Social Information Processing in Aggressive and Withdrawn Preschool Children

by

Donald Paul Oswald

Dissertation submitted to the Faculty of the

Virginia Polytechnic Institute and State University

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

in

Psychology

APPROVED:

Thomas H. Ollendick, Co-Chairperson

Caryn L. Carlson, Co-Chairperson

David Harrison

Phillip S. Zeskind

Victoria Fu

August 18, 1989

Blacksburg, Virginia

Social Information Processing in Aggressive and Withdrawn Preschool Children

by

Donald Paul Oswald

Thomas H. Ollendick, Co-Chairperson

Caryn L. Carlson, Co-Chairperson

Psychology

(ABSTRACT)

In recent years, considerable attention has been given to a social information processing model as a means of understanding interaction patterns in children. Within the framework of that model, systematic biases have been found in the manner in which aggressive children process social information. The present study sought to extend that literature by applying the model to younger children, by examining the processing of withdrawn, as well as aggressive, children, and by employing traditional affect recognition tasks as the stimuli.

Sixty preschool children were nominated by their classroom teachers as either aggressive, withdrawn, or well adjusted, according to their predominant interaction style. The children were then tested, using a set of affect recognition tasks which assessed stimulus encoding and interpretation. Stimuli consisted of facial expression photos and context stories portraying one of four emotions (Happy, Sad, Mad, or Neutral). The hypotheses of the study predicted systematic biases in stimulus encoding and interpretation, consistent with the subjects' behavioral style.

Analyses failed to support the hypotheses in that the groups failed to show identifiable systematic biases. Exploratory analyses revealed that subgroups of subjects demonstrated such biases, but those biases were related only to level of developmental maturity. The discussion of the findings explored issues which may have led to the negative results. Further research directions were also discussed which will help to clarify the questions raised by the present study.

Acknowledgements

Sincere appreciation is offered to the co-chairpersons of my committee, Thomas Ollendick and Caryn Carlson. Dr. Ollendick has been a teacher, clinical and research mentor, and friend, throughout the course of this, and previous, work and his help, feedback, and support have contributed greatly not only to this project but to the quality of my entire training program. Dr. Carlson supervised the initiation of this project and offered valuable assistance and support throughout. Thanks are also due to the remainder of my committee, Dr. Harrison, Dr. Zeskind, and Dr. Fu, who participated in the discussion and provided suggestions and feedback.

Special thanks go to the children and parents of the New River Community Action HeadStart Program who participated in the project and to _____, program director, who allowed it to happen. Thanks also to the classroom staff who filled out forms, talked to parents, and cooperated with the testing.

Finally, a word of appreciation is due to my family; to my wife, _____, for understanding the time and energy which the project demanded and for generally supporting the entire effort, to our daughter, _____, for pilot testing the materials, and to our son, _____, for helping me to concentrate on something else when things were going slowly.

Table of Contