (heads, toes, knees and shoulders). The second part of the game is only initiated if the child is over a certain age, or if half of the items or more were achieved in the first phase, in the case of preschool age children. Items are coded as 0 for an incorrect response (e.g. when asked to touch his head, the child touches his head, instead of toes), 1 for a self-corrected response (initially responding incorrectly, but correcting self), or 2 for a correct response (e.g. when asked to touch their toes, the child touches their head) with total scores ranging from 0-52. The task was tested for use with 814 children, aged 3 to 6 ½ years old, from the United States, Taiwan, South Korea and China, with the majority of the children (91%) aged 4 or 5 years old (Wanless, et al., 2011). Overall, there was some supporting evidence for the psychometric properties of the HTKS task with significant correlations between the HKTS and teacher-rated scoresof self-

regulation(r= .29 and r= .23) for US and South Korean children respectively), though weak for some countries (r= .09 for Taiwan, and r = .12 for China).In addition, higher scores on the HTKS were significantly related to academic areas when controlling for teacher-ratings of behavioural regulation in the classroom suggesting good convergent validity.

The Emotion Regulation Checklist (Shields and Cicchetti, 1998) (see Appendix D)

The Emotion Regulation scalefrom the Emotion Regulation Checklist (ERC) was completed by parents. This subscale consists of eight items (such as 'is a cheerful child' and 'responds positively to neutral or friendly overtures') on a 4-point Likert scale, with raters choosing from 1 (almost always) to 4 (never). It is comprised of positively and negatively weighted items that essentially assess the child's ability to appropriately express and manage emotion (Fujiki, Brinton and Clarke, 2002; Leerkes, et al., 2008). The full checklist has been used successfully to study the contributions of attention and emotion regulation in the reactive aggression of maltreated children (Shields and Cicchetti, 1998). In the present study, twoitems were removed from the Emotion Regulation scale due to overlap with items on the SDQ, and one item was removed to improve reliability, leaving five emotion regulation items with marginal reliability (alpha = 0.62).

The Strengths and Difficulties Questionnaire (Goodman, 1997)(see Appendix E)

The Strengths and Difficulties Questionnaire (SDQ)was given to parents to complete regarding the overall behaviour of their child. The SDQ is a 25 item measure thatassesses children'sbehaviouraldifficulties (comprising of four subscales: emotional symptoms, conduct problems, hyperactivity/inattention, and peer relationship problems) and also includes a subscale of prosocial behaviour. This questionnaire was developed for parents and teachers of 4 to 16 year olds. The SDQ has been validated for use through a study of 4,750 parents of young children (5 to 6 years of age) from the Netherlands, with Cronbach's alphas of ≥ 0.7 for internal consistency of the total difficulties score and the hyperactivity scale, and also generally showed expected concurrent and divergent validity with another measure of child difficulties, the Child Behaviour Checklist (Mieloo, Raat, van Oort, Bevaart, Vogel, Donker and Jansen, 2012). A study conducted with 18,415 5 to

15year olds from England, Scotland and Wales, and utilising data from multiple informants (parents, teachers and self-report) suggested that, in low-risk populations, there may be more benefit in using broader scales such as internalising and externalising behaviours, due to poor discriminant validity between the emotion and peer problems (internalising) and the conduct and hyperactivity scales (externalising) when applied to general populations (Goodman, Lamping and Ploubidis, 2010). Similar to Goodman et al. (2010), I found the reliability of the Internalising and Externalising subscales (alpha = .73 and .85 respectively) to be higher than the individual subscales, and as the children in the current study were a sample from the general population with low total difficulties score, I decided to use these two measures of parent-reported child difficulties.

Demographic Information

Basic demographic information was collected from parents about themselves and their children. Due to rather low ethnic diversity in the sample, the measure of first language and ethnicity were deemed to fit into two categories being English and Other, and New Zealand European and Other respectively. Information regarding qualification level was coded on a scale from 0 to 6 (ranging from not finishing high school through to doctorate level qualifications). The coding of occupations was divided into three categories, with 1 equating to unemployed status, such as stay-at-home mothers and students or non-skilled employment, 2 equating to skilled/technical employment such as people in trades or with some level of skill or training required to perform their jobs, and 3 equating to managerial or professional occupations.

Data Analysis

As a first step in the data analysis, demographic characteristics of the sample were compared across the two age groups of children employing analysis of variance for continuous and ordinal data and chi-square tests for nominal data (see Table 2 and Table 3). These analyses examined the degree of similarity in child and family background characteristics between the early childhood group of children and early primary group of children. Any significant differences between the two sample groups, other than age, would need to be considered in the subsequent multivariate

analyses. To examine group differences in social information processing, emotion processing, and children's behavioural characteristics (self-regulation, emotion regulation, internalising, and externalising behaviours), a series of multivariate analyses of variance tests were employed (see Table 4, Table 5, and Table 6). These tests address this first aim of this study to identify possible age differences in emotion processing and social information processing, as well as behavioural characteristics, across early childhood (4 years old) and early primary school aged children (6 to 7 years).

To address the second aim of this study andexamine associations between children's social and emotional information processing of hypothetical vignettes and measures of behavioural characteristics, as well as the role of emotion in patterns of social information processing, correlational analyses were run separately for each group (early childhood and early primary). The degree of association between children's behaviour characteristics and social information and emotion processing variables is shown in Table 7, and the associations between social information processing and emotion processing variables in shown in Table 8.

Finally, in an attempt to replicate the results of Helmsen and colleagues (2012) and examine the relationship between emotion regulation, social and emotion information processing, and child behavioural difficulties (SDQ internalising and externalising), a hierarchical linear regression model were tested with the Early Primary group only (the pattern of bivariate associations with the Early Childhood group were very different from those of Helmsen and colleagues, precluding any multivariate analysis). Due to the limited power associated with the small sample size, this analysis should be treated with caution and judged as exploratory.

RESULTS

Sample Characteristics

Table 2: *Sample Characteristics with Demographic Comparisons across Groups (Child)*

Variable	Early Childhood	Early Primary	Statistic F;p / X^2;p
CHILD GENDER	*Count (%)*	*Count (%)*	
Male	14 (48.3%)	11 (36.7 %)	X^2= .814; *p*= .367
Female	15 (51.7%)	19 (63.3%)	
CHILD AGE	*Mean (SD)*	*Mean (SD)*	
	54.52 (4.33)	86.83 (3.64)	F=965.21; *p*<.001
CHILD ETHNICITY	*Count (%)*	*Count (%)*	
NZ European	21 (84%)	17 (68%)	X^2= 1.754;*p* = .185
Other	4 (16%)	8 (32%)	
CHILD FIRST LANGUAGE			
English	*Count (%)*	*Count (%)*	
Other	24 (96%)	23 (92%)	X^2= 1.021;*p* = .600
	1 (4%)	1 (4%) 1 (4%)	

NOTE:n (Child Age and Gender)=59; n(Child Ethnicity and First Language) n=50;
F = multivariate analysis of variance;*X^2*= chi square test

Table 2 and Table 3 display the results of chi square tests and analyses of variance to determine if there were any significant differences between the Early Childhood and Early Primary groups. In regards to individual child characteristics (see Table 2 above), the age of the children in each group was significantly different as this was a key feature of the sample in order to make comparisons between age groups. The Early Childhood group had a mean age of approximately 4 years and 6 months, while the Early Primary Group had a mean age of approximately 7 years and 2 months, meaning on average there was a gap of 2 years and 8 months (32 months) between the children in the two groups. While both groups had a higher proportion of females in their group, the Early Childhood group was more evenly divided. However, despite the differing ratio of male to female participants in the two groups, none of these differences were significant. Of the 50 children

whose parents responded to survey material, no significant differences were apparent for child

ethnicity or first language between the two groups, with the majority in either group being identified

as New Zealand European/Pakeha, with English as their first language.

Table 3: *Sample Characteristics with Demographic Comparisons across Groups (Parents)*

Variable	Early Childhood	Early Primary	Statistic F;p / X^2;p
GENDER OF PARENT RESPONDENT	*Count (%)*	*Count (%)*	
Male	1 (3.8%)	5 (20.8%)	X^2= 3.41; *p* = .065
Female	25 (96.2%)	19 (79.2%)	
AGE OF PARENT RESPONDENT	*Mean (SD)* 36.04 (4.25)	*Mean (SD)* 38.48 (5.41)	*F* = 3.063; *p* = 0.087
ETHNICITY OF PARENT RESPONDENT	*Count (%)*	*Count (%)*	
NZ European	21 (84%)	18 (72%)	X^2= 1.049; *p* = .306
Other	4 (16%)	7 (28%)	
FIRST LANGUAGE OF PARENT RESPONDENT			
English	*Count (%)*	*Count (%)*	
Other	24 (96%)	23 (92%)	X^2= .355; *p* = .552
	1 (4%)	2 (8%)	
HIGHEST LEVEL OF PARENT EDUCATION (n=50)	*Mean (SD)* 2.68 (1.35)	*Mean (SD)* 3.08 (1.38)	*F* = 1.075; *p* = .305
OCCUPATION OF PARENT RESPONDENT	*Count (%)*	*Count (%)*	
Unemployed/Non-tech	13 (54.2%)	9 (36%)	X^2= .853; *p* = .356
Technical/Trade	2 (8.3%)	5(20%)	
Professional/Managerial	9 (37.5%)	11 (44%)	
OCCUPATION OF PARENT PARTNER			
	Count (%)	*Count (%)*	
Unemployed/Non-tech	0 (0%)	3 (13%)	X^2= .952; *p* = .329
Technical/Trade	13 (56.5%)	11 (48%)	
Professional/Managerial	10 (43.5%)	9 (39%)	

NOTE: *n* = 50, *n* (Occupation of Parent Partner) = 45;
F = multivariate analysis of variance;X^2= chi square test

Table 3 (above) displays characteristic details regarding the parents of the children. For parents' age and gender, there were no significant differences found between the two groups. Overall parent respondents were mostly female, though this was slightly higher for the Early Childhood group. The average difference between ages of the respondent parents across the two groups was 29 months (2 years and 5 months), which was an expected difference in line with the approximate age difference of the children in the two groups. There were also no significant differences for ethnicity or first language of parents, with the majority of respondents being New Zealand European/Pakeha and speaking English. While the mean score for highest parental education level was slightly higher for the Early Primary group, these differences were not significant, with the average educational achievement being between Diploma/Certificate and Bachelor's Degree level. There were slightly fewer coded responses to occupational level due to missing data or for single parents without partner data. However, there appeared to be no significant difference between the spread of occupational categories between groups, for either the parent respondent or their partners In summary, it appears that the two groups were generally similar in regards to demographic background, except for areas of difference that were expected such as age of child and a marginal significant difference for the age of parents. Thus, child and parent background demographic characteristics were not included in the subsequent analyses reported below.

Social Information Processing

Table 4 (below) displays the results of a multivariate analysis of variance (MANOVA) across the social information processing variables. The mean scores for the Early Childhood group (4 years) and the Early Primary group (6 to 7 years) were compared for seven Social Information Processing (SIP) variables; Recall, Free Attributions, Forced Choice Attributions, Response Generation, and Overall Evaluation of three response types (inept, aggressive and competent).

Table 4: *Comparison of Social Information Processing Variables between Age Groups*

Variable	Mean (SD)	Min - Max	*F*	*p*
RECALL				
Early Childhood	15.03 (3.18)	10.00 to 22.00		
Early Primary	24.63 (1.37)	21.00 to 26.00	229.166	<0.01
ATTRIBUTIONS *(Free)*				
Early Childhood	3.03 (1.32)	1.00 to 6.00		
Early Primary	3.47 (1.78)	1.00 to 7.00	1.118	0.295
ATTRIBUTIONS *(Forced Choice)*				
Early Childhood	3.17 (1.14)	1.00 to 4.00		
Early Primary	3.00 (1.05	1.00 to 4.00	0.367	0.55
RESPONSE GENERATION				
Early Childhood	6.59 (3.30)	.00 to 12.00		
Early Primary	8.43 (3.21)	1.00 to 12.00	4.745	0.03
RESPONSE EVALUATION *(Inept Responses)*				
Early Childhood	15.69 (2.77)	12.00 to 21.00		
Early Primary	16.00 (3.85)	10.00 to 23.00	0.125	0.73
RESPONSE EVALUATION *(Aggressive Responses)*				
Early Childhood	13.41 (1.54)	12.00 to 17.00		
Early Primary	12.57 (0.86)	12.00 to 15.00	6.823	0.01
RESPONSE EVALUATION *(Competent Responses)*				
Early Childhood	23.14 (1.64)	17.00 to 24.00		
Early Primary	22.43 (2.08)	16.00 to 24.00	2.078	0.16

NOTE: *n* (Preschool) = 29, *n* (Primary) = 30; *F* = multivariate analysis of variance

No significant differences were found between groups for four of the seven variables; Forced Choice Attributions, Free Attributions, Evaluations of Inept Responses and Evaluations of Competent responses. This suggests that children in both the Early Childhood and Early Primary age groups rated hostility similarly and also similarly perceivedthe effectiveness and acceptability of inept and competent responses in scenarios related to peer provocation and peer entry.

Four significant differences were found for variables with large effects between groups. For the Recall variable, there was a significant main effect with primary school children more likely to recall the main points of the stories and give more details of the main points without need for

prompts than early childhood children (mean difference = -9.60). The difference between groups in

Response Generation was also significant (mean difference = -1.84) with children in the Primary

group generating more responses, and these responses indicating higher levels of social competence

than the responses of children in the Preschool group. Finally, of the three possible response types,

significant differences were only apparent between groups for the Evaluation of Aggressive

Responses (mean difference = 0.84), with the children from the Preschool group rating Aggressive

responses more highly (better overall), on average, than those in the Primary group. In terms of

effect sizes, the mean difference across the two groups for the recall of the stories was quite large

and well over a standard deviation. However, the other significant group differences were more

modest. Overall, the analysis suggests that there are more similarities than differences in terms of

social information processing between the Early Childhood and Early Primary groups, and the

differences that do exist are most substantial when comparing memory (recall) but still significant

when looking at prosocial problem solving and perceptions of appropriateness and effectiveness of

aggressive responses.

Emotion Information Processing

Table 5: *Comparison of Emotion Processing Variables between Age Groups*

Variable	Mean (SD)	Min - Max	*F*	*p*
EMOTIONAL INTENSITY				
Early Childhood	6.52 (1.54)	3.00 to 8.00		
Early Primary	4.80 (1.79)	2.00 to 8.00	15.487	<0.01
EMOTION JUSTIFICATION				
Early Childhood	2.34 (1.59)	.00 to 4.00		
Early Primary	3.77 (0.63)	2.00 to 4.00	20.743	<0.01
EMOTION PERSPECTIVE TAKING *(match)*				
Early Childhood	16.86 (5.64)	2.00 to 24.00		
Early Primary	22.13 (2.60)	14.00 to 24.00	21.527	<0.01
EMOTION PERSPECTIVE TAKING *(Level)*				
Early Childhood	11.66 (3.31)	2.00 to 17.00		
Early Primary	14.17 (2.52)	9.00 to 20.00	10.804	<0.01

NOTE: n (Preschool) = 29, n (Primary) = 30; *F* = multivariate analysis of variance

The MANOVA analysis between age groups was also completed for 4 Emotion Processing variables (see Table 5): Emotion Intensity, Emotion Justification, Emotion Perspective Taking – Match, and Emotion Perspective Taking – Level.

Significant effects were shown between the Early Childhood and Early Primary groups for all four variables. The Emotion Intensity mean was higher in the Early Childhood group (mean difference = 1.72) indicating that the younger age group expected to feel the emotion they had identified more strongly than those in the Early Primary age group expected to feel. The differences for Emotion Justification were significant in the inverse pattern (mean difference = -1.43) with Early Primary school children achieving higher scores, on average, than the Early Childhood children in regards to their ability to logically explain their reasons for feeling the emotion they had identified. For the Emotional Perspective Taking - Match variable, this assessed children's ability to select an emotion that appropriately reflected another character's reaction to the response type enacted by the protagonist in the stories. Children in the Early Primary group generally scored higher than those in the Early Childhood group (mean difference = -5.27). Similarly, mean scores were significantly higher for Early Primary school children in the Emotional Perspective Taking - Level item (mean difference = -2.51), meaning that the younger group generally gave lower level emotional responses that were based around primary emotions, and the older group gave more responses that showed a greater awareness of complex emotions often associated with remorse or need for reparation.

The effect sizes for all emotion processing variables tended to be somewhat large, and well over a standard deviation. For three of the four variables, children in the Early Primary group demonstrated higher scores, all of which appeared to be linked to superior emotional understanding and verbal reasoning (justifying reasons for emotions, matching appropriate emotions and giving more information about depth of emotion). The only emotion variable that the Early Childhood group scored higher was the item that was linked to expectation of emotional arousal, and was not distinguished between groups in terms of verbal elaboration, due to the item being of a forced-choice nature.

Behavioural Characteristics

Table 6: *Comparison of Child Characteristics between Age Groups*

Variable	Mean (SD)	Min - Max	*F*	*p*
SDQ (Internalising)				
Early Childhood	2.27 (2.39)	.00 to 7.00		
Early Primary	3.36 (3.00)	.00 to 11.00	2.110	0.15
SDQ (Externalising)				
Early Childhood	1.65 (1.74)	.00 to 4.00		
Early Primary	3.92 (4.58)	.00 to 17.00	5.500	0.02
ERC (Emotion Regulation)				
Early Childhood	3.56 (0.30)	3.20 to 4.00		
Early Primary	3.62 (0.38)	2.60 to 4.00	0.415	0.52
HTKS (Behavioural Self-regulation Task)				
Early Childhood	29.81 (14.71)	.00 to 49.00		
Early Primary	45.17 (2.70)	39.00 to 50.00	25.636	<0.01

NOTE: n (Preschool) = 25, n (Primary) = 25; *F* = multivariate analysis of variance

Comparison of means through multivariate analysis of variance (MANOVA) was also conducted for the parent surveys and the behavioural task that provided details of individual child behavioural style (see Table 6 below). Of the four child behaviour variables (SDQ Internalising scale, SDQ Externalising scale, Emotion Regulation, and Self-regulation), only two showed significant differences between the groups. The significant difference in mean scores for the SDQ Externalising scale (incorporating the hyperactivity and conduct problems subscales; mean difference = -2.48), indicated that the children in the Early Primary group were generally rated by parents as exhibiting higher levels of externalising behaviour than the children in the Early Childhood group. The other area of significant difference for children's behaviour was that of performance on the behavioural regulation task (mean difference = -16.68), whereby older children demonstrated a much greater ability to regulate their actions than younger children, and some evidence of a possible ceiling effect

with the older children (mean = -45.17 with a maximum possible score of 50 and limited variance) . Overall, the main differences, where large effect sizes were demonstrated, generally occurred in measures associated with clearly observable behaviour (externalising behaviour and behavioural regulation), whereas no significant differences were highlighted in the measures of more internal characteristics (internalising behaviour and emotional regulation).

Relationships between Scale Items

To assess the relationships between study variables, a series of bivariate correlations were computed.These analyses were completed separately for the two groups of children given the many significant differences between the early childhood and early primary school children in social and emotion information processing.The correlations revealed a number of significant relationships (see Tables 7 and 8) but due to the small sample sizes of the two groups individually, any correlation above 0.25 is examined, even if it was not deemed to be statistically significant (these coefficients are emphasized with bold font in the Tables below).Previous studies with the SIPI-P have shown rather modest correlations of similar sizes across social information processing and behavioural variables (Arsenault and Foster, 2012; Arsenio, et al., 2009, Calvete and Orue, 2012b, Dodge, et al., 2002, Dodge and Price, 2004), and the present analyses examine if these pattern of results are replicated.Thus, non-significant correlations of .25 or stronger are described as "substantive".

<u>Relationships between Social and Emotional Processing Variables and Behaviour</u>

The bivariate correlations in Table 7 display the associations between the 11 social and emotion information processing variables and the four behaviour measures (from the regulation task and parent questionnaires).

Table 7: *Bivariate Correlations of Behavioural Measures with Social and Emotion Information*

Processing Variables

Variable	Group	HTKS	Emotion Regulation	Internalising	Externalising
RECALL	EC	**.418***	-.190	-.020	.059
	EP	.147	.168	**-.473***	**-.509****
ATTRIBUTIONS *(Free)*	EC	-.221	.235	-.200	-.154
	EP	-.103	.208	**-.284**	**-.268**
ATTRIBUTIONS *(Forced Choice)*	EC	-.030	.177	-.131	.067
	EP	**-.316**	**-.313**	.082	-.017
RESPONSE GENERATION	EC	**.404***	.110	-.050	.027
	EP	-.024	-.122	.099	.178
EVALUATION *(Inept)*	EC	**.269**	.086	-.217	**-.300**
	EP	-.189	.002	-.181	-.197
EVALUATION *(Aggressive)*	EC	**-.421***	.141	-.133	.053
	EP	.210	.021	**-.316**	-.104
EVALUATION *(Competent)*	EC	**.278**	-.043	.155	.073
	EP	-.050	-.128	**.291**	-.083
EMOTIONAL INTENSITY	EC	**-.385***	.150	**-.259**	-.012
	EP	**-.257**	-.016	.125	.051
EMOTIONAL JUSTIFICATION	EC	**.385***	.195	-.132	-.223
	EP	.024	**.410***	**-.363**	-.209
EMOTION PERSPECTIVE TAKING *(Match)*	EC	**.562****	**-.253**	.055	.161
	EP	.144	-.226	.085	.036
EMOTION PERSPECTIVE TAKING *(Level)*	EC	**.332**	-.097	-.063	.062
	EP	-.014	-.206	-.043	.138

NOTE: EC= Early Childhood; EP = Early Primary; * $p < .05$; ** $p < .01$

When looking at the patterns of associations between all information processing variables (social and emotional) and measures of general behavioural style (self-regulation task and parent reports of emotional regulation, internalising behaviour and externalising behaviour), there was only one correlation where both the Early Childhood group and the Early Primary group shared

substantive associations. These were between higher Self-regulation scores (HTKS) and lower levels of expected Emotional Intensity. Otherwise, quite distinct patterns for the two groups were noted.

Early Childhood Group

For the Early Childhood group, nearly all the social and emotional information processing variables showed substantive and often significant associations with self-regulation, except for the attribution items. Specifically there positive associations between Self-regulation and Recall, Response Generation, Evaluations of Inept and Competent Responses, Emotional Justification, and Emotion Perspective Taking (Match and Level),while there were substantive and significant negative associations between Self-regulation and Evaluation of Aggressive Responses and Emotional Intensity. These results suggest that in the Early Childhood group,better self-regulation was related to better memory and an increased ability to produce competent responses for problematic social situations.   Children who performed better in the behavioural self-regulation taskalso rated competent and inept responses (with prosocial and internalising type behaviours) as more effective and acceptable, and aggressive responses (with threatening behaviours) as less effective and acceptable. Young children with better scores on the self-regulation task also tended to have lower ratings of emotional intensity, and hadincreased ability to give logical explanations regarding expectations of their own emotional responses,increased ability to perceive an appropriate emotional impact of another's responses, and increased ability to utilise more complex emotions (such as regret/guilt or need for accommodation/reparation) within the process of emotional perspective taking.

Among the Early Childhood group, there was only one substantive association with Emotion Regulation, a negative correlation with Emotion Perspective Taking Match. This surprising result suggests that children who were less competent in suggesting an appropriate emotion as a result of one character's response towards another had higher parental reports of emotion regulation. Also surprising were the substantive negative associations between Emotional Intensity and Internalising scores, and betweenEvaluations of Inept Responses and Externalising scores. These results suggest

that young children who have higher levels of emotional intensity were rated by parents as having lower levels of internalising behaviours, and thosewho rated inept responses more positively (more effective and appropriate) were judged by their parents to have lower levels of externalising behaviours.

Early Primary Group

For the Early Primary group the associations between social and emotion information processing variables and behavioural variables were much more evenly spread than in the Early Childhood group, though a few more of the substantive and significant associations occurred between internalising behaviours and the SIP and emotion variables, compared to the self-regulation, emotion regulation and externalising behaviour measures.

In contrast to the Early Childhood group, Self-regulation was only associated with two variables; a negative association with Forced Choice Attributions and Emotional Intensity (the shared correlation as indicated earlier).The above associations suggest that children in the older group who attributed less hostility to the ambiguous responses in the stories (in the forced choice attribution variable), also expected to feel a lower level of emotional intensity in response to potentially aggravating scenarios, and tended to have higher scores in the behavioural self-regulation task. Among the Early Primary group there were two substantive associations with Emotion Regulation; a negative correlation with Forced Choice Attributions, and a positive correlation with Emotional Justification. These associations indicate that children who attributed less hostile intentions(in the forced choice attribution variable) and who were better able to give logical explanations for expectations of emotional responses were also more likely to have better emotional regulation according to the parent report measure.

As with the Early Childhood group, some surprising associations occurred between internalising and externalising behaviours and SIP and emotion variables in the older group, though there were some more expected results also. Substantive associations for the Early Primary group occurred between Internalising scores and four SIP and emotion variables; one positive correlation

occurred between Internalising scores and Evaluation of Competent Responses, and negative correlations occurred between Internalising scores and Recall, Free Attributions, and Emotional Justification. These associations indicated that children with better memory for details of the story and who were more able to give rational explanations for expectations of their own hypothetical emotional reactions to the scenarios were rated by parents as being lower on the scale for internalising behaviour.The other correlations more surprisingly suggest that older children who were more hostile in their interpretations (free attributions), more positive in their evaluations of aggressive responses (rating them more effective and acceptable) and less positive in their evaluations of competent responses (rating them as less effective and appropriate) were also rated by parents as having lower levels of internalising behaviours. Finally, in the Early Primary group, Externalising scores were negatively associated with Recall and Free Attributions (similar to associations for internalising associations with Recall and Free Attributions). This suggests that older children, who had better recall for the story, and surprisingly more hostile attributions, were rated by parents as having lower levels of externalising behaviour.

Relationships between Social and Emotional Information Processing Variables

The bivariate correlations in Table 8 (below) display the associations between social information and emotion information processing variables that were added to the revised SIPI interview.When relating the Social Information Processing variables to the Emotion Information Processing variables, the areas where substantive correlations were apparent in both groups were between better Recall of story details and ability to match emotions in Emotion Perspective Taking. In addition, increased use of complex emotions in Emotional Perspective Taking – Level was associated with more competent Response Generation and more positive Evaluations of Inept Responses for both groups. Other than these three shared associations, unique patterns were again identified between the two groups.

Table 8: *Bivariate Correlations of Social Information Processing Variables with Emotion Information Processing Variables*

Variable	Group	Emotional Intensity	Emotional Justification	Emotion Perspective Taking(Match)	Emotion Perspective Taking (Level)
RECALL	EC	-.054	**.252**	**.399***	.049
	EP	-.101	-.063	**.304**	-.131
ATTRIBUTIONS (Free)	EC	-.026	**-.261**	-.229	-.136
	EP	.171	.163	**-.313**	.028
ATTRIBUTIONS (Forced Choice)	EC	.110	.124	.104	**.292**
	EP	**.495***	-.052	.202	.104
RESPONSE GENERATION	EC	-.236	**.526***	**.262**	**.490***
	EP	-.008	.069	**.324**	**.429***
EVALUATION (Inept Responses)	EC	-.127	.106	.166	**.392***
	EP	.065	-.114	-.021	**.295**
EVALUATION (Aggressive Responses)	EC	.071	-.220	-.190	.113
	EP	.009	**.255**	.166	**.561***
EVALUATION (Competent Responses)	EC	-.183	.009	.145	-.070
	EP	-.124	.026	.078	-.159

NOTE: EC= Early Childhood; EP = Early Primary; * $p < .05$; ** $p < .01$

Early Childhood Group

For the Early Childhood group Emotional Intensity was the only emotion variable not to share associations with any SIP variables, whereas Emotion Justification was positively associated with Recall and Response Generation, and negatively associated with Free Attributions. The above associations suggest that young children who were better able to remember details of the stories without prompts, were less inclined to freely attribute hostility (more benign in their interpretations), were able to generate more competent responses to problematic social situations, andgave more rational explanations for their expectations of personal emotional response. The Emotion Perspective Taking – Match variable was not associated with any other SIP variables for the younger group other than the shared association described above (with Recall),suggesting that

younger (and older) children, who were better able to remember details of the story were also better at identifying appropriate emotions in response to the protagonist's aggressive, inept or competent behaviour.Finally,in addition to the shared associations mentioned above (with Response Generation and Evaluation of Inept Responses), the Emotion Perspective Taking – Level variable was also positively correlated with Forced Choice Attributions. Children in the younger group who were able to demonstrate use of self-conscious emotions when taking the emotional perspective of another character werebetter at generating more competent responses to social problems,but also surprisingly attributed more hostile intentions in a forced choice condition and perceived inept responses to be more effective and acceptable.

Early Primary Group

For the Early Primary Group Emotional Intensity was positively and significantly associated with Forced Choice Attributions, and Emotion Justification was positively and substantively associated with Evaluations of Aggressive Responses. These results suggest that older children who attributed more hostility in a forced choice condition also expected to feel higher levels of emotional intensity, and children who perceived aggressive responses to be more effective and acceptable overall were surprisingly better able to give rational explanations for expectations of personal emotional reactions.In addition to theshared associations described above (with Recall) the Emotion Perspective Taking – Match variable also showed substantive negative associations with Free Attributions only in the older group. This suggests that older children who were better able to remember details of the story, attributed less hostile intentions for social scenarios, and were better at identifying appropriate emotions in response to the protagonist's aggressive, inept or competent behaviour. Finally, in addition to the shared positive associations (for Response Generation and Evaluation of Inept Responses), as outlined above, the Emotion Perspective Taking – Level variable was positively and significantly associated with Evaluation of Aggressive Responses in the Early Primary Group. These associations indicate that older children who tended to generate more competent responses for problematic social scenarios, but surprisingly evaluated aggressive and

inept responses more positively (more effective and acceptable), alsodemonstrated increased use of self-conscious emotions in their emotional perspective taking.

Testing Social and Emotional Information Processing as a Mediating Variable

As described previously, a recent study (Helmsen, Koglin, & Petermann, 2012) examined the role of social information processing as a mediator between emotion regulation and aggression in a large sample of preschool children. The results showed that social information processing did not mediate the link between emotion regulation and aggression, but rather, social information processing was a small but significant additional predictor of aggression. The final aim of this study was to attempt to replicate and extend the results of Helmsen and colleagues by testing the role of emotion information processing in the link between emotion regulation or self-regulation and internalising and externalising behaviours. After examining the pattern of bivariate correlations across the study variables and separately for the two groups of children, it was apparent that for the preschool age children there were significant associations between emotion regulation and internalising ($r = -.57$; $p< .001$) and externalising ($r = -.63$; $p< .001$) behaviours, but not self-regulation ($r = .07$ and $-.02$ respectively). However, for the preschool age children emotion regulation was only associated with one emotion processing variable, emotion perspective taking, and this variable was not associated with either internalising or externalising behaviours (see Table 6, second to last row).

For the early primary school children, increased self-regulation was associated with lower externalising ($r = -.47$; $p = .02$) behaviours, and increased emotion regulation was associated with both internalising ($r = -.67$; $p< .001$) and externalising ($r = -.71$; $p< .001$) behaviours. However, of the social and emotion information processing variables, only emotional justification was associated with both emotion regulation and internalising behaviours (but not externalising behaviours; see Table 6 row 9). These variables were entered into a hierarchical linear regression model, with internalising behaviours regressed on emotion regulation in the first step, and then emotional justification entered in the second step. The results showed that emotional justification was no longer a significant predictor of internalising behaviours when emotional regulation was also in the

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model (Beta = -.11; *p* = .54), and the link between emotion regulation and internalising behaviours was only slightly reduced (Beta = -.62 from -.67). Thus, similar to the study by Helmsen et al., (2012), these results showed a strong association between emotion regulation and children's behavioural difficulties. However, in the present study, social and emotional information processing did not play an independent role in predicting behavioural difficulties once emotion regulation was considered in the analysis.

DISCUSSION

Aims and Overview of Results

The present study had three research aims which attempted to address the issue of how emotional and cognitive processes and behavioural patterns may differ between early childhood and early primary school years, how social and emotional cognitive processes are interconnected and how they relate to behaviour patterns of young children, and the role of these cognitive processes as possible mediators between emotion regulation and behaviour. Each aim will be addressed separately by summarising the overall findings for the aim, with a discussion of where the present study's findings fit within the current body of research.

The first aim in this study was to identify differences in social and emotional information processing, as well as behavioural characteristics between younger and older children. The results suggested that early preschool and early primary school children share many similarities in their social information processing abilities, but also possess some distinct differences. In looking at the early stages of the Social Information Processing model of Children's Social Competence (Crick and Dodge, 1994), older children were clearly much more advanced in their recall abilities (Step 1: encoding) than younger children, but level of hostility for attributions (Step 2: interpretation) were the same for both age groups. The accuracy in older children's recall supports results from the Dodge and Price study (1994) which found that older children (in a group of 6, 7 and 8 year olds) encoded more relevant information for both hostile and non-hostile cues. The present study did not

specify hostility and non-hostility within the recall variable, coding recall as an ability to remember key story points only. The differences seen in recall ability, with superior recall in older children, are not at all unexpected given descriptions outlining how capacity and efficiency in memory may develop over time (see Miller, 2002). It is also possible that older children have also had multiple experiences with situations similar to those depicted in the scenarios in the interview, such that they have developed scripts or schemas that help them fill in any gaps that may have been present (Carr, 2006).

The proposition that deficits in memory may result in less adequate use of cues, and more reliance on schemata to process social information (Crick and Dodge, 1994), could lead to the hypothesis that younger children (with lower recall overall) would possibly make more biased attributions. However, the present study found no differences between younger and older children regarding the level of hostility in their attributions, for either the open or the forced-choice question. This is consistent with research which indicated that attribution of hostile intent can occur regardless of schema based processing in aggressive adolescent children (Horsley, et al. 2010), and that there is little difference in hostile biases between younger and older primary school aged children of 6 to 8 years (Dodge and Price, 1994). This may be linked in some ways to the notion above that script based information may actually help in the instance of memory reconstruction (Carr, 2006), and the familiarity of events such as those depicted in the interview helped compensate for lack of recall thus allowing for interpretations to be unaffected by lack of recall. The similarities in attributions between age groups in the present study may also be explained by the fact that ability to understand differences between intentions and actions appears to develop somewhere in the 4 to 5 year old age period (Schult, 2002). In the present study, the children in the younger group were all at least turning 4 during the week of the interview and many had been 4 for some time, so that the ability to distinguish differences in cause depending on possible intentions rather than outcome alone may well have been already developed in the majority of the children in the younger group. It is also possible that a hostile attribution bias is a trait-based (non-skill based)

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aspect of information processing that is uniquely developed in some children (Dodge and Price, 1994), which explains research linking hostile attribution bias with children who show aggressionorbehaviour problems (Katsurada and Sagawara, 1998; Meece and Mize, 2010; Runions and Keating, 2007) but which may not be evident in normative populations, as in the current study.

In regards to the later stages of the SIP model, older children generated more prosocial and independent responses (Step 4: response generation), whereas younger children evaluated aggressive behaviour responses more highly. However, both younger and older children evaluated inept and competent responses similarly (Step 5: response evaluation). The generation of more prosocial responses in older children is dissimilar to the findings from Dodge and Price (1994) who found little difference between younger and older children for level of aggression in the content of their responses. These differences between the findings may be explained by the differing age groups, where comparisons in the present study were between four and six to seven year olds, whereas the Dodge and Price (1994) study looked at 6 to 8 year olds. With inclusion of younger children in the study, development of hostile patterns may have been more distinct between groups. Coding differences may also have played some part, with the Dodge and Price (1994) study looking for aggression versus non-aggression in content, whereas the present study allowed for distinction between response types based on expectations of norms for the age groups (such as help-seeking in preschool children, and independent problem solving in older children, as well as hostility or uncertainty) which may have more clearly demonstrated differences between age groups.

In considering why older children generated more prosocial responses for the social scenarios, it is possible that, given the open-ended nature of the variable, older children were more willing to share ideas. However, mean scores indicate that younger children also responded relatively often to this question, which would not account for the differences between the two groups. It is also possible that older children, through repeated experience and efficiency of information processing, have developed more awareness of the benefits and efficacy of prosocial responses or of the disadvantages associated with other response types, and so have refined their

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response generation such that they may access these types of responses more readily in problematic social scenarios (Miller, 2002).

Regarding results for evaluations of responses in the present study, younger children's tendency to evaluate aggressive behaviour more positively was similar to the results found by Dodge and Price (1994), where older children (in a group aged 6 to 8 years) showed less endorsement of aggressive responses than younger children in the group. It is possible that young children are in the process of developing an accurate appraisal of effectiveness of aggression. While many young children rated aggressive responses similarly to older children, there were some younger children who *strongly* endorsed aggressive responses.While these particular children could be more aggressive in nature, it is also possible that they are less well developed than their peers (and older children) in their ability to perceive effectiveness of aggressive responses. In this regard, further exploration into particular differences between the children in this age bracket, comparing those who do evaluate aggressive responses positively and those who do not, could add to our understanding of the developmental changes that occur regarding perceptions around effectiveness and acceptability of aggressive responses.

Giventhat more prosocial response generation and lower endorsement of aggressive responses in older children is in line with suggestions from de Castro (2010) that aggressive tendencies may decrease over time as children develop more complexity in their information processing of social situations, we may also have expected to see some difference in evaluation of competent and inept evaluations between age groups. However this was not the case in the present study. Lack of distinction for ratings of competent responses has certainly been seen between groups of aggressive and non-aggressive children aged 7 to 13 years (de Castro, et al., 2005) so we would not necessarily expect perceptions of competent responses to differ between younger and older children on the basis of change in aggression with age. It is possible that competent responses are so familiar and obviously "appropriate", that preschool aged children are just as capable of

rating them as clearly positive, such that many of thechildren in the present study had similar ability in rating effectiveness and appropriateness of competence.

In regards to inept responses, these may be more subtly nuanced such that even older children have difficulty making clear decisions about their effectiveness or, due to their less clearly "appropriate" or "inappropriate" nature, are more subject to the influences of emotion processing. While, instinctively, we may perceive inept responses such as crying or feeling "unliked" as being ineffective or inappropriate, it is possible that children in this age bracket are more inclined to see such responses as acceptable (as they are still in the mode of help-seeking to meet needs). Other results in the present study regarding inept responses suggest that positive evaluations are associated with good self-regulation in younger children and withmore depth of emotional perspective taking for both older and younger children, but thatchildren in the younger age group who demonstrate higher (parent-rated) externalising difficulties rated such responses less favourably. These links warrant further exploration, as it is possible that self-control and empathy may influence how inept responses are processed with potentially more patience and tolerance, which children with externalising behaviour (at a young age) may not be able to access. This hypothesis would also be consistent with research that has indicated that socially competent children attribute sadness to others and perceive aggressive behaviour to be morally unacceptable more readily than aggressive children (Schultz, et al., 2010), suggesting that they may indeed demonstrate more empathy which is more individual rather than age based.

For the Emotion Processing variables, quite different patterns existed between groups, with all emotion processing variables being significantly different. The differences between the groups tended to follow patterns that were consistent with increased ability and complexity with older age, such that older children were better able to justify why they would feel a particular way in that same situation. In situations where the main protagonist responded in aggressive, inept,or competent ways, older children were better at suggesting appropriate emotions and tended to use more self-conscious processing of emotions, making suggestions that often showed a level awareness of the

consequences and effects of a person's actions. These results are consistent with other findings where increasing age (from 4 to 15 years of age) influenced ability to accurately and quickly match identities with emotive faces, particularly with happy, fearful and sad emotional expressions (Herba, et al., 2006). Results were also similar to findings where most aspects of an emotion knowledge task completed with three to six year olds were correlated with age and verbal ability (Morgan, et al., 2010). Given the verbal aspect to the Emotion Justification variable in the present study it is not surprising that this, like other emotion variables in the Morgan, et al. (2010) study, is correlated with age. Similar to the Emotion Perspective Taking – Match variable in the present study Morgan, et al. (2010) used the expression-situation matching task, which required children to match expressions with situations or causes, and the expression-label matching task which required children to name an emotion expression on a picture. In line with the Emotion Perspective Taking – Level variable in the present study was the task which required matching of facial expressions with primary emotion labels (happy, sad, mad and scared) and more complex emotions (including confused, love, surprised, proud, disappointed, embarrassed and tired) which as indicated above, were all also associated with increase of age.

The only emotion variable in the current study that was significantly higher for the younger cohort was expected emotional intensity in response to problematic social situations. Previous research has suggested that quality of negative emotion in response to toy removal was distinct for different ages in a sample of 2 to 4 year old Chinese children, with 2 year olds showing significantly more distress (measured through coding of facial expression, hitting, crying, etc.) than 3 and 4 year olds, and 3 year olds demonstrating more low level anger (measured through coding of facial expression, whining, grabbing, etc.) than four year olds (He, Qiu, Park, Xu and Potegal, 2013). While the above study (He, et al., 2013) measured actual emotional reaction to a problematic situation, the present study addressed *expectation* of emotional intensity. It has previously been shown that intensity of children's emotional attributions decreases for both boys and girls with age in a group of 7, 9 and 11 year olds (Brody, 1984). The present study provides support for this decrease in

emotional intensity with age in that older children express less intensity than younger children, and suggests that direct questions may be effective in measuring such differences in children as young as 4 years old.

It is interesting to note that the emotion variables that were associated with older age were generally asked during the later stages of the social-information processing interview. The Emotion Perspective Taking variables were linked to the evaluations of potential responses (for the response evaluation step). However, the Emotional Intensity variable (associated with younger age) was asked in the earlier stages of the interview, directly after the Attribution questions (for the interpretation step) and the Emotional Justification item (associated with older age) was asked after that, just prior to the Response Generation step. These two variables addressing aspects of emotion expectations could potentially be perceived as representing the emotional arousal aspect of the SIP model (associated with the goal clarification step; Crick and Dodge, 1994) and could potentially reflect the point of change between automatic, instinctive processing (associated with early SIP) and the more reflective processing (associated with later SIP), which de Castro (2010) suggests may be linked to age and development.

In the third component of the first aim, behavioural characteristics were compared between the two age groups. The first areas of comparison for behavioural characteristics were task-related self-regulation and parent-rated emotional regulation.Results in the present study aligned with those found by Wanless, et al. (2011) who also found that child age was positively and significantly correlated with behavioural self-regulation (HTKS scores) for 3 to 6 year olds in the United States, Taiwan, South Korea and China. Wanless, et al. (2011) found that scores in the task covered the entire range, though overall only a small number reached the top score. Given that the current study included children up to 7 years of age, and the fact that both the present study and the study by Wanless, et al. (2011) found that older age is associated with higher scores, it stands to reason that more of the children in the older age group in the current study would reach top scores for the self-regulation task.

Conversely, in the present study there were no significant differences in parent reported emotion regulation between the two age groups. This is a difficult area to address with some suggestion that emotion regulation does change and develop across the lifespan (Cole, 2014; Zimmerman and Iwanski, 2014) and that this is influenced by parental socialisation (Meyer, et al., 2014). This suggests patterns of development are likely to be unique to the individual. Added to this difficulty in capturing age differences are the vast range of methods used for measuring emotion regulation and it is suggested that future research needs to keep in mind the developmental nature of measuring this construct and to continue to focus on longitudinal, multi-method measures of emotion regulation that will help us to understand the changing nature of this in response to children's broadening social arenas (Adrian, Zemen and Veits, 2011). It is possible that the current study did not demonstrate differences in emotion regulation because of individual patterns amongst children, but it is also quite likely that there were problematic aspects to the measure of emotion regulation that was utilised. Only one scale of the Emotion Regulation Checklist (Shields and Cicchetti, 1998) and this seemed to tap into negative mood at the expense of other regulatory process. Shields and Cicchetti (1998) themselves indicated the importance of considering a range of regulatory processes when researching children's emotions, so future efforts to incorporate measures of emotion regulation in SIP research should endeavour to select multi-method measures of this construct.

The second areas of comparison for behavioural characteristics were those associated with behavioural tendencies; externalising and internalising behaviours were both rated by parents on the SDQ. Both age groups were rated similarly for internalising behaviours, but older children were rated higher on the externalising difficulties scale. Other studies have found age to influence likelihood of difficulties on SDQ scales, with age being the only demographic variable that was found to be a predictor of total difficulties, with younger adolescents scoring more highly than older ones in a study of New Zealand secondary school students (Black, Pulford, Christie and Wheeler, 2010). Additionally, all subscales and total difficulties were influenced by age in a sample of 14,478 German

children aged 3 to 17 years old with the oldest children in the group (14 to 17 year olds) generally demonstrating lower scores for total difficulties, conduct problems, and hyperactivity-inattention; equal scores for emotional symptoms and prosocial behaviour; and higher scores for peer problems when compared to the youngest age group (3 to 6 years) (Holling, Kurth, Rothenberger, Becker and Schlack, 2008). While both findings (Black, et al., 2010; Holling, et al., 2008) had some results that were seemingly divergent (though not directly comparable to the present study), it is clear that the SDQ, while a standardised measure, is likely to pick up different problems at different ages. It is possible that internalising difficulties may not be easily identified due to less obvious presentation of these types of behaviours compared with externalising behaviours, particularly in a non-clinical sample, such that ratings for children of all ages were generally the same. However, externalising difficulties, which are more readily observable, may begin to be deemed "problematic" at early primary school age where there are expectations that children have learned to demonstrate more regulated behaviour, that tend to be placed less on younger children, where some degree of impulsive and aggressive behaviour is more developmentally likely and deemed less inappropriate.

In the second aim of the study, patterns of association between social and emotional information processing, and behavioural characteristics were examined, as was the role of emotion in patterns of social information processing. The first part of the aim was addressed by comparing steps of the SIP interview (including the additional emotion aspects) with the four regulatory and behavioural measures. Patterns strongly suggested that there are many differences between younger and older children for how social and emotional information processing variables are associated with expression of behaviour.

The first behavioural variable measured was self-regulation, through a behavioural control task completed prior to the SIP interview. This measure was significantly associated with nearly all variables (except attributions) with the early childhood group whereby children who performed better on the self-regulation task also demonstrated more social and emotional competence on all social and emotion information processing variables. This is partially endorsed by results linking

self-regulation in delay tasks with labelling of emotion expressions and understanding of situational emotional knowledge in preschool and early primary aged children (Denham, Bassett, Way, Minic, Zinsser and Graling, 2012).

Conversely, self-regulation was only associated with two variables for the older age group. The first of these was a shared correlation with the preschool group, whereby better self-regulation was associated with lower ratings of emotional intensity. This supports previous research that suggests actual experience of low level anger during a toy removal experiment was not associated with any parental reports regarding behaviour, whereas high level anger was significantly correlated with parental reports of anger, and more strongly with parental reports of inhibitory control (He, et al., 2013). These findings suggest that more intense experience of emotion seems to be associated with processes related to regulatory ability.This is not surprising given that, according to Lemerise and Arsenio (2000), regulatory control has the goal of managing the experience of intense emotions. However, we would have expected emotion regulation to play more of a role in this process, whereas it didn't yield any significant correlations with emotion intensity in the current study.

The second association for self-regulation in the older group suggested that better regulation was associated with less hostility for the forced-choice attribution question. This implication that older children with more behavioural self-control are less likely to perceive ambiguous social behaviour as hostile is not unexpected, as problem behaviour, through lack of regulation, has been linked to aggressive tendencies (White, Jarrett and Ollendick, 2013). White, et al. (2013) found that behavioural regulation was associated with reactive aggression but not proactive aggression, which fits with the hypothesis that reactive aggression is more emotionally driven and thereby requires greater level of effortful control (de Castro, 2010). In relating this to interpretation of intentions, research has shown that disruptive and physically aggressive preschool boys are less likely to perceive accidental intentions in ambiguous hypothetical social provocations (Schultz, et al., 2010).

When considering why only two links between self-regulation and social and emotional information processing variables were found for the older group, whereas several links were found for the younger group, it is worth noting that there appeared to be definite ceiling effects for the behavioural regulation task in the present study. Older children demonstrated far less range in the task with much less deviation, whereas younger children were quite varied in their self-regulatory abilities with very large variation in their performances on the task.It is possible that older children have learned better self-regulation with time and therefore our normative population did not provide enough cases of older children with lower self-regulatory ability to demonstrate links between self-regulation and aggression in that group, or that this measure does not sufficiently distinguish differences in these abilities in older children. If this is true, then a clearer measure of older children's regulatory ability would possibly highlight more associations between self-regulation and social and emotional information processing variables in that age group also.

Parental reports of children's emotional regulation demonstrated only one substantive association for the younger group and two for the older group. The association for the preschool group, betweenhigher emotion regulation and lower matching of emotions in perspective takingwas surprising, and contradictory to previous results found with 3 year olds (Leerkes, et al., 2008). The present study's results are counter-intuitive, as we would expect children who had better emotion regulation to also better understand how other children would feel through the processes of experiential learning, as described by Miller (2002).These results may discrepant due to the fact that the current study used one scale from the Emotion Regulation Checklist (ERC; Shields and Cicchetti, 1998), whereas the previous study (Leerkes, et al., 2008) utilised the full checklist. However, Leerkes, et al. (2008) still found significant associations between affective perspective taking and the Emotion Regulation scale of the ERC on its own but differences may also be explained by the removal of some items from the emotion regulation scale in the present study.

In a similar pattern to associations with self-regulation, early primary aged children with better emotional regulation also demonstrated significantly less hostile attributions in the forced

choice question. This differed to results found by Helmsen et al. (2012) where no associations were evident between hostile attribution of intent and maladaptive emotion regulation. Regarding connections between emotion regulation and hostile attributions Calvete and Orue (2012a) found that both hostile attributions and emotion regulation acted as predictors of reactive aggression (RA) in a sample of 1,125 adolescents, whereas de Castro, et al. (2005) did not find any significant associations between emotion regulation and proactive or reactive aggression, though did find that aggressive boys (7 to 13 years) were more likely to have hostile attributions and less competent emotion regulation strategies.This suggests that the maybe some,as yet, unclear connection between the two variables.Hostile attributions are a difficult variable to measure (for a review see de Castro, Veerman, Koops, Bosch and Monshouwer, 2002), which may contribute towards explaining discrepant results regarding their connection with emotion regulation. However, better emotion regulation was also linked with better justification ability in the older group. This could be explained by some level of interplay between these variables, whereby emotional regulatory ability provides more opportunities to interact with others in a way that promotes improved understanding of emotional information (Miller, 2002) but as noted there are some identified concerns regardingthe measure of emotion regulation utilised in the current study whichmay well have impacted on the findings above and will be discussed further in the limitations section.

When looking at internalising and externalising behaviours there were no shared associations between the early childhood and early primary groups. Internalising behaviours were associated with several social and emotional information processing variables in unexpected ways. For the preschool aged group there was only one small association with lower internalising difficulties associated with higher expectations of emotional intensity. This negative association contradicts a recent study with primary school children, which found that parent rated shyness and emotionality were predictive of later ratings of internalising behaviour (Eggum, Eisenberg, Reiser, Spinrad, et al.,2011). For the early primary group (6 to 7 years old) increasing internalising difficulties were associated with less hostile attributions (free), negative evaluations of aggressive responses,

and more positive evaluations of competent responses. These results were different to findings whereby neither hostile attributions nor competence in response evaluation were significantly related with withdrawn behaviour (Ziv and Sorongon, 2011). They also contrasted with findings that hostile attributions were not associated with internalising ratings , but that positive evaluations of aggressive responses (and inept ones) were related to internalising ratings(Ziv, 2012). The results from the present study are also almost the inverse from Raikes and Thompson (2008) who found that children rated as more lonely in first grade demonstrated negative attributions earlier at 54 months (though not in first grade), and produced less socially competent solutions, but more aggressive responses. Thus, the current results seem to stand alone in relation to the above studies, and the added issues of a small sample and small associations compounds any attempt to speculate about these results.

In the present study, increased internalising difficulties were also associated with poorer story recall and poorer emotion justification in older children. The Recall variable is a cognitive and verbal variable, and the same could be said for the Emotion Justification variable which requires a child to give logical rationale for their expected emotions.In this regard, the early primary children with internalising difficulties may have poorerexpressive language skills. This fits with research suggesting children with lower verbal ability at four years of age demonstrated more internalising behaviour at 7 years of age (Bornstein, Hahn and Suwalsky, 2013). It is also possible that these effects may be related to temperament, with children who are more outgoing being more likely to share their thoughts openly in these open question items, and shy children being more reserved.

For externalising difficulties one association with social or emotional variables was evident with the preschool children, whereby children judged by their parents as having higher externalising difficulties gave more negative evaluations of inept responses. This somewhat contradicted the results from two recent studies by Ziv and colleagues. Ziv and Sorongon (2011) found that more competent response evaluations were associated with less aggressive and hyperactive behaviour. Differences to Ziv and Sorongon (2011) may be explained by differences in rating response

evaluationwith the current study utilising inept responses as a separate category in contrast to Ziv and Sorongon's use of an overall score of evaluation competence. Ziv (2012) found that children with higher externalising (and internalising) behaviour more positively rated inept responses. These differences may be explained by sample differences with the former study using a sample including children exposed to violence, and the current study using a more normative community sample. This may cause discrepancies between studies as the children in the group that were exposed to violence were more likely to demonstrate internalising and externalising behaviours (Ziv, 2012). Therefore the children in the Ziv study (2012) are likely to have demonstrated much higher levels of behaviour difficulties than the children in the current study's sample, rendering the two groups incomparable for level of difficult behaviour.

In older children, increasing externalising difficulties were associated with poorer recall. These results are similar to those found by Coy, et al. (2001), where the only concurrent relationship in the longitudinal study (with four SIP variables and internalising and externalising behaviour) with preschool aged boys and continuing over two years was that of CBCL externalising parental reports at Time 3 and Encoding (essentially a recall task) which was only measured at Time 3. It is interesting to note that Encoding was one of the variables (as well as problem solving) that was modestly correlated with verbal IQ and language skills, which again endorses the possibility that behavioural difficulties are associated with poorer verbal skills(Bornstein, et al., 2013).

Finally, as with internalising difficulties, increasing externalising difficulties were also surprisinglylinked with lower hostile attributions for the open-ended question, though onlywith the older group. Again, this contradicts other findings where hostile attributions have been significantly associated with externalising or aggressive behaviour (de Castro, 2005; Ziv, 2012), although these studies utilised a forced choice question. As mentioned earlier, the present study also utilised a forced choice attribution variable where associations with behaviour measures were very small, but more in the expected direction in relation to externalising behaviour in younger children and internalising behaviour for older children only.

In order to investigate the role of emotion processing in SIP the second part of the second aim examined correlations between social information processing variables and emotion processing variables. Correlations within this section also indicated that while there are some shared associations for the two age groups, social and emotional information processing variables seem to interact in different ways for early childhood and early primary aged children.

The first emotion processing variable was that of Emotional Intensity, which in higher levels was associated with Forced-choice Attributions for the older age group only. This was interesting due to the fact that overall the primary group demonstrated significantly lower expectations of emotional intensity. Therefore there seems to be no distinction between Attributions and Emotional Intensity when children are younger, but when children are older, their negative attributions may influence how intensely they expect to feel, or how intensely they feel influences their perceptions of hostility.Support for the latter comes from previous findings that suggest empathy tends to decrease when an individual sees their own emotional intensity as higher than the other person in the situation (Strayer, 1993), such that due to interpretation of their own emotional intensity, children may demonstrate less emotional understanding for the other party. However, itis proposed in this discussion that the Emotional Intensity variable may act as an indirect measure of emotional arousal that is potentially linked to the goal clarification step of the SIP model. This would either suggest that the attributions (Step 2: interpretation) influence the arousal in a linear fashion, which would lend support to the former possibility. It is possible, and likely, that there is a reciprocal effect, with feedback loops, as put forward in the reformulated model of SIP in social competence (Crick and Dodge, 1994), such that reactive and cursory appraisal of cues driven by a predisposed hostile attribution biases (developed through previous experiences), creates an instinctive emotional reaction, which, depending on the level of emotional arousal,either inhibits further appraisal or drives further negative interpretation when engaged in secondary, reflective appraisal. This explanation fits with the developmental emotion and social information processing model hypothesised by de Castro (2010).

The second emotion processing variable was that of Emotional Justification. As noted, this variable requires some level of cognitive processing and verbal skills, in that children need to rationalise their emotional expectations. Therefore it is not surprising that it was positively associated with Recall, though only for the younger age group. Ability in Emotional Justification was also associated with lower hostility in the Free Attributions and prosocial Response Generation for the younger children. Strayer (1993) also found that cognitive attributions (essentially the same as the current study's Emotion Justification variable) showed distinct age related development between 5 and 13 years of age, and attributed this to development of internal thought processes and verbal ability, where younger children (aged 5) had a tendency to focus on actual events in considering their own emotions, but slightly older children (aged 7) were beginning to consider the other person within the event when explaining their expectations of emotional response. Additional to this, these two variables (Free Attributions and Response Generation) in the present study clearly required a degree of verbal ability as in the Emotion Justification variable. Therefore it is possible that some of these differences were more apparent for younger children due to the greater variability in verbal skills. Despite the reliance on verbal ability for these questions, the lower hostility in interpretation and the more prosocial responses generated demonstrate a qualitatively different type of responding for children who are able to justify emotional expectations when young. This aligns with the developing understanding of self and other as related to emotion as described earlier, with younger children interpreting situations based on actual, concrete events and older children beginning to consider another person, when describing their emotional response to an event (Strayer, 1993). This would also explain results such as those found by Schutz, et al. (2010), where socially competent preschool children are more likely to attribute sadness to others and perceive aggressive response to be less positive and morally unacceptable. These findings speak in a general sense to the connection between social competence, emotion understanding (emotion attributions) and less aggressive SIP (response evaluations).

One social information processing variable was associated with Emotional Justification in the older group, and that was for more positive evaluations of aggressive responses. Some of the unexpected results regarding evaluations of non-competent responses may possibly be explained by the way the item is structured, with three aspects pertaining to general evaluation (good or bad), social evaluation (would the other child like you) and instrumental evaluation (will they let me do….). It is possible that the sample of children that we interviewed perceived aggressive responses as instrumentally effective and this also resulted in a decision that the response type would be good, which gave a generally positive endorsement of aggression. It is interesting to note that the opposite (though slightly smaller) association occurred for the younger group, with younger children who were better at emotional justification being less positive in their evaluations of aggressive responses. Why this would be the case for younger children, but not older children, is difficult to explain, though there is the possibility that younger children are in a developmental phase where a clear sense of appropriate and inappropriate (right and wrong) behaviour is being taught and learned, such that they have a very clear cut sense of the "right" answer. In this regard, older children may well have had a more mixed experience of the world with exposure to experience of actual effectiveness of aggressive responses. This would give them a broader knowledge base by which to critically evaluate their perceptions and potentially justify their positive interpretations of aggressive responses.

The final two emotion processing variables are those related to emotional perspective taking, which were presented alongside SIP variables measuring later stage processing (evaluations of inept, aggressive and competent responses) in the SIP interview. Firstly, the ability to predict likely emotional reactions to inept, aggressive and competent responses (Emotion Perspective Taking – Match) was associated for both age groups with recall ability. This is similar to findings that suggested preschoolers' emotion knowledge (from a composite score of emotion identification and emotion matching in a perspective taking task) predicted emotion recall (on another story task) that went beyond the effects of age and receptive language skills (Channell and Barth, 2013). While

neither this study nor the present study examined longer term recall, it is likely that the ability to hold details in the mind would allow the child more cognitive space to readily engage in processes that lead to more appropriate matching of emotion to situation. This same trend, however, was not shown to continue with level of emotion perspective taking. This may be explained by the fact that level of emotion perspective taking requires more processing than matching alone, and limits on this may have been present for the age groups that we interviewed. The discrepancy may also be explained by the differences that were evident between the coding of EPT–Match and EPT-Level. Both of these possibilities are discussed further, below, in relation to associations found with EPT-Level.

The ability to take another's emotional perspective (Emotion Perspective Taking – Match) was also associated with less hostility in free attributions, though more strongly in the older age group. Again, the free attribution question may well have allowed children with more cognitive or verbal ability to perform better. Labelling of emotions and affective perspective taking has indeed been linked to early academic functioning (letter-word identification and practical maths problems) but not socio-emotional problems in preschool children (Leerkes, et al., 2008), suggesting a cognitive influence to the types of tasks used to measure emotion knowledge. Additionally, von Salisch, Haenel and Freund (2013) found that an emotion perspective taking task was also associated with verbal, attention, and cognitive measures in a group of 4 to 6 year olds. Given that effects have been seen in preschool aged children in other studies (Leerkes, et al., 2008; von Salisch, et al., 2013) but less so in the present study, it is possible that the measures used in the present study are slightly different (particularly in the Free Attribution variable) such that they display less sensitivity in the younger age group.

Secondly, the ability to engage in a higher level of emotional processing(Emotion Perspective Taking – Level), with an awareness of self-conscious emotions, was associated with Response Generation and evaluation of inept responses in both groups. It is not surprising that an ability to process emotions on a deeper level is connected with more prosocial responses, as a child with this

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ability is more likely to understand the consequences and repercussions of their responses, and this also adds to earlier discussion about emotional depth possibly leading to higher levels of empathy which allow for more tolerance of inept responses. In a general sense emotion knowledge (expression identification and emotional situation knowledge) has been significantly associated with measures of social competence (parent questionnaires regarding co-operative, comforting and perspective-taking behaviour) in a group of 74 preschool aged children (Garner and Waajid, 2012), with emotional situation knowledge playing the key role in prediction of both cognitive and social competence. It is possible that the reason expression knowledge did not play an important role in this due to mastery in this age group in identification of basic emotion types. This would fit with the suggestion from Bassett, Denham, Mincic and Graling (2012) that emotion knowledge has a linear development with expression recognition leading to situational understanding, in turn resulting in social competence and improved learning behaviours as rated by teachers, and the authors found this to be the case in preschool children. It was also endorsed in results from the current study, whereby all children performed well in the emotion recognition pre-check task, and older children performed better in all emotion knowledge variables (Emotion Justification, Emotion Perspective Taking - Match, and Emotion Perspective Taking - Level).It is possible that the depth of emotion processing (in the Emotion Perspective Taking – Level variable) may represent another step in emotion development, consistent with a hierarchical organisation of emotion development as is proposed by Pons, et al. (2004).

While associations between Response Generation and both Emotion Perspective Taking (EPT) variables were present for both groups, the associations between Response Generationand EPT-Level particularly were much stronger and significant (also for both groups). This may have been related to similar coding patterns between the Response Generation and EPT–Level variables. Whereas EPT–Match was coded categorically as either competent or not competent, based on pre-determined expectations of emotions for the given scenarios; Response Generation and EPT–Level were coded based on varying degrees of response. The coding was organised to accommodate

qualitative differences in children's responses that demonstrated developing levels of independence (for Response Generation) and consideration of others (for EPT–Level).

Some surprising associations were also found for both younger children and older children in relation to depth or level of emotional perspective taking. Younger children who demonstrated a higher level of emotional perspective taking also attributed more hostility in attributions. This may be attributed to difficulties that young children have in differentiating between intention and outcomes (Schult, 2002), and also due to the forced choice nature of the attribution question which has been acknowledged as potentially having a priming effect towards hostility (Ziv and Sorongon, 2011). Older children who demonstrated a higher level of emotional perspective taking evaluated aggressive responses more positively. While this is surprising, it is not necessarily suggestive of more aggressive behaviour. In fact, Crick and Dodge (1996) found that in third to sixth grade children (approximately 9 to 12 years of age) prosocial behaviour was indeed associated with positive expectations (for instrumental outcomes) for both prosocial and verbally aggressive responses, and a perception that avoidance of conflict would result in conflictual outcomes.Other factors can also play a role in the pathway between evaluation of aggressive responses and expression of actual aggressive behaviour. This was shown to be the case with adolescents where evaluation at 13 years was not significantly associated with aggression earlier or later, until level of impulsivity was taken into account (Fite, Goodnight, Bates, Dodge and Pettit, 2008). This suggests that many children may perceive aggression to be effective, but personality like variables may mediate between these perceptions and expression. However, the effect still stands that older children (6 to 7 years old) in the present study, who have a deeper level of emotion perspective taking, still perceived aggression to be more effective and better overall.

In this regard, it is important to note the use of composite scores for the response evaluation variable in the current study. As the children were asked about social and instrumental outcomes, as well as whether the response was "good" or "bad", there are several combinations where children with emotional competence would be more likely to rate an aggressive response

highly. For example, if the response was perceived to be instrumentally effective, then the child might then also determine that it was a "good" option, which would give that response a score of at least 2 out of 3. Also, children with good emotion perspective taking ability might also be more forgiving in the sense that if a child responded aggressively, they might perceive the other children to still "like that child" despite the aggressive response. For this reason, clearer delineation between each question type may inform as to how level of emotion perspective taking is related to each type of evaluation. Additionally, inclusion of more "moral" questions such as whether the behaviour was kind or the "right" thing to do may also provide more information as to why more emotionally perceptive children would rate aggressive responses in a particular way. It is possible that as children with a deeper level of emotion perspective taking get older they become more critical in their incorporation of actual experiences into their database of knowledge. They may be more perceptive in their ability to assess the effective use of aggression to obtain instrumental or social goals, such that aggressive responses are rated as better overall.

Finally, the third aim of the present study endeavoured to replicate and extend the results of Helmsen, et al. (2012) by examining the role of social information processing variables (as well as emotion processing variables) in predicting behaviour difficulties (externalising and internalising). In order to see if SIP (or emotion processing) acted as a mediator between emotion (or self) regulation and aggressive (or other) behaviour difficulties or if SIP or emotion information processing acted as an independent predictor of aggressive (or other) difficulties, links between regulation, SIP and behaviour were examined. Helmsen, et al. (2012) utilised a mediation analysis based on Baron and Kenny's (1986) criteria for social psychological research, whereby certain conditions need to be met in order for mediation analysis to occur. The independent variable (in this case emotional or self-regulation) must relate to the outcome variable (internalising or externalising behaviour). There must also be significant relationships between the independent variable (regulation) and the mediator variable (in this case SIP and emotion processing variables)as well as between the mediator variable (SIP/emotion processing) and the outcome variable (behaviour). Finally, the

association between the predictor (regulation) and outcome variable (behaviour) must be reduced significantly (for full mediation) or substantially (for partial mediation) by incorporation of the mediator (SIP/emotion processing) into the equation.

Patterns of bivariate correlations between regulation measures (emotion regulation and self-regulation) and behaviour difficulties (internalising and externalising) were examined. While a few patterns were found between different types of regulation and behaviour, the only one of these patterns that also demonstrated links with social or emotional information processing variables was that of Emotion Regulation and Internalising difficulties, with Emotion Justification, in the older (early primary) group. When these variables were analysed by means of hierarchical linear regression a direct link between emotion regulation and behavioural difficulties (internalising difficulties in this study) was found, which supported findings from the Helmsen, et al. (2012), study (with measures of aggressive behaviour). Emotion Justification (the only relevant social or emotional information processing variable linked to both regulation and behaviour in the older group) did not mediate between Emotion Regulation and behaviour, which again supported results from Helmsen, et al. (2012). However, neither did it act as an independent predictor of behaviour in the regression model. This was contradictory to results from Helmsen, et al. (2012), where SIP variables (aggressive response generation and aggressive response evaluation and decision) were a small, but significant independent predictor of aggressive behaviour. Even though some similar evidence was found that linked SIP/emotion processing with behaviour, few links were found between emotion regulation and SIP, as was the case for Helmsen et al. (2012). It is possible that the differing results that were apparent between these two studies were due to measurement differences. Emotion regulation in the Helmsen (2012) study was measured with two scales (inhibitory control and anger/frustration) from the Children's Behaviour Questionnaire (CBQ) Short Form (Putnam and Rothbart, 2006) which may well have overlapped with different measures in the present study such as Self-regulation and Emotional Intensity. Thesetwo areas were quite relevant particularly to the preschool age group. The Emotion Regulation scale from the Emotion Regulation

Checklist (ERC; Shields and Cicchetti, 1998) that was utilised in this study may also have had some measurement issues which will be discussed further in the limitation section of this discussion.

Summary of Aims and Results

To recap, the aims of this study were to examine how emotional and cognitive processes, and behavioural patterns, may differ between early childhood and early primary school years; to investigate how emotional and cognitive processes are interconnected in the predication of behaviour of young children and how emotion fits into a social information processing model; and finally, to explore the potential pathways through which regulation and social/emotional information processes may contribute to prediction of behavioural difficulties.

In addressing the first aim, we saw that information processing variables are often quite similar between 4 year olds and 6 to 7 year olds, with only a few differences that mostly seemed to exist in later stage processing. The differences in early stage processing were only for recall which was most likely related to cognitive capacity, rather than an information processing bias, and similarity in attributions supported previous research, with the suggestion that attributional style may be more linked to behavioural style than age. In the later stage processing, older children were generally more prosocial and younger children generally less socially competent in their responses and younger children were also more accepting of aggression in their evaluations. While some discrepancy was evident between these results and previous research, this may well have been due to sample age differences or variation in coding systems, and overall SIP results in the present study generally fit with the idea of decrease in aggression, and increase in complexity of SIP espoused by de Castro (2010).

Emotion processing variables seemed to be much more affected by age, with younger children expecting more intensity of emotion and older children being more competent with other areas of emotion, which is easily explained by emotion development processes with learning occurring through increased experience, whereby older children are likely to learn better emotional regulation and also understand more about emotional experiences of self and others (Miller, 2002).

The areas where older children demonstrated increased complexity compared to younger children, generally fit with other studies' definitions of emotion knowledge and were also in line with their results (Herba, et al., 2006; Morgan, et al., 2010). Emotion Intensity, however, appeared to capture quite a different aspect of emotion that was much more experiential in nature. Results were consistent with previous research suggesting that the nature or intensity of emotional experience in problematic situations can change with increasing age (He, et al., 2013; Brody, 1984) and lent support to the idea that a direct question within an interview can equally capture similar information without the need for behavioural experiments. It was proposed that the emotion variables that were presented alongside the early stage processing showed more relevant associations for younger children, whereas the emotion variables presented later in the SIP model demonstrated more significant associations for older children. It was suggested that this may have some connection to reflective processing, which is proposed to be linked with age and development (de Castro, 2010).

Finally, behavioural measures suggested that older children were better at self-regulation but emotion regulation was similar in both age groups. There were potential ceiling effects in the self-regulation task, but results still endorsed other findings whereby age impacted on self-regulatory ability. The measure of emotion regulation may have tapped more into the general area of emotional experience or mood, with less focus on regulatory processes, and this will be considered within the limitations section of the present study. Scores for internalising behaviours, which may be difficult to identify or less likely to present in young children, were similar in both groups. However, externalising behaviours were more apparent in the older group. This could be due to the fact that the SDQ may be more sensitive to particular age groups, and this could be explained by the presence of more established behaviour patterns in older children or the fact that some degree of energetic behaviour is expected in younger children and therefore perceived as less "problematic".

There were two key parts to the second aim. Firstly, the present study looked at the role of social and emotional information processing variables in predicting behaviour. Several patterns were

demonstrated with different types of patterns for different measure of behaviour. Self-regulation was associated with competence in all areas of emotional information processing for young children, and this may be attributed to ceiling effects on the task, where more variation was seen between scores for younger children. With a measure of self-regulation that was more sensitive to differences in older children we may also have seen more associations with increased competence in the early primary group also. Self-regulation was far more linked with all emotion processing variables related to emotion knowledge and most SIP variables (in at least one of the two groups) compared with emotion regulation. This may be due to the cognitive nature of the variables in the Information Processing type questions. However, higher self-regulation was associated with lower emotional intensity, the more experiential emotion variable, in both groups, whereas it was not associated with emotion regulation for either group. This may be due to issues around the use of the emotion regulation scale (from the ERC; Shields and Cicchetti, 1998) on its own, and more so with some items removed due to overlap with the SDQ or to improve reliability ratings. It seems likely that the emotion regulation scale may tap into positive/negative emotional experience in general, as opposed to regulatory ability, with items such as "is a friendly child" and "responds well to overtures from adults/peers". Studies that have attempted to measure emotion regulation have often used measures of both emotional experience or reactivity, and inhibitory control (Helmsen, et al., 2012) or have separated the two concepts clearly in order to differentiate emotion regulation (or control) from other types of regulation (Leerkes, et al., 2008).

Internalising and externalising behaviour was associated with different variables for different age groups, with some results being unexpected or not lining up with prior research. Many of the anomalies could be explained by considerations such as shyness preventing children with internalising difficulties from sharing their ideas or the influence of time or method of measurement. For children with externalising difficulties aspects that may have played a part included the method of measurement requiring increased use of verbal communication, or coding differences. These aspects may have resulted in children with lower behavioural difficulties to be more inclined to

answer open questions but in doing so, be prone to conveying responses that advocated short-term instrumental results that were linked with hostility.

Generally, self-regulation impacted processing in younger children, whereas level of behavioural difficulty tended to impact processing in older children. This might be due to ceiling effects in the self-regulation task for older children, and also due to the likelihood of older children being more easily identified as having behavioural difficulties, particularly pertaining to externalising behaviour. Emotion regulation seemed to have less involvement with information and emotion processing variables, which may well have been related to measurement issues within the emotion regulation measure.

In the second part of the second aim, the role of emotion variables in social information processing was examined. Many links were demonstrated with the emotion processing variables being linked to a few distinct areas of SIP. Firstly, the experiential emotion component, Emotional Intensity, seemed particularly relevant in the current study regarding the links with attributions of hostility in older children, potentially explained by increased ability with in considering another person's perspective within the process of interpretation. Emotion Justification was linked with SIP steps that were either cognitive or verbal in nature (recall for younger children and free attributions for older children), that potentially required more developed internal processing or verbal ability (such as more prosocial response generation in older children) or were possibly influenced by ceiling effects (such as the recall variable for older children).Patterns of relationships for the Emotion Perspective Taking variables (EPT-Match and EPT-Level) appeared to besuggestive of some form of increasing competence in emotional development. Matching in Emotion Perspective Taking was linked with early stage SIP processing steps. These early steps are associated with less reflective processing (de Castro, 2010) but still require some cognitive and verbal capability. The relationship of this variable with recall seems to fit well with the supposition that better memory allows more space for cognitive processing, but that such ability may have limits which explain differences of associations for the EPT-Level variable. Level of emotion perspective taking was associated in both

groups with later stage processing in the SIP model and was possibly impacted by more developed processing of another person's experienceempathy or tolerance. The more complex nature of the EPT-Level processing seemed to be reflected in the coding system which accounted for varying shades of response, that were not accounted for in the EPT-Match variable.

A few unexpected results were also found when exploring the role of emotion in SIP. Some of these may have been related to difficulties with impact of age in distinguishing between intention and outcomes, or possible priming effects in the younger group whereas ideas around use of composite scores were considered for the older group. Some surprising results such as positive evaluation of aggressive behaviours were supported by other research and may well have been explained by the fact that questions used in the interview pertained more to effectiveness than moral judgement.

Finally, regarding the third aim of the study, while support was not found for information processing (Emotion Justification) in independently predicting behaviour (Internalising), many links were still found between information processing variables (social and emotional) and measures of regulation and behaviour, which were often distinct for particular age groups. Sample size was likely to have had an effect on these findings, as the current sample sizes were quite low for implementation of regression analyses. It is also possible that results for the present study were different to results from Helmsen, et al. (2012) due to measurement differences, particularly for emotion regulation.

Limitations of the Present Study

Several limitations of the present study were related to research design. Firstly, given the small sample size, these results should be interpreted with caution. As this was an exploratory study, with the goal of integrating emotion aspects into a well utilised Social Information Processing format, the numbers served to open avenues for future investigation, but were limited in the power they offered in the various statistical tests. Furthermore, there were a large number of bivariate correlational analyses (over 140 for the two groups combined) that examined associations across

social and emotional information processing and the behavioural measures. However, no adjustments (e.g., a Bonferroni correction) were made in the analyses to allow for the possibility of obtaining sizeable and significant correlations purely by chance. This would have substantially reduced the number of associations considered significant, even though the interpretation of the results focus more on the size of the associations as related to other findings in this field.

In addition, as the sample was drawn from a normal community population, the effects were likely to be smaller than those found for clinical and higher risk samples. After exploring the findings from the present study, it was clear that many of the associations between variables shared cognitive processing or verbal components. In this regard, it may have been prudent to incorporate a measure of cognitive or verbal ability that would serve as a control to validate results that were found. Another limitation of the study, related to research design, was the cross-sectional design as opposed to a longitudinal design. Age differences in a normative population, while controlled for factors such as gender, ethnicity, parental education, and parental occupation, may not reveal as much information about development of information processing patterns as longitudinal tracking of the same children over time.

Some of the measures used in this study may also have been linked to findings that were unexpected or inconsistent with previous research. The Emotion Regulation measure in this study seemed to access positive affect or reactivity, without a component of inhibitory control which has been used as part of emotion regulation scores in other studies (Helmsen, et al., 2012). This may have limited the ability to accurately capture the concept of emotion regulation, and also limited the comparability to other studies. However, without the inhibitory control component, the measure may have had some benefit in that measuring emotion regulation would have been quite distinct from measuring self-regulation. It has been shown that different types of control (emotional and cognitive) are linked to different outcomes (Leerkes, et al., 2008). In the present study different regulation measures may have helped to reveal distinctions between behavioural and emotional regulation links with social and emotional information processing. Measures of externalising and

internalising behaviours may have been less sensitive to ascertaining level of difficulty in the younger age group, and the measure of self-regulation demonstrated ceiling effects that may have altered significance of associations in the older age group.

Regarding the measures of Social Information Processing (SIP) ceiling effects were also noted for the Recall (encoding) variable in the older age group, which again may have prevented detection of some significant patterns. However, the SIPI-P was specifically designed for use with children in the early childhood age range. Thus, some of these ceiling effects should have been expected when extending this measure to 6 and 7 year olds. Some problems were also noted for Attributions (interpretation) for both forced choice and free variables. Forced choice measurement of attribution of intent has often been noted as problematic, with results of studies being dependent on the way the question is framed and considered to possibly contain an element of priming towards hostility. However, the Free Attribution question may have had different issues in that it potentially allowed more cognitively or verbally capable children to perform better, thereby exposing a bias towards hostility that the less capable children may also have had but did not reveal due to higher levels of reticence in responding to questions. Given these issues, it seems that neither attribution variable accurately captured interpretation of intent, with the forced choice variable possibly being too leading and the free variable being too open to effects of "don't know" responding or mixed/unclear answers. No step regarding goal clarification was incorporated and this will be further discussed in the future directions section of this discussion. While many interesting associations were found regarding response generation and response evaluation, some care should be taken in the interpretation of high scores for evaluations as being representative of clear endorsement, rather than just a reflection of perceived effectiveness.

Implications/Future Directions

There were a number of interesting results in the present study that may guide areas of future research. The first area that was interesting was the use of emotional intensity in the SIP interview for the current study. Emotional Intensity seemed to be distinct from the other emotion

related questions that were incorporated into the interview, in that the other emotion processing

variables seemed to be more linked with emotion knowledge or understanding, whereas the

Emotion Intensity variable tended to tap into more of an experiential aspect of emotion. Given that

the question relating to emotional intensity was placed between the interpretation step and the

response generation step in the present study, and that it seems to capture some aspect of

emotional arousal, it is possible that the measurement of emotional intensity could be linked to goal

clarification as suggested by Crick and Dodge (1994). The goal clarification step also links somewhat

into the measures of response decision/evaluation. As discussed earlier, the Positive Evaluation of

Response measures asked three questions, two of which were clearly related to social or

instrumental outcomes. Goal clarification is referred to as "focused arousal states" that orientate

people towards particular outcomes (Crick and Dodge, 1994). Given that the two outcomes related

to response evaluation, social and instrumental,could contribute towards motivating behaviour, they

also have a connection with goal clarification which may well be driven by emotional reaction, which

is potentially represented by the Emotional Intensity variable in the present study. It is suggested

that further work could focus on linking reports of emotional intensity in response to situations with

goal selection measures as well as outcome measures that relate to social and instrumental drivers

of behaviour(and possibly other areas of motivation also). This is particularly interesting as it links to

Lazarus' (1991) theory of emotion which also considers the connections between emotion and

motivation. This line of investigation may well enlighten us more about the often non-present goal

selection step, as well as how it relates to emotional arousal. With evaluation of outcome measures

separated into the social and instrumental components it could potentially lead to a clearer picture

of whether children actually endorse response types or merely see them as effective in some way.

Secondly, the measure of Emotional Intensity may well represent a key point that turns

interpretations into actions. De Castro (2010) discussed the idea that strong negative emotionality

may inhibit reflective processes. As Emotional Intensity was significantly lower for young children, as

well as linked to Self-regulation for all children and hostility of Attributions in older children, there is

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some indication that this variable has some role to play in emotional arousal and early stage social information processing. The surprising relationship with internalising behaviour (low internalising associated with high intensity) is also an area where further exploration may be warranted, especially as internalising behaviour was surprisingly linked with several other variables as well. It is possible that the nature of internalising behaviour changes how much a child will feel able to share their actual experiences and perceptions and this may also apply to how they respond to conflictual scenarios by way of non-engagement. This could potentially result in lower emotional arousal due to avoidance of stressful situations.

It is also recommended that a measure of emotion regulation be carefully selected to enhance understanding of links between emotion and social information processing, as well as continued incorporation of a cognitive or behavioural regulation measure, as different types of regulation seem to contribute to social and emotional information processing in quite different ways.

Finally, it is suggested that evaluation of inept responses would be an area that lends itself to further investigation. Again, some results related to inept responses were surprising. It may be possible that children who evaluate inept responses positively are able to demonstrate more empathy and tolerance towards others, given that emotion perspective taking in both age groups was associated with these types of evaluations. It is also possible that children are rating their definitions of acceptability on the types of behaviour they themselves may employ. However, self-control seemed to play some role in these evaluations (particularly in younger children) which suggests that young children with good regulation (of the behavioural kind) are more accepting of inept type responses, whereas externalising behaviour (again in young children) was negatively associated with such evaluations, implying that something about the nature of children with those types of behaviours may prohibit them from perceiving inept responses as acceptable. These effects in the younger children are particularly interesting given that inept responses are probably more typical at that age.

Conclusions

Overall, it can be said that the current study achieved its underlying purpose of finding a parsimonious way to incorporate emotion aspects into an already effective measure of social information processing in young children. The tool allowed for various areas of emotion and social information processing to be related to other regulatory and behavioural measures in order to explore how information processing patterns are developed, and the role of emotion aspects within that. While the sample size was too small to make any definite statements about how these areas develop, the results did point to some patterns that endorsed previous research or highlighted areas where further exploration may be warranted.

There were often clear links between verbal or cognitive aspects and more complexity in responding or more prosocial ways of responding. These types of variables were also often linked with more developed ability in emotion understanding, and these were generally associated with older age, as was more competence in some of the later SIP steps. In contrast, the measure of emotional intensity, generally applied to younger children, and was often linked to areas of regulation and possibly empathy or tolerance.

It seemed that many of the associations seen for only one group or the other were due to issues around ceiling or floor effects, where there was limited variance in the group where no effects were found, and this was particularly clear for self-regulation and recall in the older group.   In this regard, we might assume that for the links between SIP and emotion to be apparent, we need to be looking specifically at developmental abilities that are emerging around the age in question, rather than a developmental period where all children of that age group are presenting in the same way.In this regard, we must have continued awareness of how age may interact with the types of measures and methods we utilise.

Generally, different patterns of processing were demonstrated between age groups, which may well be related to underlying developmental capabilities, but some areas appeared to suggest that more individual patterns, particularly those relating to internalising behaviour, emotional

arousal and evaluations of inept responses (potentially relating to empathy), may be present and worth investigating.

Finally, while social and emotional variables were not shown to be independent predictors of behaviour in this study, and neither measure of regulation was found to be relevant in mediating between information processing and behaviour, it is suggested that with reliable and carefully selected regulation and behaviour measures, and a more robust research design, this style of assessment that incorporates both cognitive and emotional components of social information processing could be very useful, particularly within the preschool population for which the interview was originally designed.

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Human Ethics Committee
Approval Letter

HUMAN ETHICS COMMITTEE

Secretary, Lynda Griffioen
Email: human-ethics@canterbury.ac.nz

Ref: HEC 2013/116

2 October 2013

Rebecca Dowling
School of Educational Studies & Leadership
UNIVERSITY OF CANTERBURY

Dear Rebecca

The Human Ethics Committee advises that your research proposal "Development of social information-processing and emotion processes in early childhood" has been considered and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 1 October 2013.

Best wishes for your project.

Yours sincerely

Lindsey MacDonald
Chair
University of Canterbury Human Ethics Committee

SIPI-P
Revised Version
with
Emotion Processing

SIPI-P

Social Information Processing Interview — Preschool

FOR GIRLS
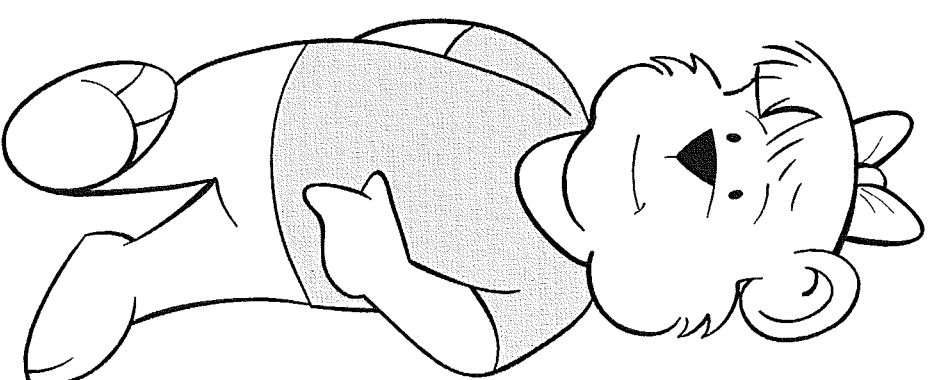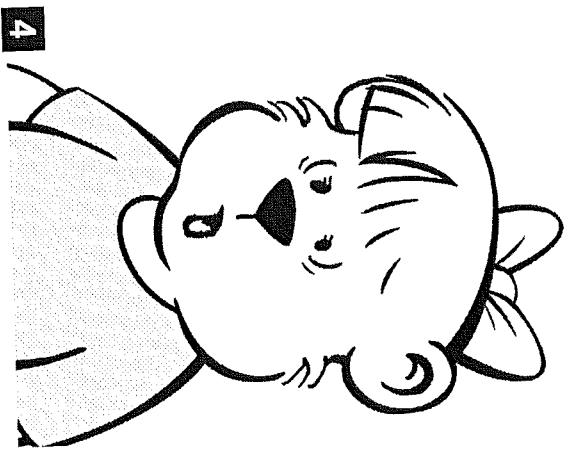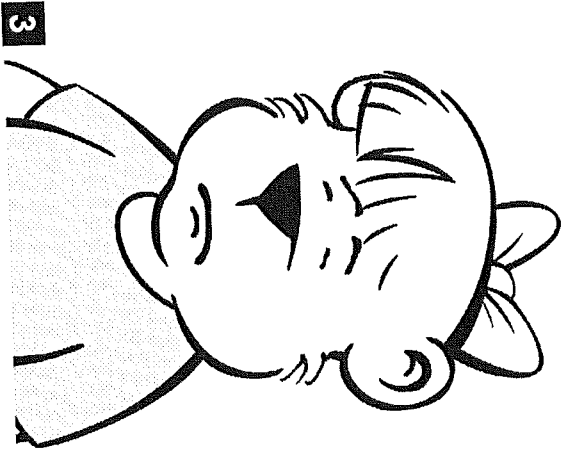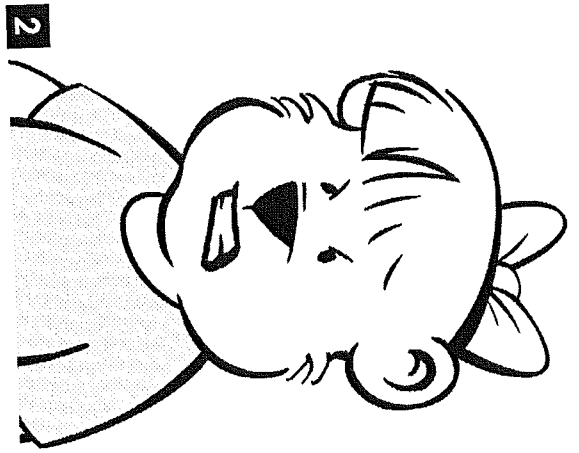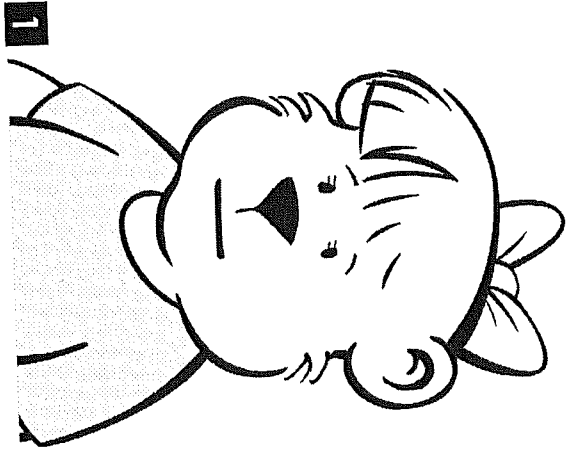
CIRCLE ALL THE PICTURES AND SAY: **Look at all the bears on this page.**

EM1:   **Point to the angry bear.** CORRECT: PICTURE 2

EM2:   **Point to the surprised bear.** CORRECT: PICTURE 4

EM3:   **Point to the sad bear.** CORRECT: PICTURE 3

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IF CHILD POINTS TO THE WRONG BEAR, POINT TO THE RIGHT ONE AND SAY:
Usually, people think this is the (angry/surprised/sad) bear.
```

Let's look at some more bears.

1

2

3
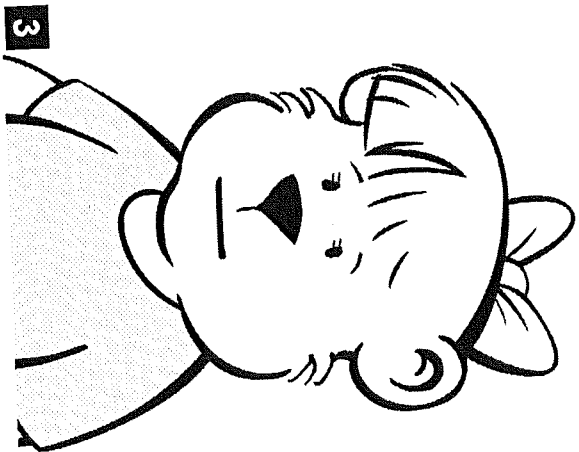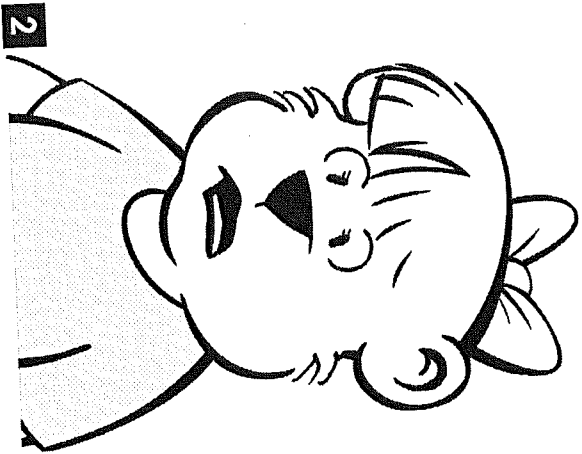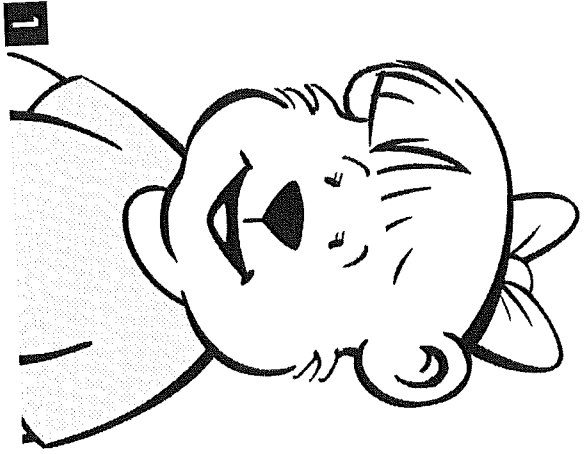
CIRCLE ALL THE PICTURES AND SAY: **Look at all the bears on this page.**

EM4:   **Point to the happy bear.** CORRECT: PICTURE 1

EM5:   **Point to the bear who looks afraid.** CORRECT: PICTURE 2

IF CHILD POINTS TO THE WRONG BEAR, POINT TO THE RIGHT ONE AND SAY: **Usually, people think this is the (happy/afraid) bear.**
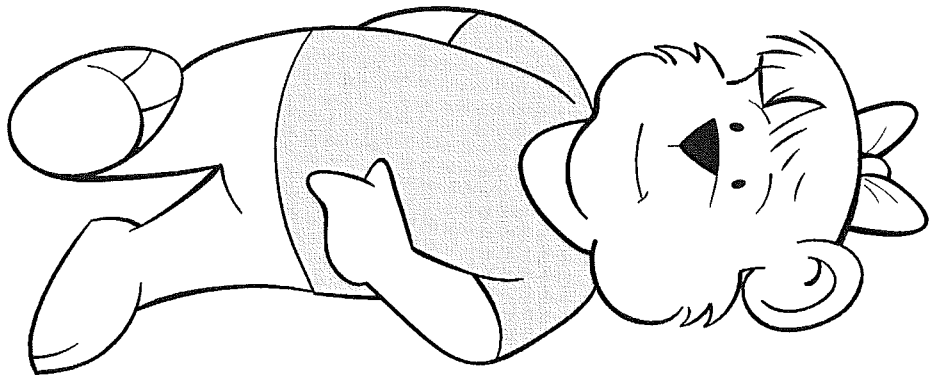
Now I'm going to tell you a few stories about a bear named Lisa.

POINT TO LISA. This is Lisa. She's wearing a dark shirt and she's in all the stories.
I'm going to ask you some questions about the stories. There are no right or wrong answers.
I just want to know what you think. Are you ready?
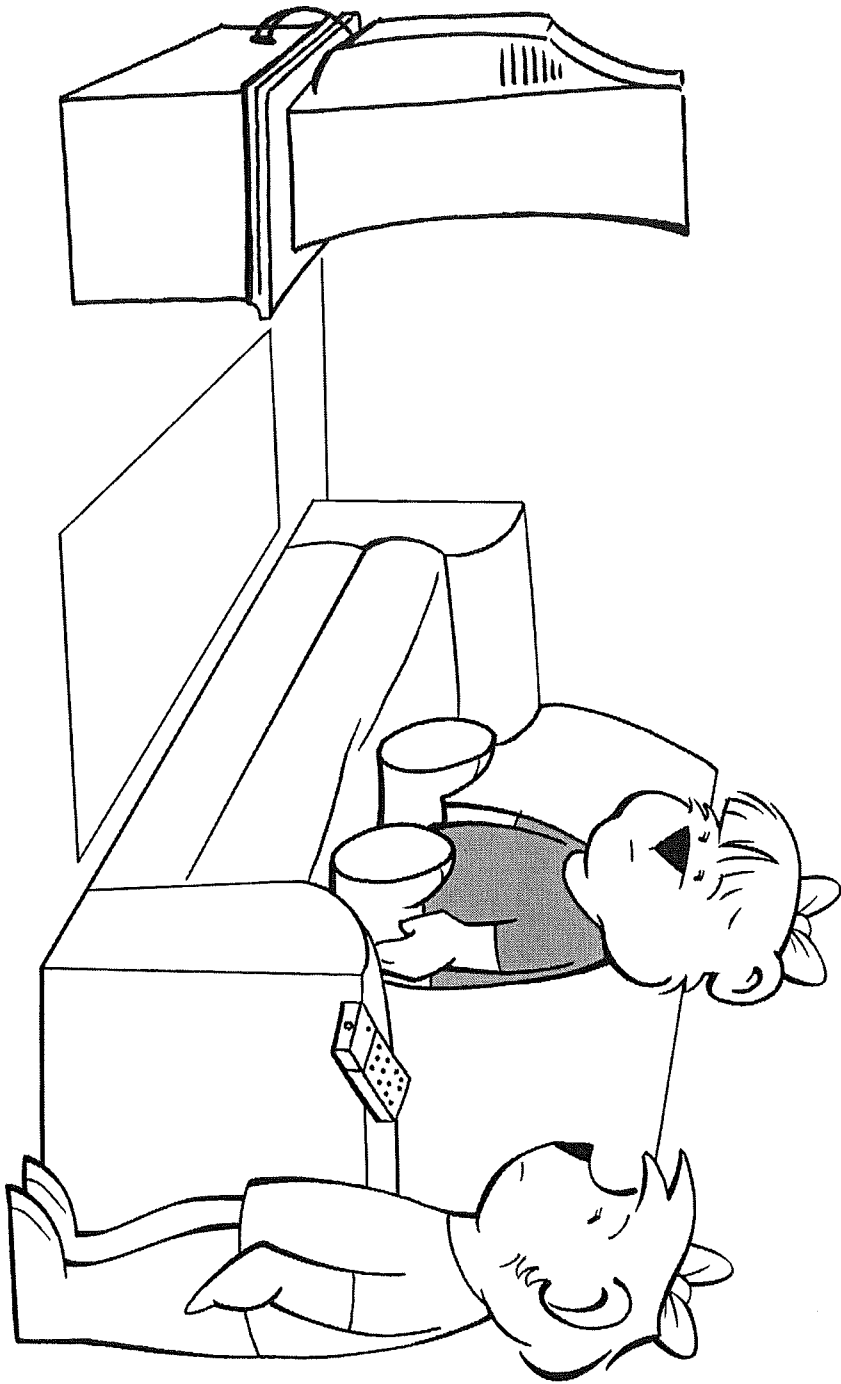
STORY: Watching TV

POINT TO LISA. **In this story, Lisa is watching TV.**

POINT TO OTHER CHILD. **Another child comes over to watch TV, too.**
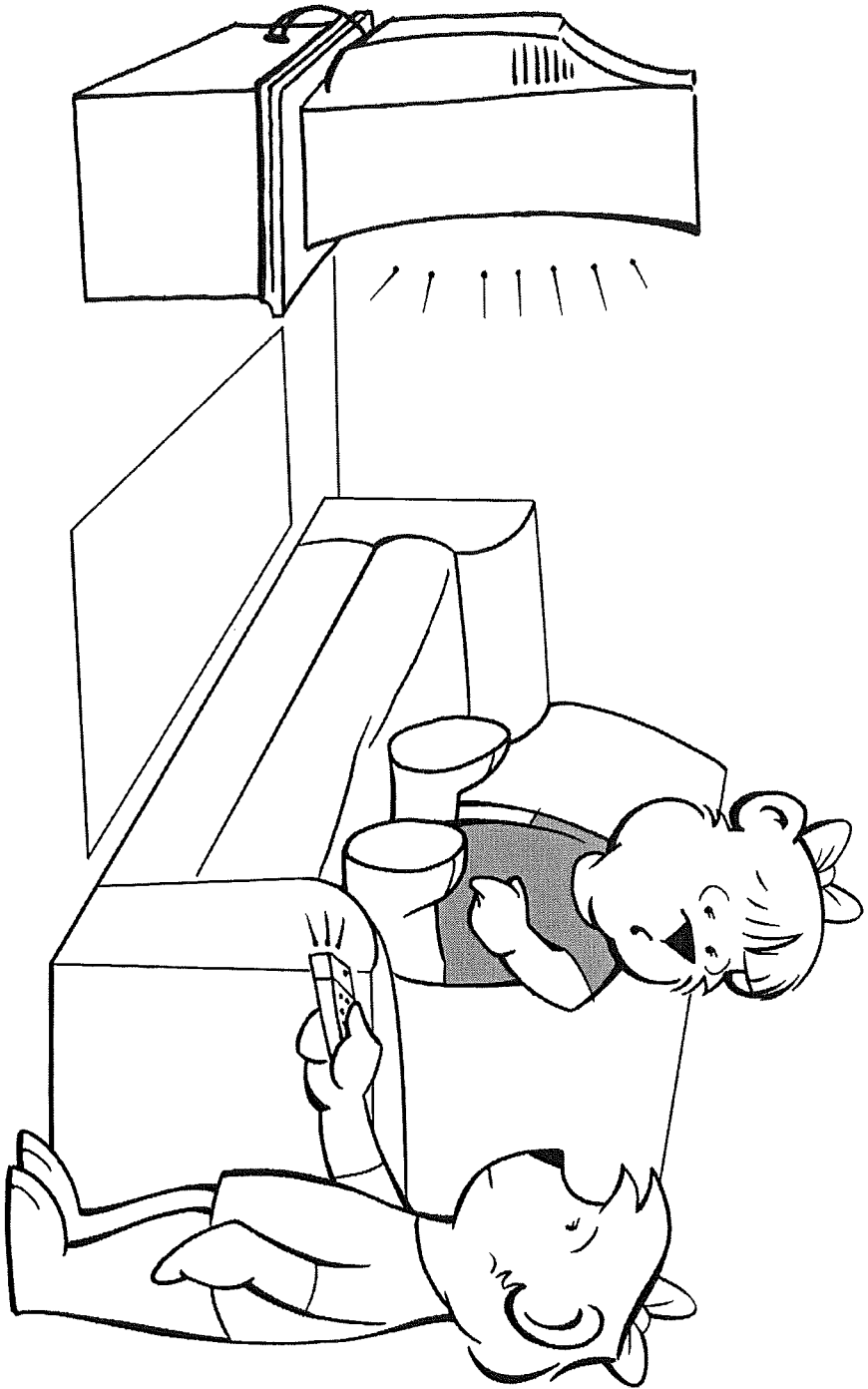
POINT TO OTHER CHILD. **The other child takes the remote control and changes the channel.**

PAUSE BEFORE TURNING PAGE.

A1.   Now, tell me what happened from the beginning of this story to the end.

PROBE IF ANY OF THE THREE PARTS OF THE STORY ARE MISSING OR INCORRECT.
ASK QUESTIONS II AND III ONLY IF THE CHILD RESPONDS "NO" TO THE FIRST, CORRECT QUESTION.

A1a.   **At the beginning of the story,**

I.   ***Was Lisa watching TV?**

II.   **Was Lisa coloring a picture?**

III.   **Was Lisa playing a video game?**

A1b.   **In (the next part of) the story,**

I.   ***Does another child come over to watch TV too?**

II.   **Does another child come over and begin coloring?**

III.   **Does another child come over and begin playing a video game?**

A1c.   **At the end of the story,**

I.   ***Does the other child take the remote control and change the channel?**

II.   **Does the other child take the remote control and turn off the TV?**

III.   **Does the other child take the remote control and turn the sound up real high?**

*The correct response is "yes".
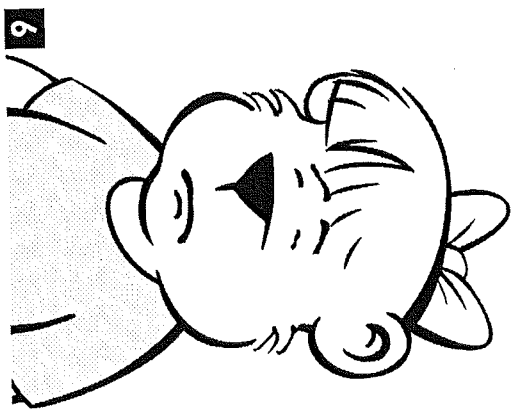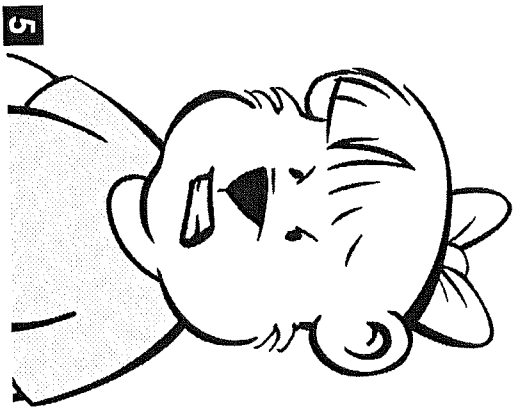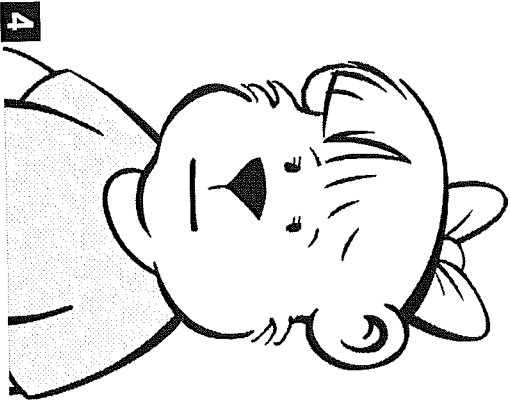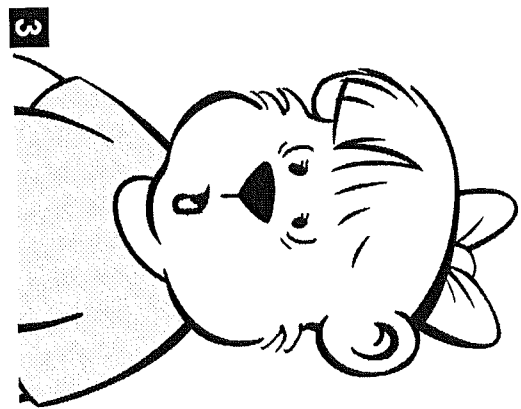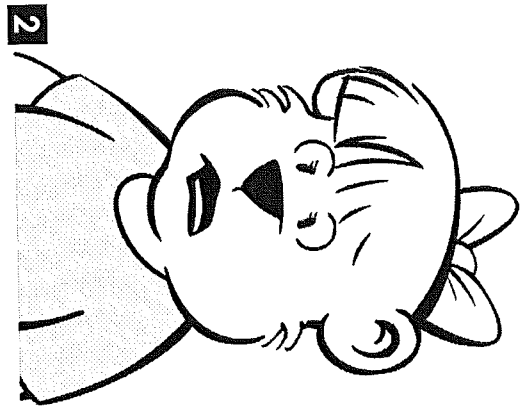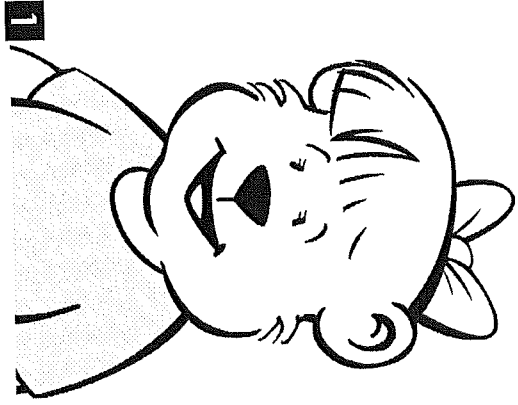
A2a. POINT TO THE FACES AND SAY: **Point to the picture that shows how Lisa feels after the other child takes the remote control and changes the channel.**

Picture 1: **Does Lisa feel happy?**

Picture 2: **Does Lisa feel afraid?**

Picture 3: **Does Lisa feel surprised?**

Picture 4: **Does Lisa not really care?**

Picture 5: **Does Lisa feel angry?**

Picture 6: **Does Lisa feel sad?**
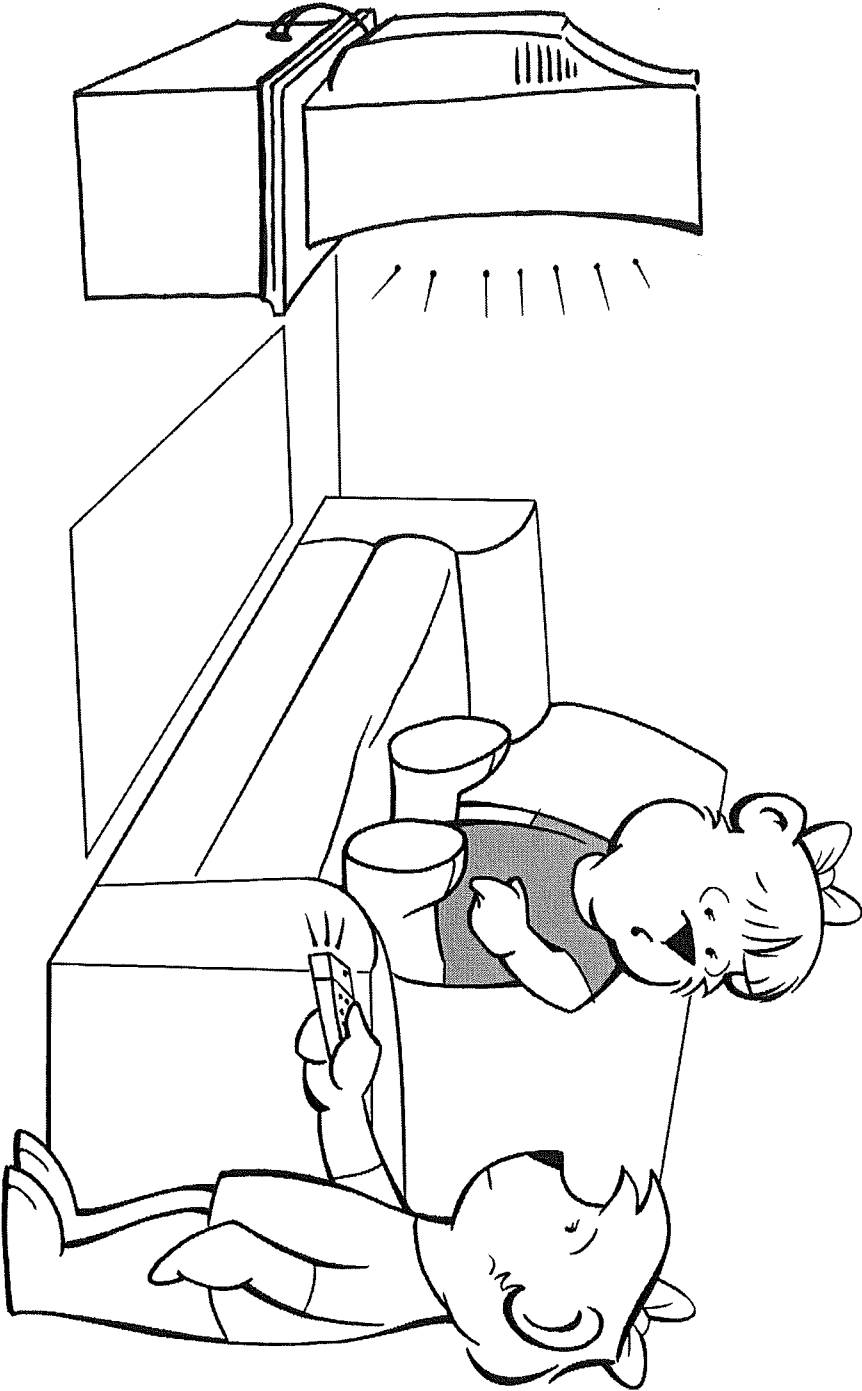
A3. POINT TO OTHER CHILD AND SAY: **Why did the other child take the remote and change the channel while Lisa was watching the TV?**

IF THE CHILD DOES NOT RESPOND, MOVE TO NEXT QUESTION

A4. POINT TO OTHER CHILD AND SAY: **Do you think the child who took the remote control and changed the channel was mean or not mean?**
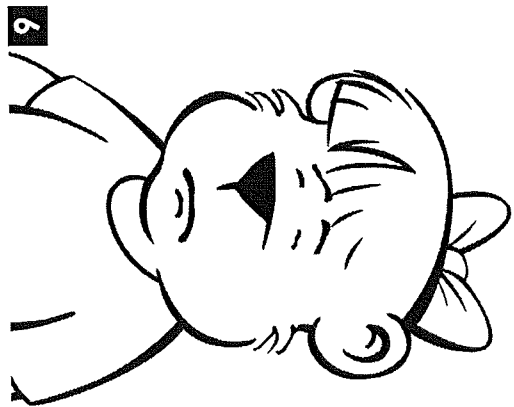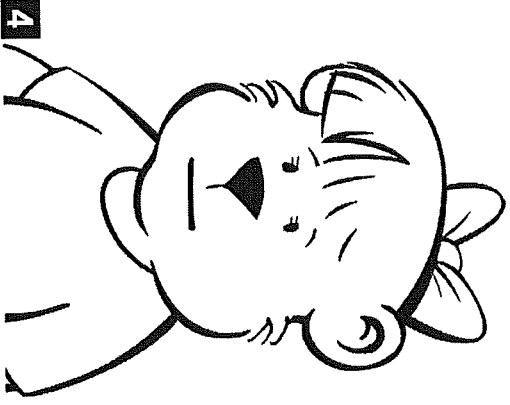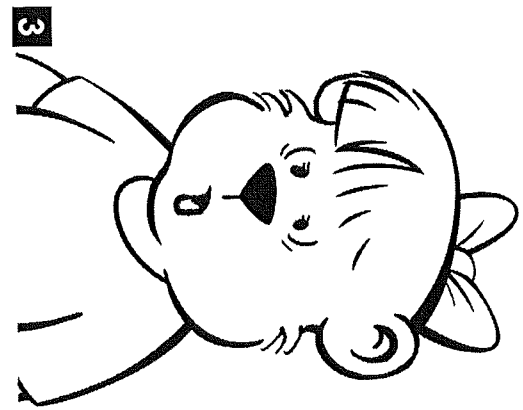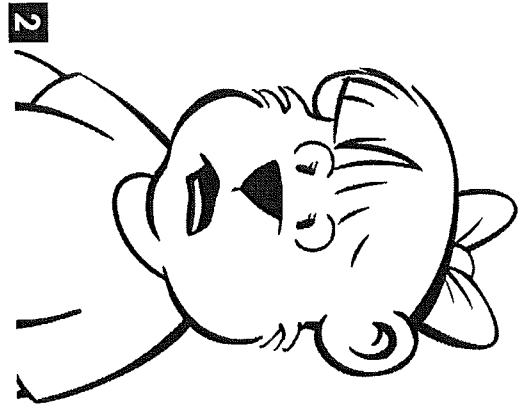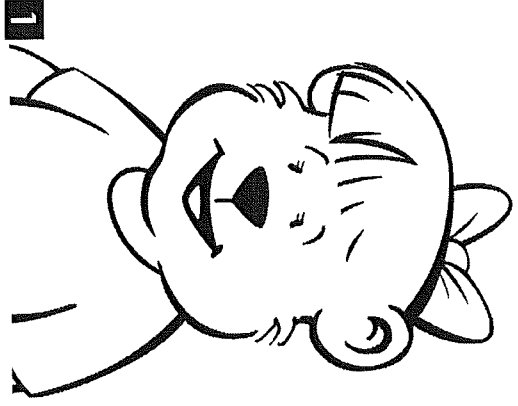
A5. **Pretend that you are watching TV and someone takes the remote control and changes the channel. How would you feel?**

Picture 1: **Would you feel happy?**

Picture 2: **Would you feel afraid?**

Picture 3: **Would you feel surprised?**

Picture 4: **Would you not really care?**

Picture 5: **Would you feel angry?**

Picture 6: **Would you feel sad?**

A6. **So you would feel (REPEAT IDENTIFIED EMOTION). How (IDENTIFIED EMOTION) would you feel? Would you feel a little bit (IDENTIFIED EMOTION) or a lot (IDENTIFIED EMOTION)?**

A7. **Why would you feel (IDENTIFIED EMOTION)?**
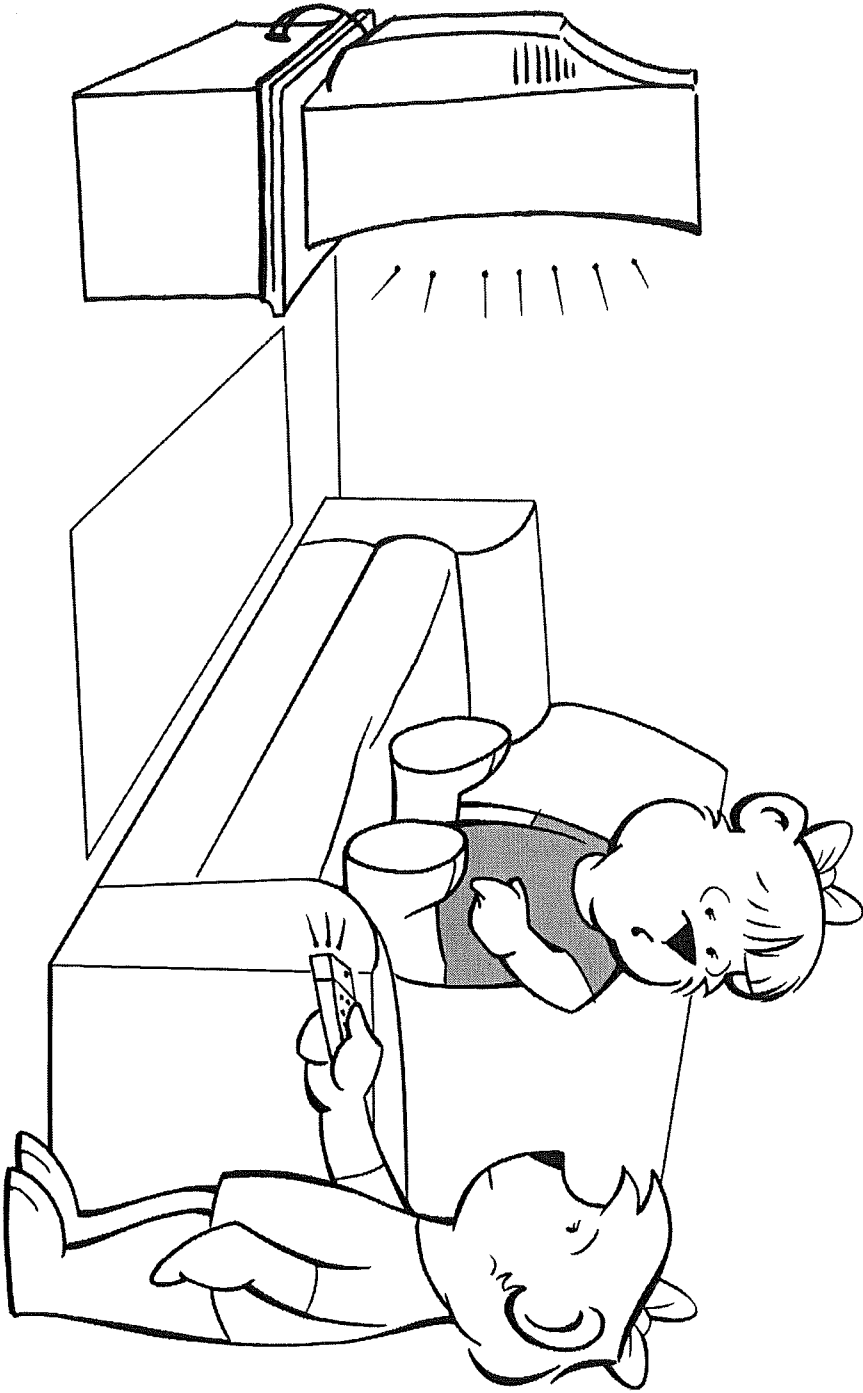
A8. **Pretend that you are watching TV and someone takes the remote control and changes the channel. What would you do?**

IF THE CHILD DOES NOT RESPOND, SAY: **What would you say or do if another child did this while you were watching TV?**

Now, let me show you some different things that Lisa could say or do.
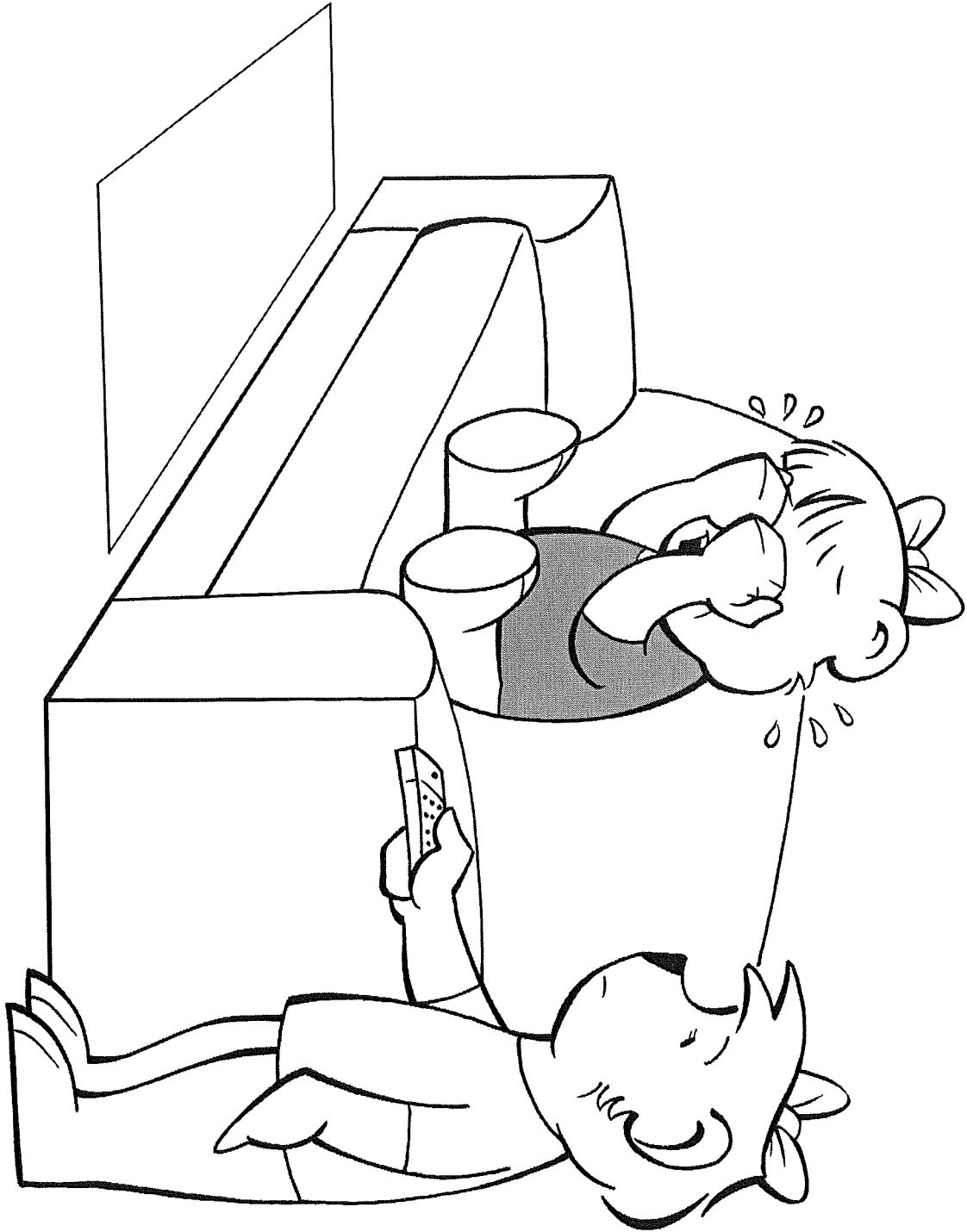
POINT TO LISA. Lisa could cry and say, "That's not fair."

A9. **Is this a good thing or a bad thing for Lisa to do?**

A10. **If you did that, do you think the other child would like you?**

A11. **Do you think the other child would let you watch your show if you did that?**

A12. POINT TO THE OTHER CHILD. **How would the other child feel if you did that?**

Now, I'll show you something else that Lisa could do.

POINT TO LISA. Lisa could say, "I'm watching something now. You can watch your show when I'm done."

A13. Is this a good thing or a bad thing for Lisa to do?

A14. If you did that, do you think the other child would like you?

A15. Do you think the other child would let you watch your show if you did that?

A16. POINT TO THE OTHER CHILD. How would the other child feel if you did that?

Now, I'll show you something else that Lisa could do.
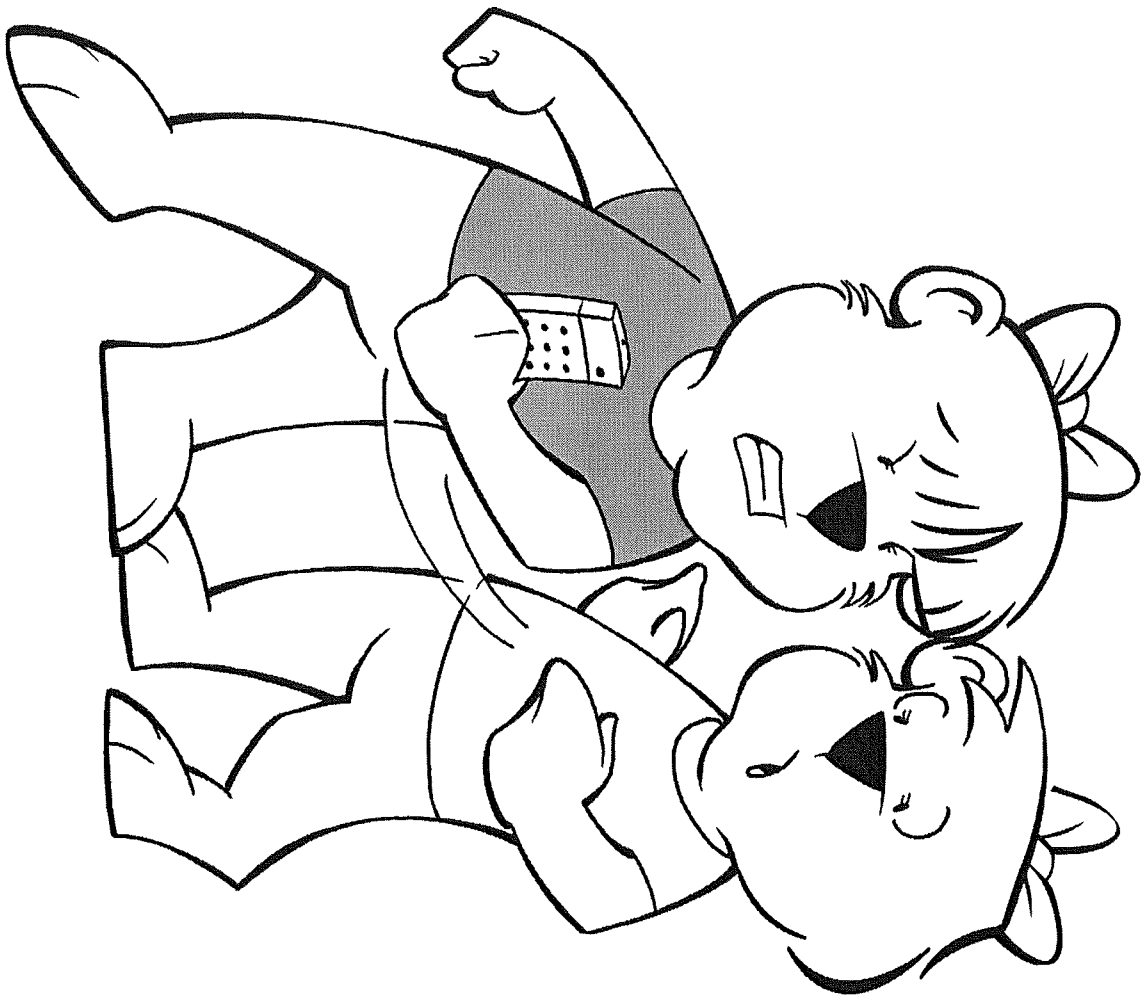
POINT TO LISA. Lisa could say, "Hey! Give it back to me now or I"ll hit you!"

A17. Is this a good thing or a bad thing for Lisa to do?

A18. If you did that, do you think the other child would like you?

A19. Do you think the other child would let you watch your show if you did that?

A20. POINT TO THE OTHER CHILD. How would the other child feel if you did that?

Now, let's look at another story.
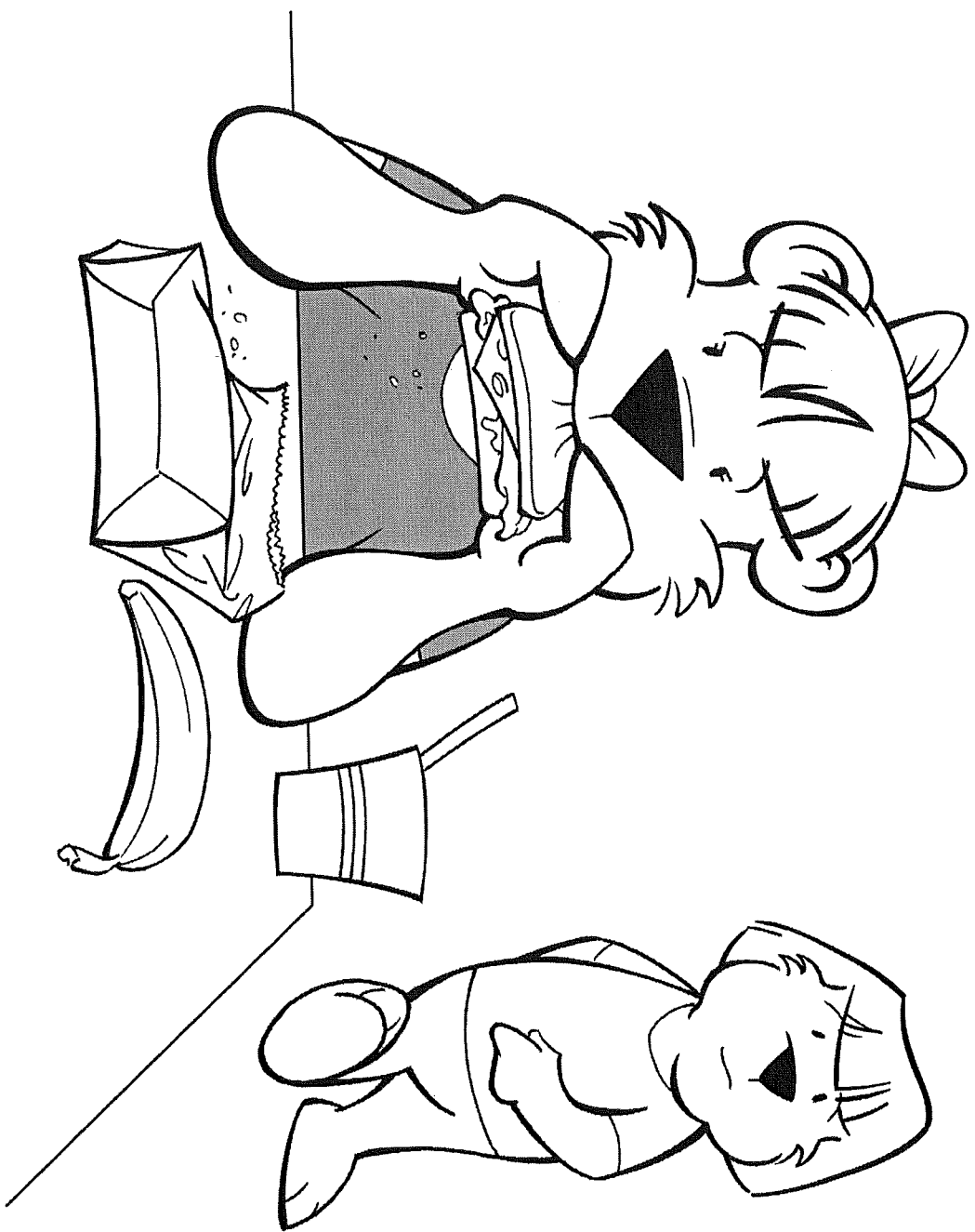
STORY: Spilled Water

POINT TO LISA. **In this story, Lisa is sitting at the table eating her lunch.**

POINT TO THE OTHER CHILD. **Another child walks by.**
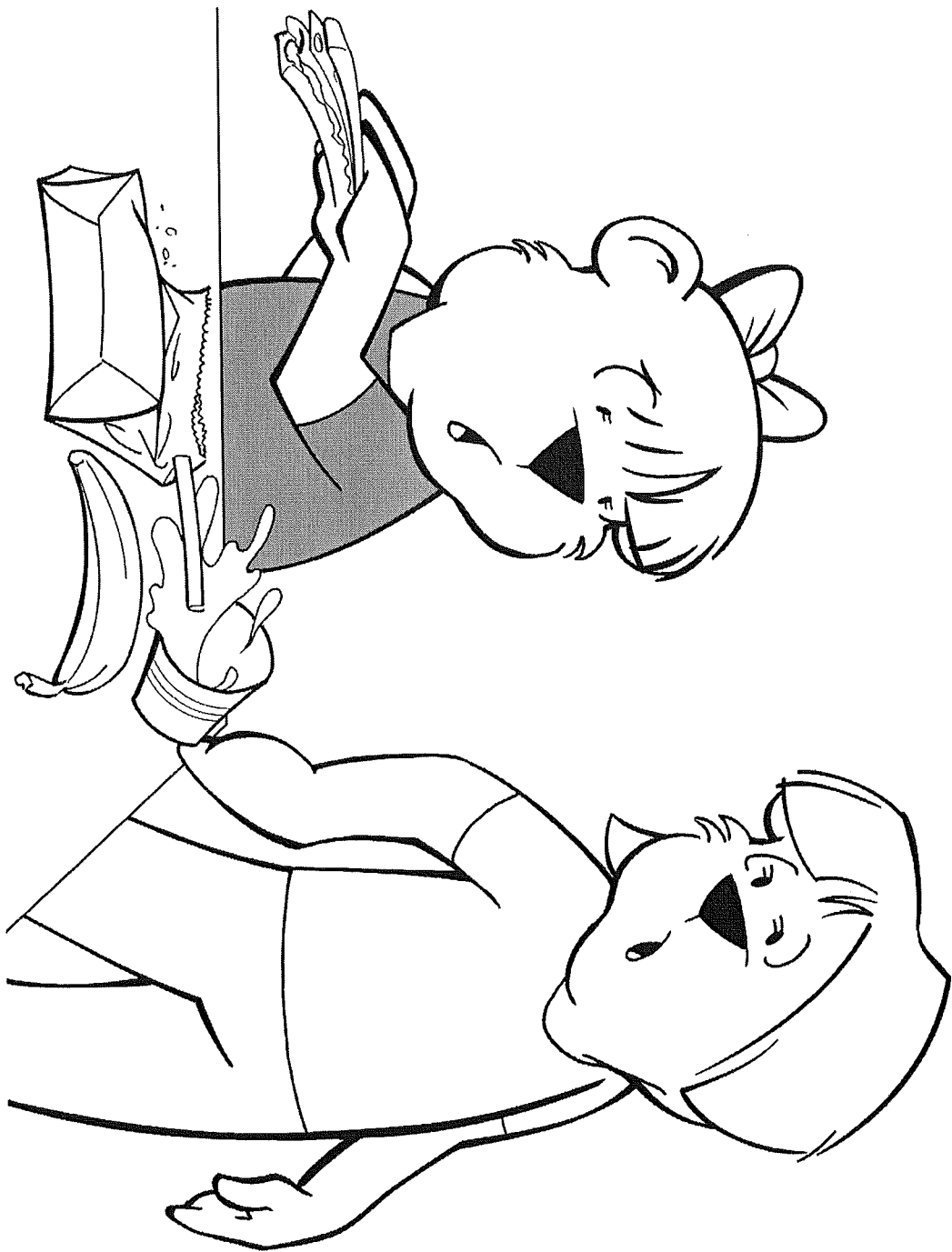
POINT TO OTHER CHILD. When the other child walks by the table, she spills Lisa's water cup.
The other child says "Oops".

C1. **Now, tell me what happened from the beginning of this story to the end.**

PROBE IF EITHER OF THE TWO PARTS OF THE STORY ARE MISSING OR INCORRECT.
ASK QUESTIONS II and III ONLY IF THE CHILD RESPONDS "No" TO THE FIRST, CORRECT QUESTION.

C1a. **At the beginning of the story,**
I. *__Does another child walk by while Lisa is sitting at the table eating her lunch?__
II. **Does a teacher walk by while Lisa is sitting at the table eating her lunch?**
III. **Does a child sit down next to Lisa while Lisa is eating her lunch?**

C1b. At the end of the story,
I. *__Does the other child spill Lisa's water and say "Oops"?__
II. **Does a teacher spill Lisa's water and say "Oops"?**
III. **Does the other child almost spill Lisa's water and say "Oops"?**

*The correct response is "yes".
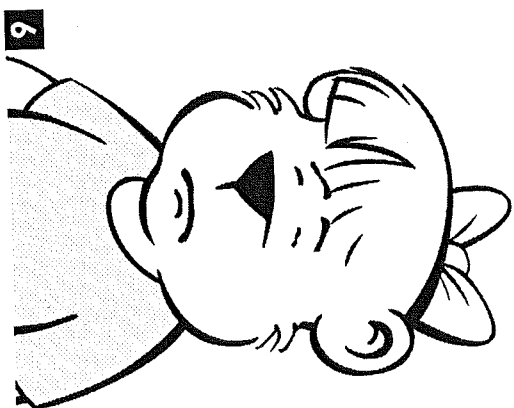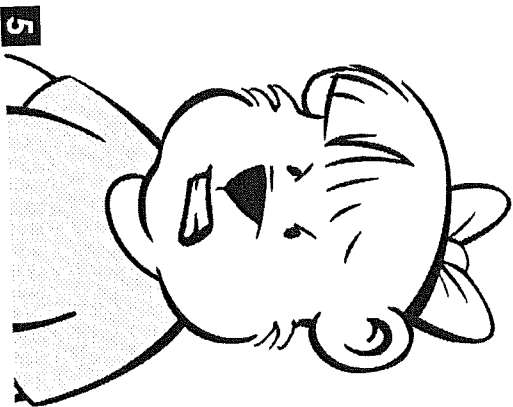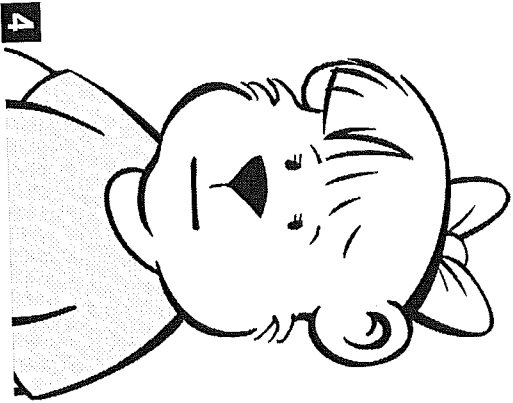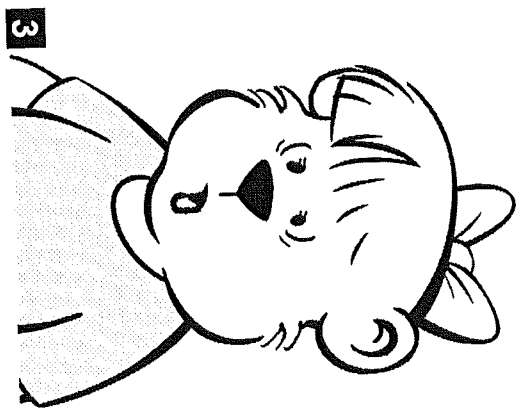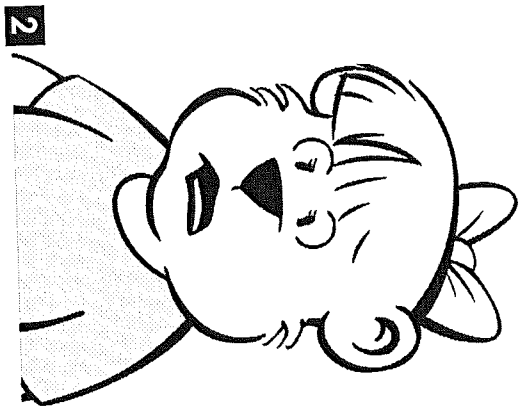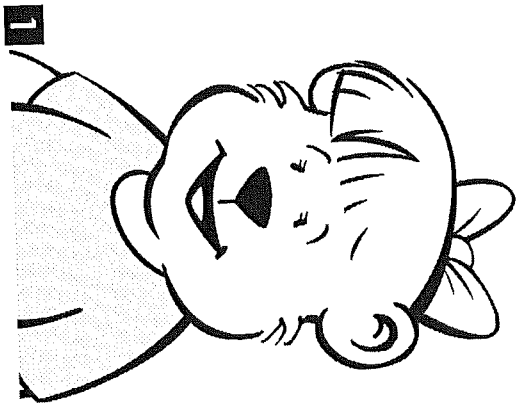
C2a. POINT TO THE FACES AND SAY: **Point to the picture that shows how Lisa feels after the other child spilled her water.**

Picture 1: **Does Lisa feel happy?**

Picture 2: **Does Lisa feel afraid?**

Picture 3: **Does Lisa feel surprised?**

Picture 4: **Does Lisa not really care?**

Picture 5: **Does Lisa feel angry?**

Picture 6: **Does Lisa feel sad?**

C3. POINT TO OTHER CHILD AND SAY: **Why did the other child spill the water?**

IF THE CHILD DOES NOT RESPOND, MOVE TO NEXT QUESTION

C4. POINT TO OTHER CHILD AND SAY: **Do you think the child who spilled the water was mean or not mean?**
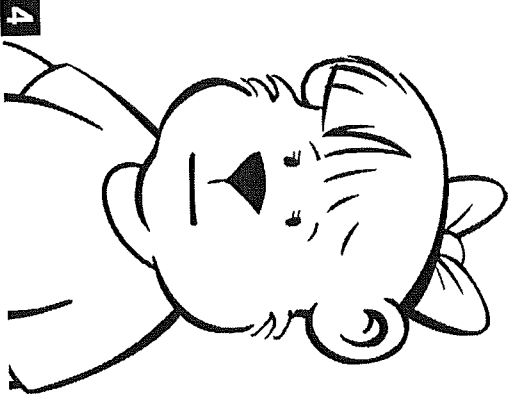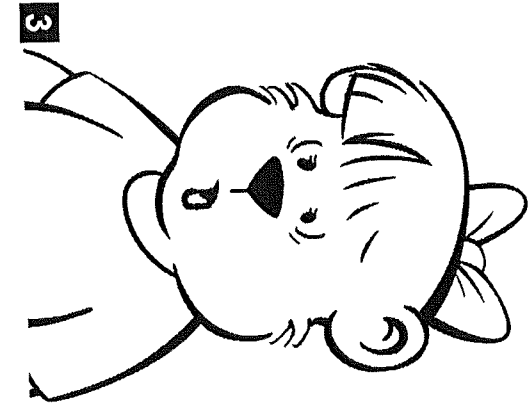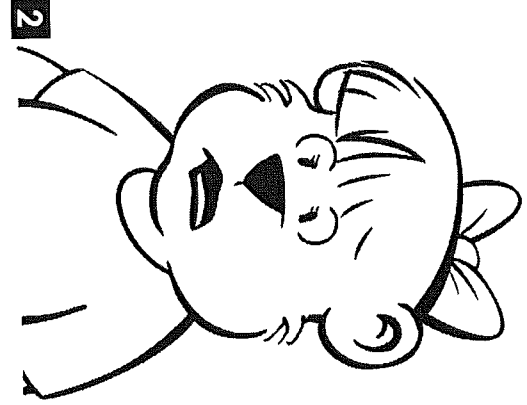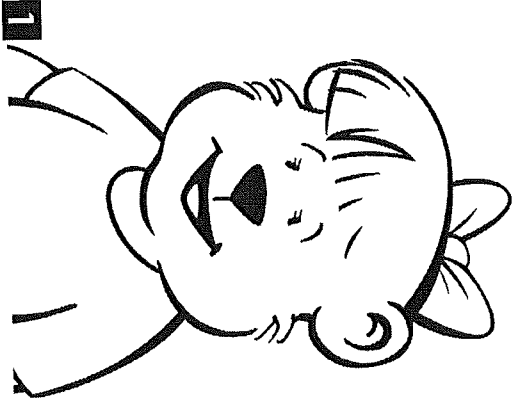
C5. How would you feel if you were eating lunch and someone spilled your water?

Picture 1: Would you feel happy?

Picture 2: Would you feel afraid?

Picture 3: Would you feel surprised?

Picture 4: Would you not really care?

Picture 5: Would you feel angry?

Picture 6: Would you feel sad?

C6. **So you would feel (REPEAT IDENTIFIED EMOTION). How (IDENTIFIED EMOTION) would you feel? Would you feel a little bit (IDENTIFIED EMOTION) or a lot (IDENTIFIED EMOTION)?**

C7. **Why would you feel (IDENTIFIED EMOTION)?**

C8. What would you say or do if you were eating lunch and someone spilled your water?

IF THE CHILD DOES NOT RESPOND, SAY: What would you say or do if this happened to you?

Now, let me show you some different things that Lisa could say or do.

POINT TO LISA. Lisa could say to the other child, "You better clean this up and bring me more water or else..." .

C9. Is this a good thing or a bad thing for Lisa to say?

C10. If you said that, do you think the other child would like you?

C11. Do you think the other child would help you clean up if you said that?

C12. POINT TO THE OTHER CHILD. How would the other child feel if you said that?

Now, I'll show you something else that Lisa could do.

POINT TO LISA. Lisa could put her head on the table, cry real hard, and not say anything.

C13. Is this a good thing or a bad thing for Lisa to do?

C14. If you did that, do you think the other child would like you?

C15. Do you think the other child would help you clean up if you did that?

C16. POINT TO THE OTHER CHILD. How would the other child feel if you did that?

Now, I'll show you something else that Lisa could do.

POINT TO LISA. Lisa could say, "You weren't very careful, could you help me clean it up?"

C17. Is this a good thing or a bad thing for Lisa to say?

C18. If you said that, do you think the other child would like you?

C19. Do you think the other child would help you clean up if you said that?

C20. POINT TO THE OTHER CHILD. How would the other child feel if you did that?

Now, let's look at the last story.

STORY: Playdough

In this story, these children are playing with play dough.

POINT TO CHILD SITTING UP. **This child says: "Hey, let's make a zoo."**

POINT TO CHILD LYING DOWN. **This child says: "Yes, with all kinds of animals. ... You know, Lisa wanted to play, too."**

POINT TO LISA. **Lisa is watching the other children playing.**

POINT TO LISA. Lisa walks up to the other children and asks them: "Can I play with you?"
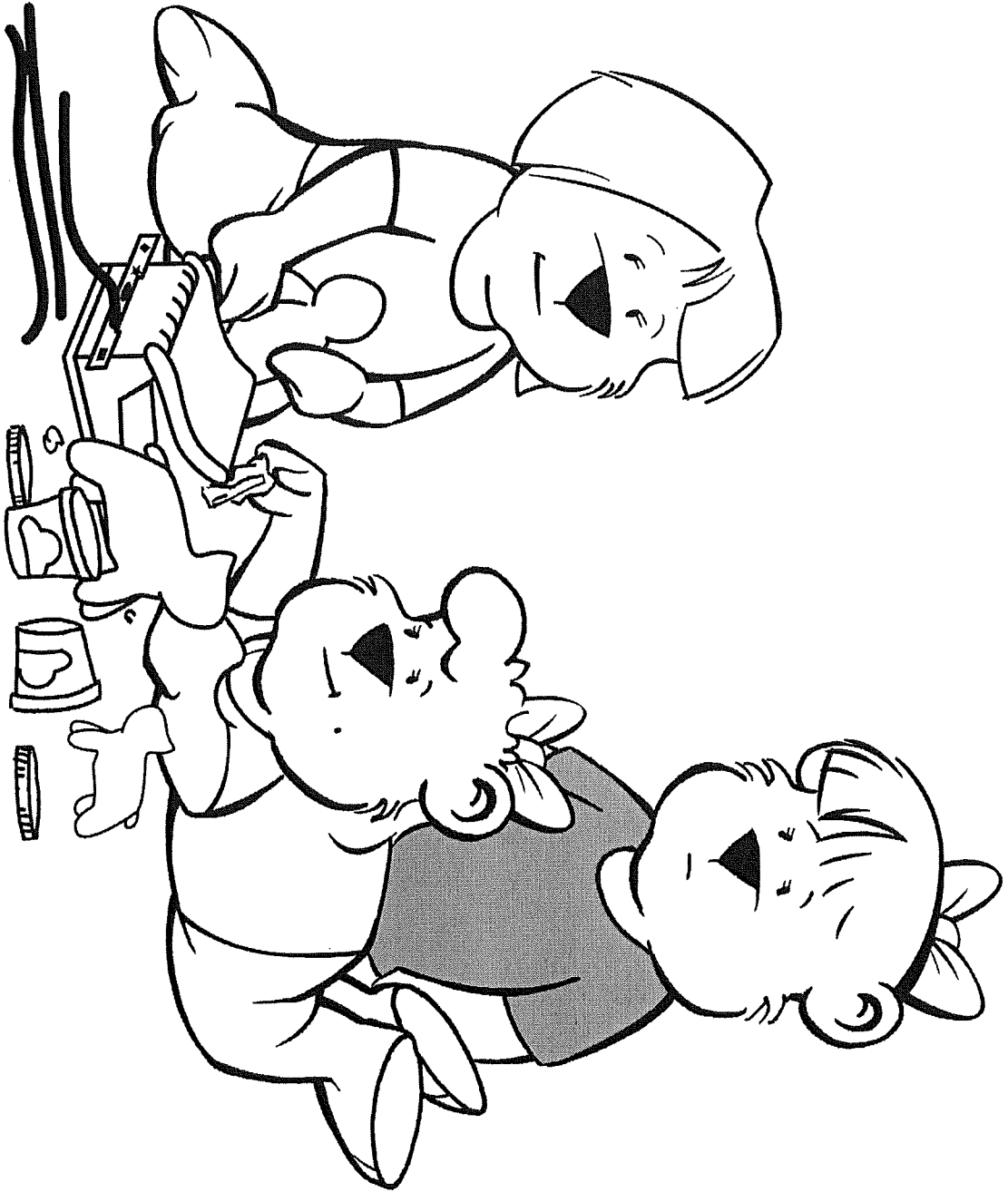
But the other children don't answer and keep playing.

B1.   Now, tell me what happened from the beginning of this story to the end.

PROBE IF ANY OF THE FOUR PARTS OF THE STORY ARE MISSING OR INCORRECT.
ASK QUESTIONS II AND III ONLY IF THE CHILD RESPONDS "NO" TO THE FIRST, CORRECT QUESTION.

B1a.   **At the beginning of the story,**

I.   ***Were the children making zoo animals with play dough?**

II.   **Were the children playing ball outside?**

III.   **Were the children coloring pictures?**

B1b.   **In (the next part of) the story,**

I.   ***Did one of the children say that Lisa wanted to play with the play dough too?**

II.   **Did one of the children say that Lisa wanted to play with some other toys?**

III.   **Did one of the children say that Lisa wanted to go outside?**

B1c.   **In (the next part of) the story,**

I.   ***Does Lisa walk up to the other children and ask to play with them?**

II.   **Does Lisa walk up to the other children and say "Let's play something else."?**

III.   **Does Lisa walk up to the other children and say "Do you want to go outside and play?"**

B1d.   **At the end of the story,**

I.   ***Do the other children keep playing without answering Lisa?**

II.   **Do the other children put away the play dough without answering Lisa?**

III.   **Do the other children keep playing and say, "Come play with us Lisa."?**

*The correct response is "yes".
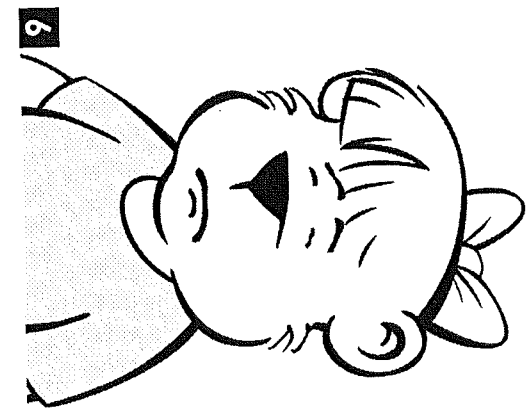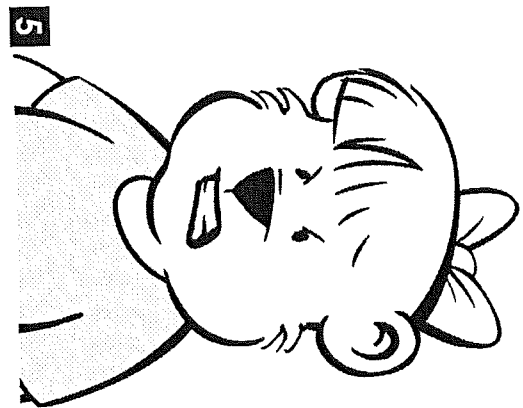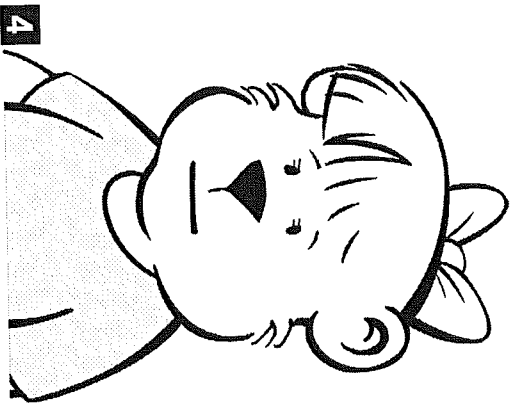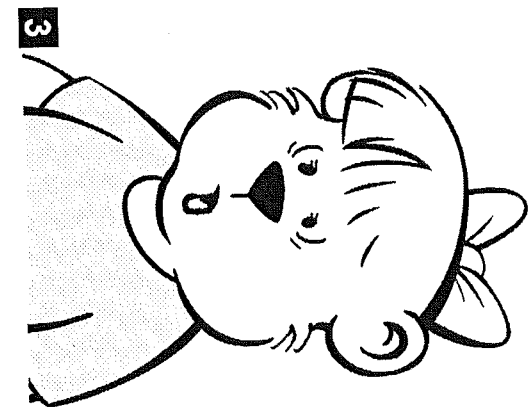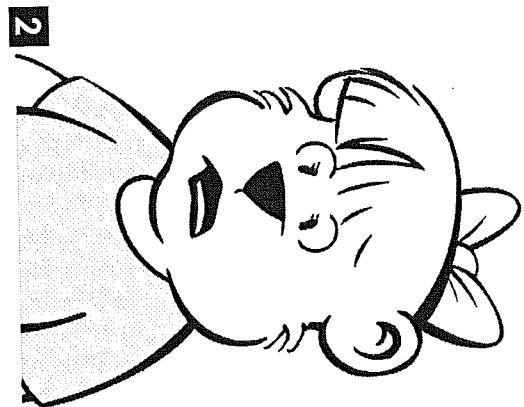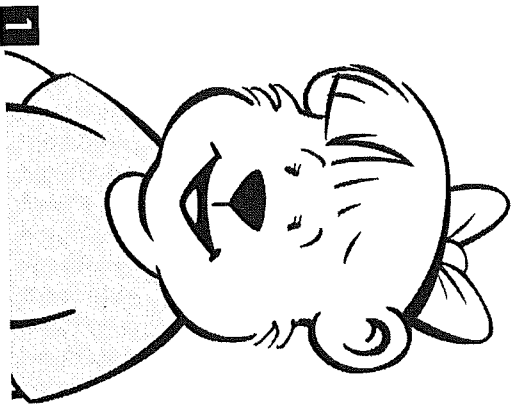
B2a. POINT TO THE FACES AND SAY: **Point to the picture that shows how Lisa feels after the other children do not answer her question.**

Picture 1: **Does Lisa feel happy?**

Picture 2: **Does Lisa feel afraid?**

Picture 3: **Does Lisa feel surprised?**

Picture 4: **Does Lisa not really care?**

Picture 5: **Does Lisa feel angry?**

Picture 6: **Does Lisa feel sad?**

B3. POINT TO OTHER CHILD AND SAY: **Why did the other children not answer Lisa?**

IF THE CHILD DOES NOT RESPOND, MOVE TO NEXT QUESTION

B4. POINT TO OTHER CHILDREN AND SAY: **Do you think the other children who didn't answer are mean or not mean?**
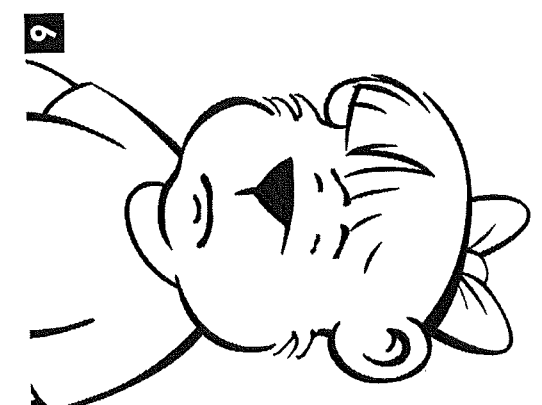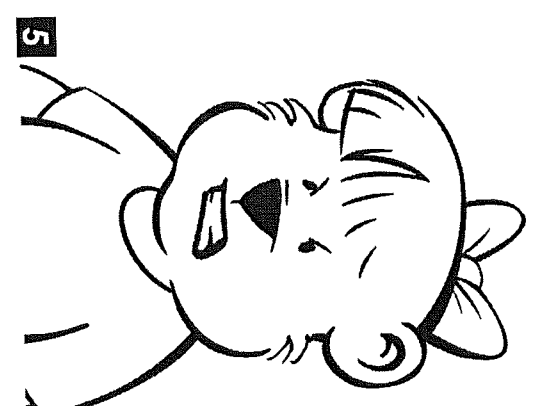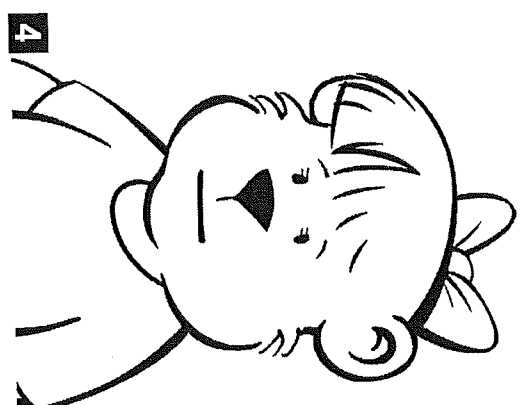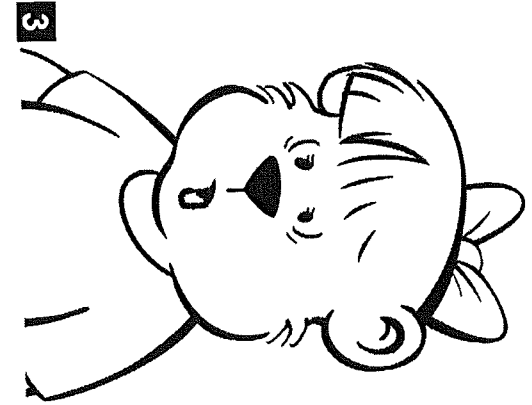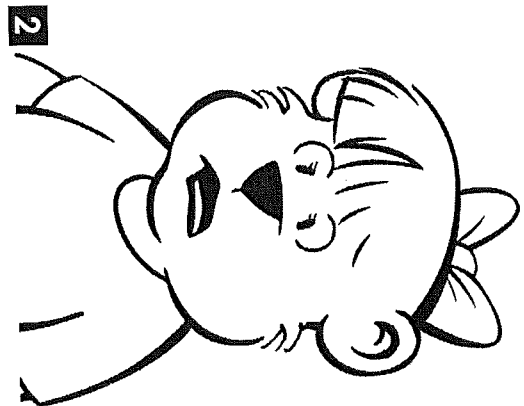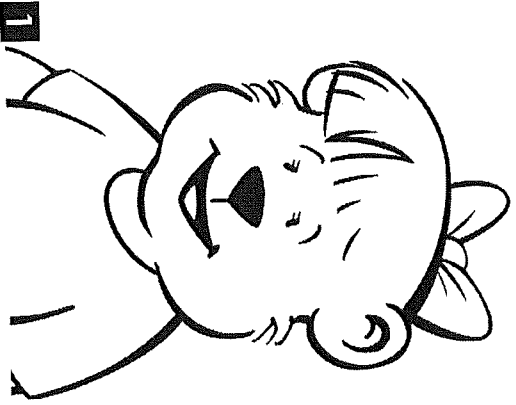
B5. Pretend that you ask the girls if you can play and they don't answer and keep playing. How would you feel?

Picture 1: **Would you feel happy?**

Picture 2: **Would you feel afraid?**

Picture 3: **Would you feel surprised?**

Picture 4: **Would you not really care?**

Picture 5: **Would you feel angry?**

Picture 6: **Would you feel sad?**

B6. So you would feel (REPEAT IDENTIFIED EMOTION). How (IDENTIFIED EMOTION) would you feel? Would you feel a little bit (IDENTIFIED EMOTION) or a lot (IDENTIFIED EMOTION)?

B7. Why would you feel (IDENTIFIED EMOTION)?
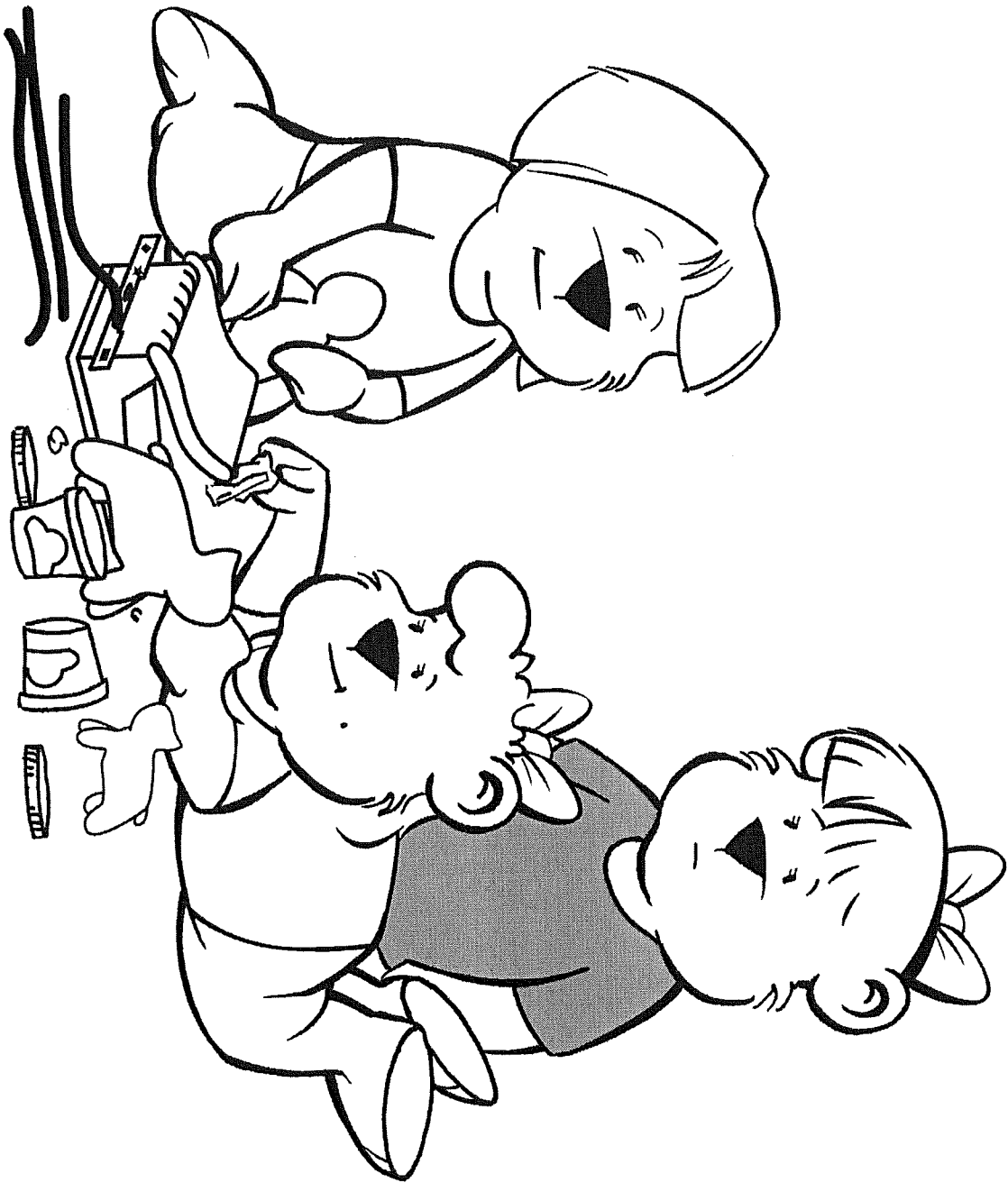
B8. **Pretend that you ask the girls if you can play and they don't answer and keep playing. What would you do?**

IF CHILD DOES NOT RESPOND, SAY: **What would you say or do if other girls in your class did this when you asked if you could play?**

Now, let me show you some different things that Lisa could say or do.

POINT TO LISA. Lisa could stomp on the play dough and say, "You better let me play or I'll hit you!"

B9. Is this a good thing or a bad thing for Lisa to do?

B10. If you did that, do you think the other children would like you?

B11. Do you think the other children would let you play if you did that?

B12. POINT TO THE OTHER CHILD. How would the other children feel if you did that?

Now, I'll show you something else that Lisa could do.

POINT TO LISA. Lisa could start crying and say to the other children: "You don't like me!"

B13. Is this a good thing or a bad thing for Lisa to do?

B14. If you did that, do you think the other children would like you?

B15. Do you think the other children would let you play if you did that?

B16. POINT TO THE OTHER CHILD. How would the other children feel if you did that?

Now, I'll show you something else that Lisa could do.
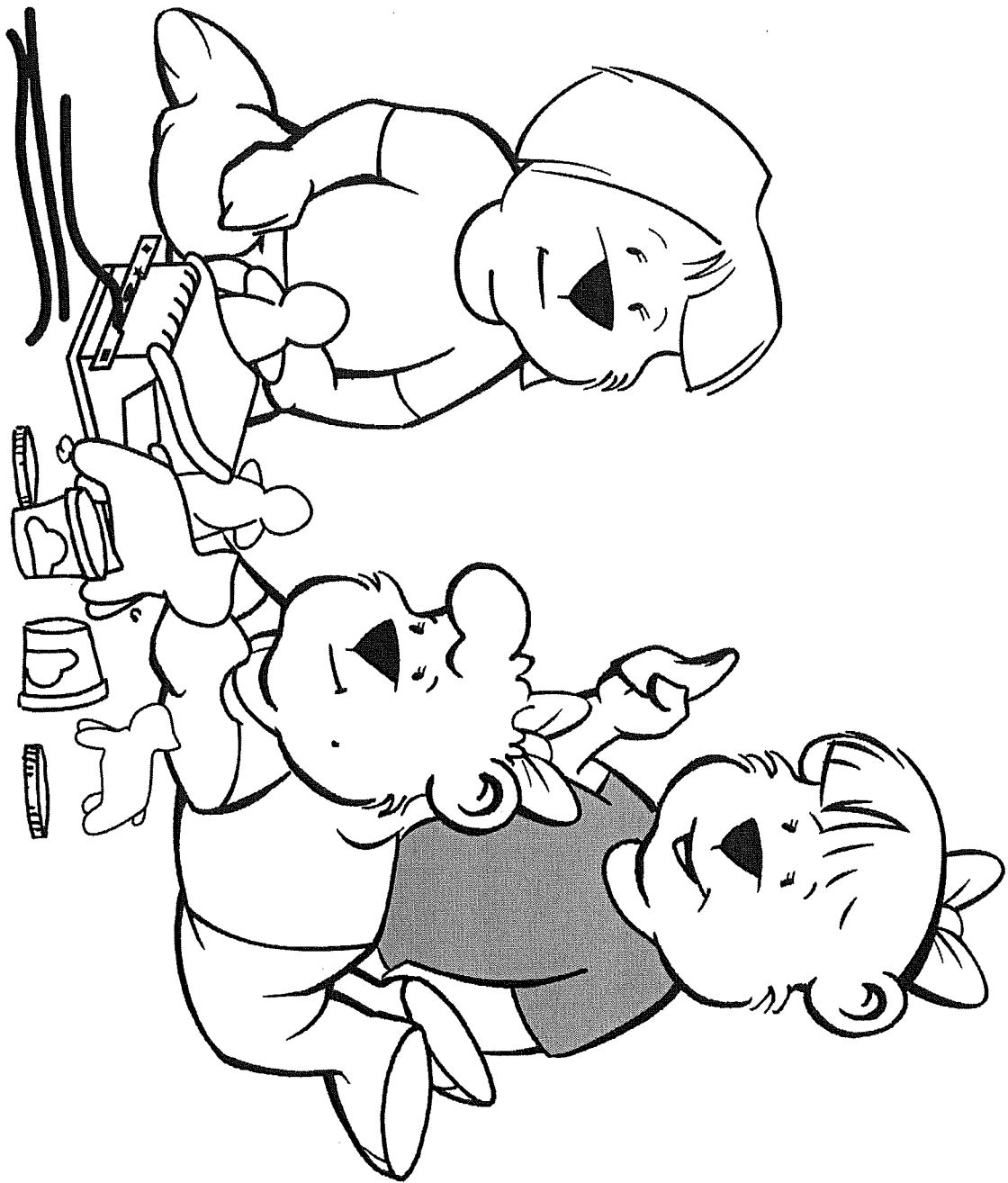
POINT TO LISA. Lisa could tell the other children, "If you let me play with you, I can show you how to make all kinds of animals. I even know how to make a giraffe."

B17. Is this a good thing or a bad thing for Lisa to do?

B18. If you did that, do you think the other children would like you?

B19. Do you think the other children would let you play if you did that?

B20. POINT TO THE OTHER CHILD. How would the other children feel if you did that?

Now, let's look at another story.
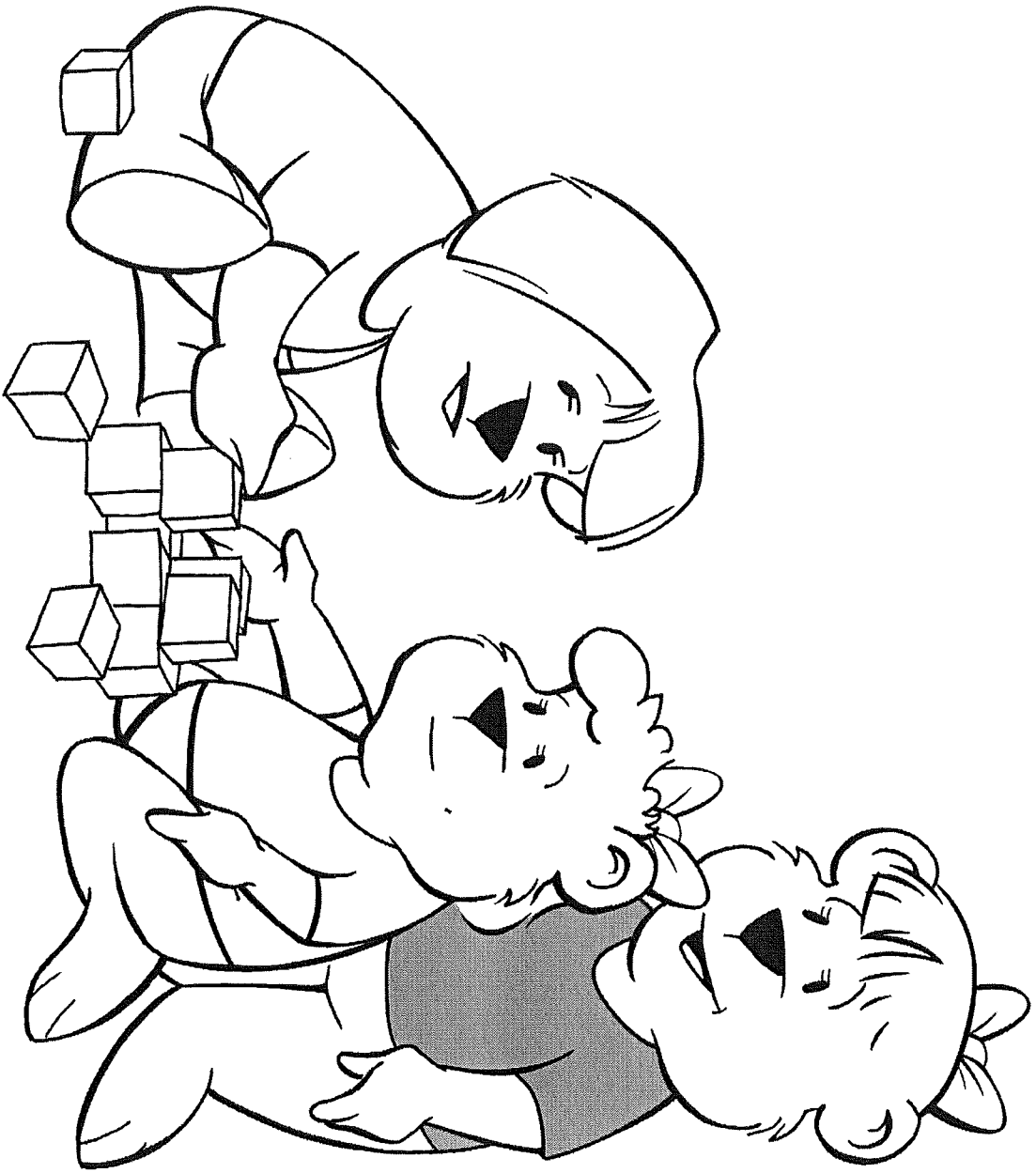
POINT TO LISA. **Lisa walks up to one of the children and asks her: "Can I play with you?"**

POINT TO CHILD FARTHEST FROM LISA. **This child says: "Sorry. The teacher said only two can play in the block area."**

D1. Now, tell me what happened from the beginning of this story to the end.

PROBE IF ANY OF THE FOUR PARTS OF THE STORY ARE MISSING OR INCORRECT. ASK QUESTIONS II and III ONLY IF THE CHILD RESPONDS "No" TO THE FIRST, CORRECT QUESTION.

D1a. **At the beginning of the story,**
I. ***Were the children playing with blocks?**
II. **Were the children playing ball outside?**
III. **Were the children coloring pictures?**

D1b. In (the next part of) the story,
I. ***Did one of the children say that Lisa wanted to play with her in the block area?**
II. **Did one of the children say that Lisa wanted to play with some other children in the block area?**
III. **Did one of the children say that Lisa wanted to go outside and play?**

D1c. In (the next part of) the story,
I. ***Does Lisa ask the other children if she can play with them?**
II. **Does Lisa ask the other children if they want to color?**
III. **Does Lisa ask the other children if they want to go outside?**

D1d. **At the end of the story,**
I. ***Does the child tell Lisa "The teacher said only two can play in the block area."?**
II. **Does the child say to Lisa, "Yes, come play with us."?**
III. **Does the child say to Lisa "Play time is over."?**
*The correct response is "yes".
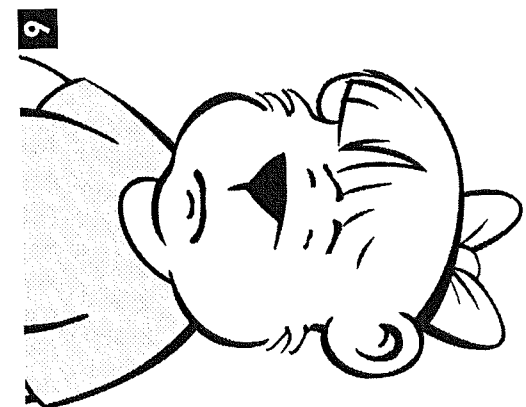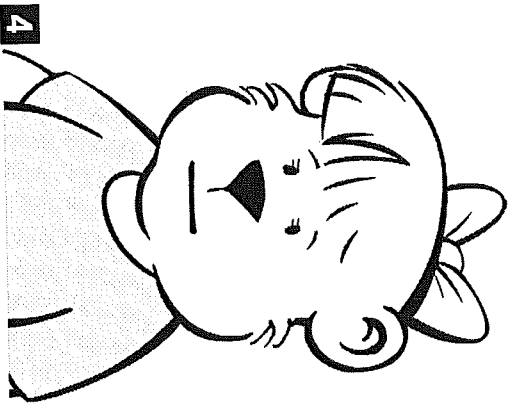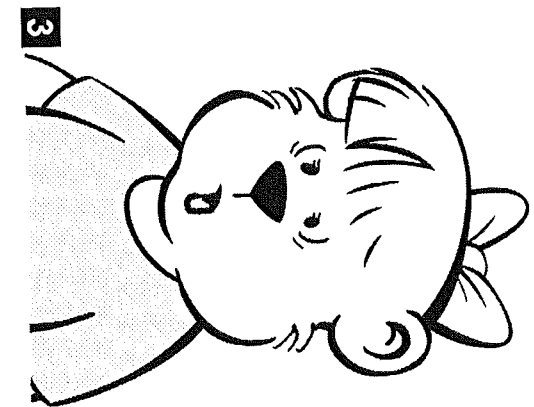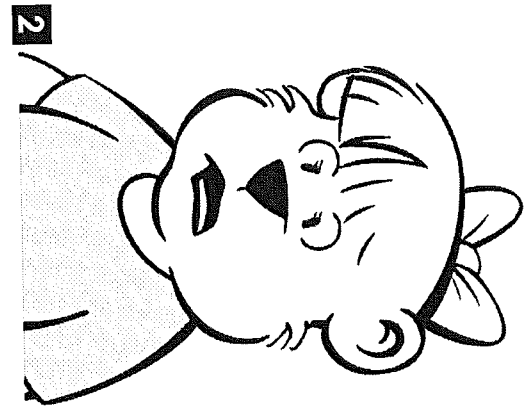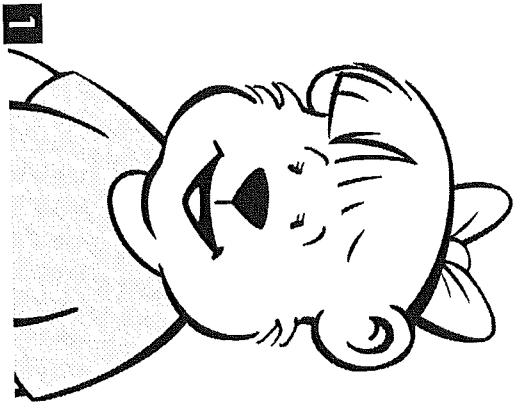
D2a. POINT TO THE FACES AND SAY: **Point to the picture that shows how Lisa feels after the other child tells her that only two can play in the block area.**
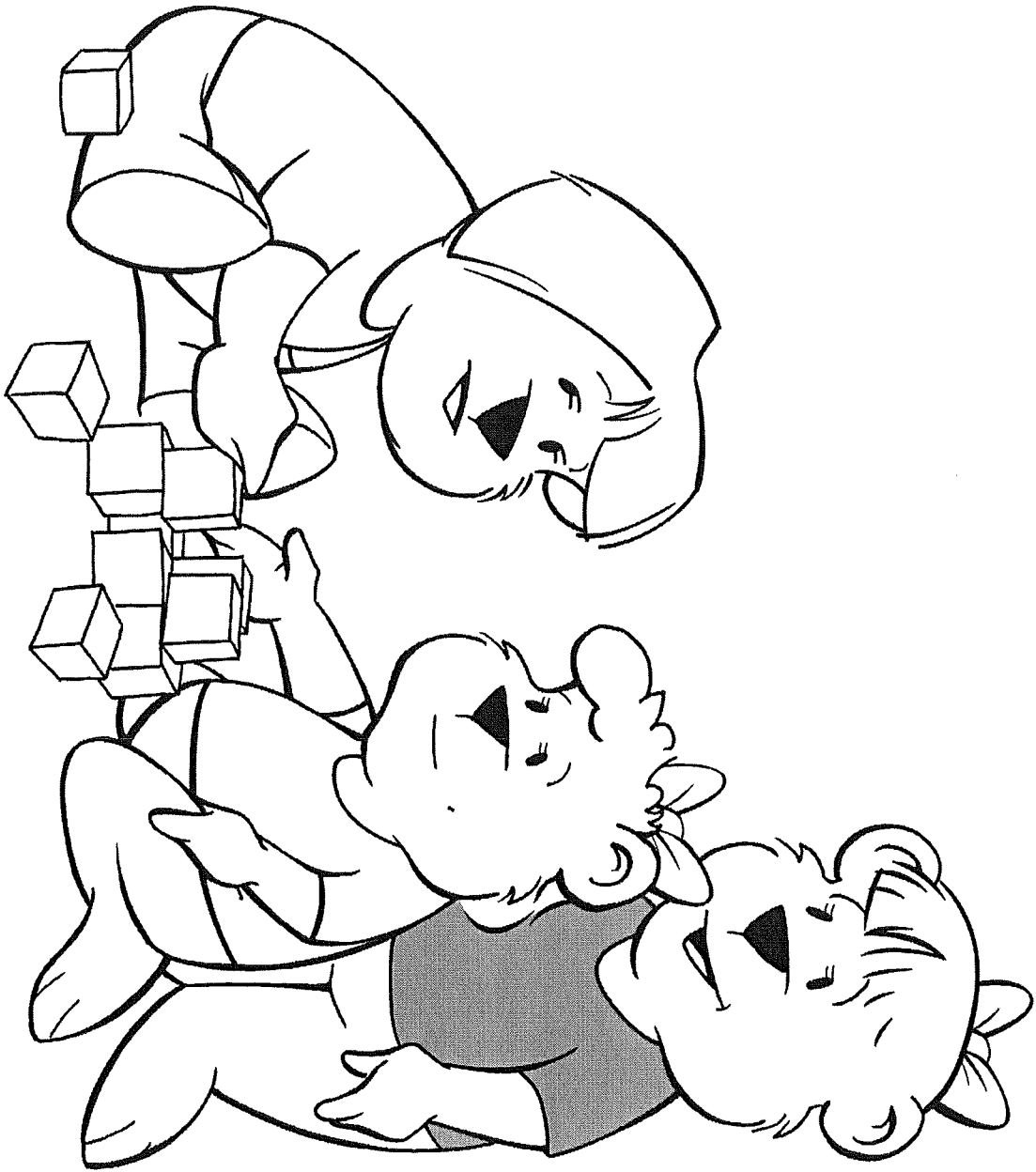
Picture 1: **Does Lisa feel happy?**

Picture 2: **Does Lisa feel afraid?**

Picture 3: **Does Lisa feel surprised?**

Picture 4: **Does Lisa not really care?**

Picture 5: **Does Lisa feel angry?**
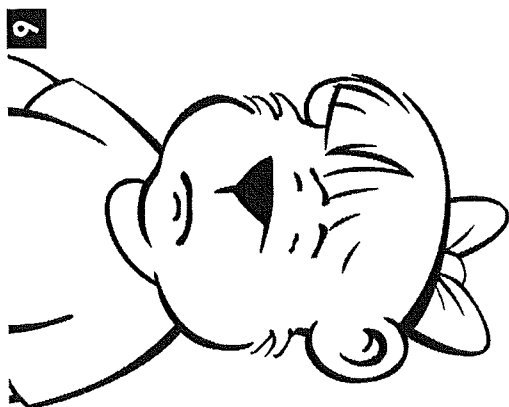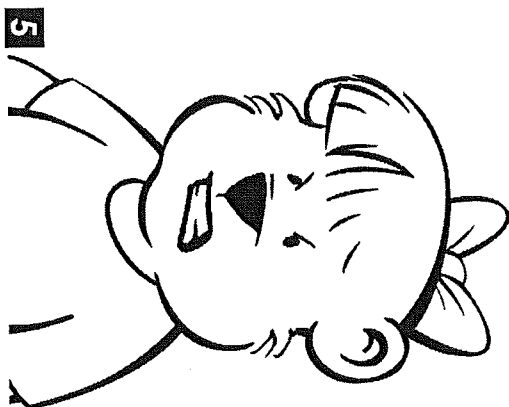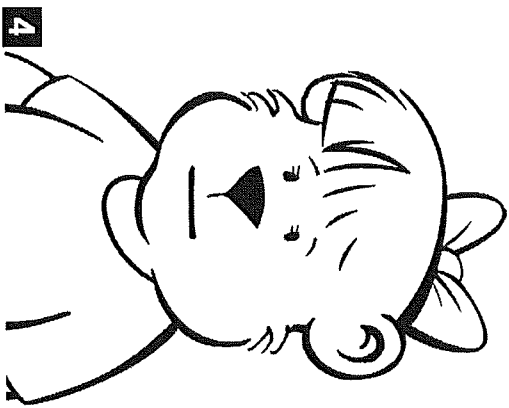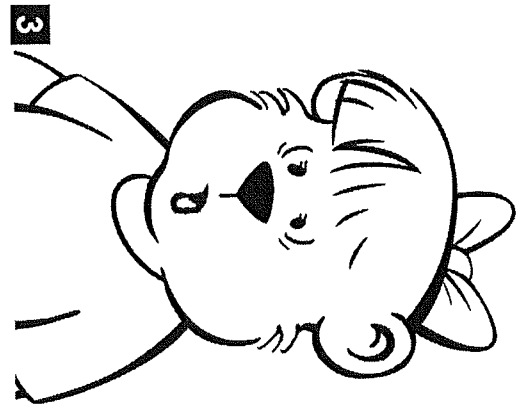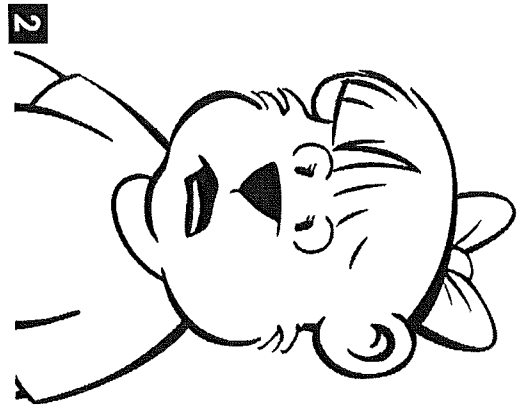
Picture 6: **Does Lisa feel sad?**

D3. POINT TO OTHER CHILD AND SAY: **Why would the other children not let Lisa play?**

IF THE CHILD DOES NOT RESPOND, MOVE TO NEXT QUESTION

D4. POINT TO OTHER CHILDREN AND SAY: **Do you think the other children who didn't let Lisa play are mean or not mean?**

D5. **What would you say or do if you asked girls in your class if you could play and they said that only two can play in the block area? How would you feel?**

Picture 1: **Would you feel happy?**

Picture 2: **Would you feel afraid?**
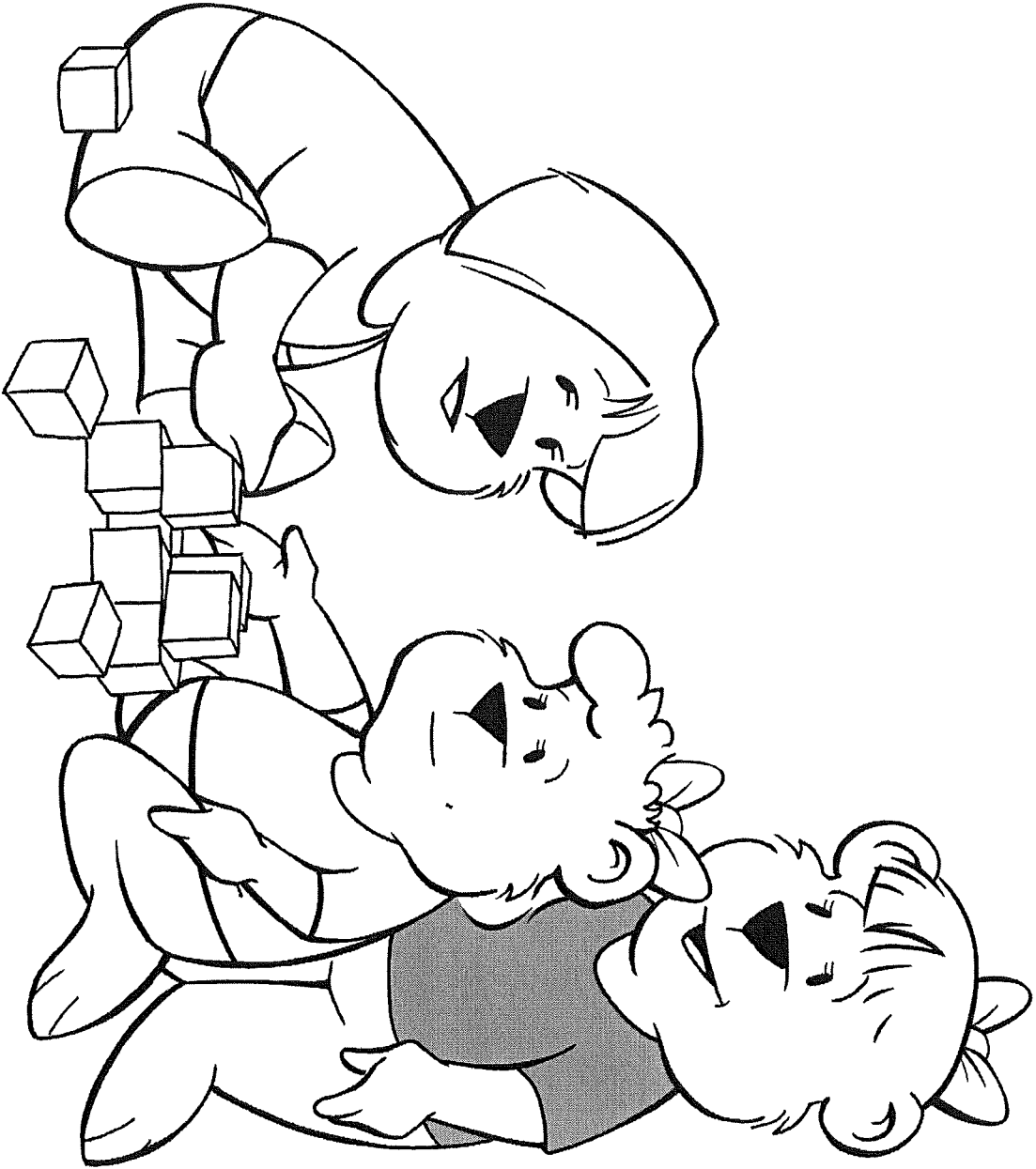
Picture 3: **Would you feel surprised?**

Picture 4: **Would you not really care?**

Picture 5: **Would you feel angry?**

Picture 6: **Would you feel sad?**

D6. **So you would feel (REPEAT IDENTIFIED EMOTION). How (IDENTIFIED EMOTION) would you feel? Would you feel a little bit (IDENTIFIED EMOTION) or a lot (IDENTIFIED EMOTION)?**

D7. **Why would you feel (IDENTIFIED EMOTION)?**

POINT TO LISA. Lisa could say, "Then can I play next?"

D9. Is this a good thing or a bad thing for Lisa to say?

D10. If you said that, do you think the other children would like you?

D11. Do you think the other children would let you watch your show if you said that?

D12. POINT TO THE OTHER CHILD. How would the other children feel if you said that?

Now, I'll show you something else that Lisa could do.

POINT TO LISA. Lisa could knock apart the blocks and say to the other children: "If I can't play, then you can't play either!"
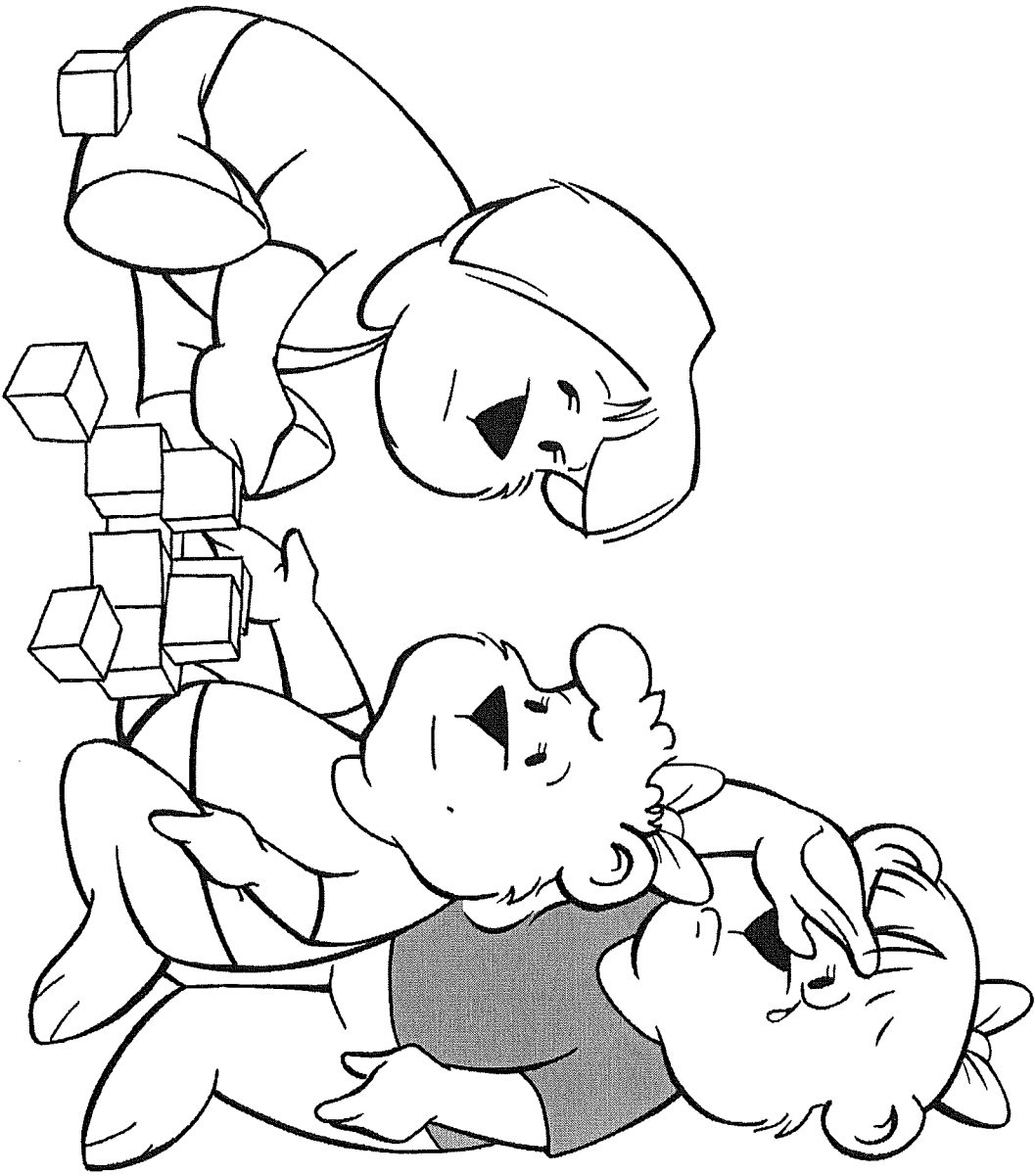
D13. **Is this a good thing or a bad thing for Lisa to do?**

D14. **If you did that, do you think the other children would like you?**

D15. **Do you think the other children would let you play if you did that?**

D16. POINT TO THE OTHER CHILD. **How would the other children feel if you did that?**

Now, I'll show you something else that Lisa could do.

POINT TO LISA. Lisa could cry and say, "It's not fair."

D17. **Is this a good thing or a bad thing for Lisa to say?**

D18. **If you said that, do you think the other children would like you?**

D19. **Do you think the other children would let you play if you said that?**

D20. POINT TO THE OTHER CHILD. **How would the other children feel if you said that?**

Now we're all done!

You did a great job and I'd like to thank you for helping me!

HEAD TOES KNEES SHOULDERS (HTKS)

Description of the Instrument:

- Children are asked to play a game in which they must do the opposite of what the experimenter says. The experimenter instructs children to touch their head (or their toes), but instead of following the command, the children are supposed to do the opposite and touch their toes. If children pass the head/toes part of the task, they complete an advanced trial where the knees and shoulders commands are added. The HTKS task has been conceptualized by Pontiz, et al., (2008) as a measure of inhibitory control (a child must inhibit the dominant response of imitating the examiner), working memory (a child must remember the rules of the task) and attention focusing (must focus attention to the directions being presented by the examiner).

Base Reference/Primary Citation:

Ponitz, C. C., McClelland, M. M., Jewkes, A. M., Connor, C. M., Farris, C. L., & Morrison, F. J. (2008). Touch your toes! Developing a direct measure of behavioral regulation in early childhood. Early Childhood Research Quarterly, 23, 141–158. doi: 10.1016/j.ecresq.2007.01.004.

Ponitz, C. C., McClelland, M. M., Matthews, J. S., & Morrison, F. J. (2009). A structured observation of behavioral regulation and its contributions to kindergarten outcomes. Developmental Psychology, 45, 605-619. doi: 10.1037/a0015365

HTKS TASK SCRIPT

> Administer the task while seated; the child should stand, about 3 feet from you, throughout the entire task. The person symbol indicates to demonstrate the correct body motions.
>
> If the child produces the correct response immediately, score the item "2". If they self-correct right away, without prompting, score the item "1". If they do not touch the correct part of their body at all, score the item "0".

Copy Practice:

Now we're going to play a game. The game has two parts. First, I want you to copy what I do. Touch your head.
Wait for the child to put BOTH his/her hands on head.

Good! Now touch your toes.
Wait for the child to put his/her hands on toes.

Good!
Repeat the two commands <u>with motions again</u>, or until the child imitates you correctly. *(keep having child copy)*

Touch your head.

Touch your toes.

Now we're going to be a little silly and do the opposite of what I say. When I say to touch your head, *instead* of touching your head, you touch your toes. When I say to touch your toes, you touch your head. So you're doing something different from what I say.

A1. What do you do if I say "touch your head"?

Circle child's response on the code sheet.

- If s/he hesitates or responds incorrectly, say:
Remember, when I say to touch your head, you touch your toes, so you are doing something different from what I say. Let's try again. Repeat A1 again.

> **If a child says an answer say:**
> **Show me**

- If s/he responds correctly, say and proceed to A2:
That's exactly right.

A2. What do you do if I say "touch your toes"?

- If s/he hesitates or responds incorrectly, say:
Remember, when I say to touch your toes, you touch your head, so you are doing something different from what I say. Let's try again. Repeat A2 again.

- If s/he responds correctly, say and proceed to B2:
That's exactly right.

Circle child's response on the code sheet.

You may re-explain (use EXPLANATION above) up to three times in the TRAINING (A1-A2) and PRACTICE (B1-B4) sections. If you have already given two explanations during the TRAINING questions, then you may correct them only once more in the PRACTICE items. If the child cannot do the task after the third explanation, administer the 10 test items anyway.

PART I PRACTICE:

.

| B1**. Touch your head** |
| B2. **Touch your toes** |
| B3. **Touch your head** |
| B4. **Touch your toes** |

You may use any of the remaining retraining (up to 3 total on both rules and practice) on the practice:

Remember, when I say to touch your toes (head), you touch your head (toes), so you are doing something different from what I say. Let's try again.

PART I TESTING:

We're going to keep playing this game, and you keep doing the opposite of what I say.

If the child does not understand the task, you will have gone through the directions at most four times (once at the beginning, and up to three times in the TRAINING and PRACTICE sections). **DO NOT explain again after testing begins.**

1.	Touch your head
2.	Touch your toes
3.	Touch your toes
4.	Touch your head
5.	Touch your toes
6.	Touch your head
7.	Touch your head
8.	Touch your toes
9.	Touch your head
10.	Touch your toes

PART II TRAINING:

Administer Part II if child responds correctly to 5 or more items on Part I of the task, <u>or</u> if child is in kindergarten or beyond.

Ok, now that you've got that part, we're going to add a part. Now, you're going to touch your shoulders and your knees. First, touch your shoulders.
Touch your shoulders; wait for the child to touch his/her shoulders with both hands.

Now, touch your knees.
Touch your knees; wait for the child to touch his/her knees with both hands.

Repeat with four alternating commands (no demo) until the child has imitated you correctly or it is clear the child does not comprehend the task.

> **Touch your shoulders**
>
> **Touch your knees**
>
> **Touch your shoulders**
>
> **Touch your knees**

Ok, now we're going to be silly again. You're going to keep doing the opposite of what I say like before. But this time, you're going to touch your knees and shoulders. When I say to touch your knees, you touch your shoulders, and when I say to touch your shoulders, you touch your knees.

C1. **What do you do if I say "touch your knees?"**

- <u>If response is correct</u>, say and proceed to D1:

  Good job! Let's practice.

If a child says an answer say: **Show me**

- <u>If the response is incorrect</u>, say and proceed to D1:

  Remember, when I say to touch your knees, *instead* of touching your knees, you touch your shoulders. I want you to do the opposite of what I say. Let's try again.
  Repeat C1 again.

PART II PRACTICE:

D1. **Touch your knees** D2. **Touch your shoulders** D3. **Touch your knees** D4. **Touch your shoulders**	You may use any of the remaining retraining (up to 3 total on both rules and practice) on the practice: **Remember, when I say to touch your knees (shoulders), you touch your shoulders (knees), so you are doing something different from what I say. Let's try again.**

- **If the child gets two or fewer correct**, say:

Remember, I want you to keep doing the opposite from what I say, but this time, touch your knees and shoulders.

Proceed to Part II test section. Do not explain any parts of the task again.

PART II TESTING:

Now that you know all the parts, we're going to put them together. You're going to keep doing the opposite from what I say to do, but you won't know what I'm going to say.

There are four things I could say.

If I say to touch your head, you touch your toes.
If I say to touch your toes, you touch your head.
If I say to touch your knees, you touch your shoulders.
If I say to touch your shoulders, you touch your knees.

Are you ready? Let's try it.

11.	Touch your head
12.	Touch your toes
13.	Touch your knees
14.	Touch your toes
15.	Touch your shoulders
16.	Touch your head
17.	Touch your knees
18.	Touch your knees
19.	Touch your shoulders
20.	Touch your toes

After the child completes the task, say:
Thank you for playing this game with me today!

HTKS RECORD FORM

If the child produces the correct response immediately, score the item "2". If they self-correct (*see bottom of page 2) right away, without prompting, score the item "1". If they do not touch the correct part of their body at all, score the item "0".

Part 1 TRAINING: (circle child's response)

Retraining

A1. **What do you do if I say "touch your head"?**		
0 (head)	1	2 (toes)

_____

A2. **What do you do if I say "touch your toes"?**		
0 (toes)	1	2 (head)

_____

PART I PRACTICE: (circle child's response)

	Incorrect	Self-Correct*	Correct
B1. **Touch your head**	0 (head)	1	2 (toes)
B2. **Touch your toes**	0 (toes)	1	2 (head)
B3. **Touch your head**	0 (head)	1	2 (toes)
B4. **Touch your toes**	0 (toes)	1	2 (head)

Retraining

_____

Retraining occurs only 3 times

PART I TESTING: (circle child's response)

		Incorrect	Self-Correct*	Correct
21.	Touch your head	**0 (head)**	**1**	**2 (toes)**
22.	Touch your toes	**0 (toes)**	**1**	**2 (head)**
23.	Touch your toes	**0 (toes)**	**1**	**2 (head)**
24.	Touch your head	**0 (head)**	**1**	**2 (toes)**
25.	Touch your toes	**0 (toes)**	**1**	**2 (head)**
26.	Touch your head	**0 (head)**	**1**	**2 (toes)**
27.	Touch your head	**0 (head)**	**1**	**2 (toes)**
28.	Touch your toes	**0 (toes)**	**1**	**2 (head)**
29.	Touch your head	**0 (head)**	**1**	**2 (toes)**
30.	Touch your toes	**0 (toes)**	**1**	**2 (head)**

Total Points:_____

Number of 1 responses:_____

NOTE
*Definition of self-correction: Mark "self-correct" on both
the training and testing portion if the child makes *any*
discernible motion toward the *incorrect* answer, but then
changes his/her mind and makes the correct response.
Pausing to think, not moving, and then responding correctly
does *not* count as a self-correction.

PART II TRAINING:

Administer Part II if child responds correctly to 5 or more items on Part I of the task, <u>or</u> if child is in kindergarten or beyond.

Circle child's response:

C1. **What do you do if I say "touch your knees?"**			Retraining
0 (knees)	1	2 (shoulders)	_____

PART II PRACTICE:

	Incorrect	Self-Correct*	Correct	
D1. **Touch your knees**	0 (knees)	1	2 (shoulders)	Retraining
D2. **Touch your shoulders**	0 (shoulders)	1	2 (knees)	
D3. **Touch your knees**	0 (knees)	1	2 (shoulders)	_____
D4. **Touch your shoulders**	0 (shoulders)	1	2 (knees)	

PART II TESTING: (circle child's response)

		Incorrect	Self-Correct	Correct
31.	Touch your head	**0**	**1**	**2 (toes)**
32.	Touch your toes	**0**	**1**	**2 (head)**
33.	Touch your knees	**0**	**1**	**2 (shoulders)**
34.	Touch your toes	**0**	**1**	**2 (head)**
35.	Touch your shoulders	**0**	**1**	**2 (knees)**
36.	Touch your head	**0**	**1**	**2 (toes)**
37.	Touch your knees	**0**	**1**	**2 (shoulders)**
38.	Touch your knees	**0**	**1**	**2 (shoulders)**
39.	Touch your shoulders	**0**	**1**	**2 (knees)**
40.	Touch your toes	**0**	**1**	**2 (head)**

Total Points:_____

Number of 1 responses:_____

HTKS SCORING

Each item is coded as follows (Ponitz et al., 2008):
> 0 = Incorrect response
> 1 = Any motion to incorrect response, but self-corrected to end with correct response
> 2 = Correct response

Final Score:
> The task has begins with 6 practice items and between the first and second set of items there are 5 more practice trials. The final score is the sum of the first six practice items and the 20 test items. (Range: 0-52)

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APPENDIX D

EMOTION REGULATION CHECKLIST

Please fill in this checklist regarding your child's behaviour. It is important to score every item in the checklist to the best of your knowledge, by circling the number that best matches how often your child demonstrates the behaviour for each item (1=rarely/never, 2=sometimes, 3=often and 4=almost always).

Rarely/ Never	Sometimes	Often	Almost Always	
1	2	3	4	1. My child is a cheerful child.
1	2	3	4	2. My child exhibits wide mood swings (sometimes it is hard to predict their emotional state because she/he moves quickly from a positive to a negative mood).
1	2	3	4	3. My child responds positively to neutral or friendly gestures from adults.
1	2	3	4	4. My child transitions wellfrom one activity to another; doesn't become angry, anxious, distressed, or overly excited when moving from one activity to another.
1	2	3	4	5. My child can recover quickly from upset or distress (for example, doesn't pout or remain sullen, anxious or sad after emotionally distressing events).
1	2	3	4	6. My child is easily frustrated.
1	2	3	4	7. My child responds positively to neutral or friendly gesturesfrom peers/other children.
1	2	3	4	8. My child is prone to angry outbursts/tantrums easily.
1	2	3	4	9. My child is able to delay gratification.
1	2	3	4	10. My child takes pleasure in the distress of others (for example, laughs when another person gets hurt or punished; seems to enjoy teasing others).
1	2	3	4	11. My child can modulate excitement (for example, doesn't get "carried away" in high energy play situations or overly excited in inappropriate contexts).
1	2	3	4	12. My child is whiny or clingy with adults.
1	2	3	4	13. My child is prone to outbursts of energy and exuberance.

1 2 3 4   14. My child responds angrily to limit-setting by adults.

1 2 3 4   15. My child can say when he/she is feeling sad, angry or
mad, fearful or afraid.

1 2 3 4   16. My child seems sad or listless.

1 2 3 4   17. My child is overly exuberant (overly energetic/excited)
              When attempting to engage others in play.

1 2 3 4   18. My child displays flat affect (expression is vacant or
              Inexpressive; child seems emotionally absent).

1 2 3 4   19. My child responds negatively to neutral or friendly
gestures by peers (for example, may speak in an angry
tone of voice or respond fearfully).

1 2 3 4   20. My child is impulsive.

1 2 3 4   21. My child is empathic towards others; shows concern
When others are upset or distressed.

1 2 3 4   22. My child displays exuberance (energy and excitement)
that others find intrusive or disruptive.

1 2 3 4   23. My child displays appropriate negative emotions (anger,
fear, frustration, distress) in response to hostile,
aggressive or intrusive acts by peers/other children).

1 2 3 4   24. My child displays negative emotions when attempting
to engage others in play.

STRENGTHS AND DIFFICULTIES QUESTIONNAIRE

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 entirely certain. Please give your answers on the basis of your child's behaviour over the last six months.

	Not True	Somewhat True	Certainly 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	☐	☐	☐
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 other children ☐ ☐ ☐

Many fears, easily scared ☐ ☐ ☐

Good attention span, sees work through to the end ☐ ☐ ☐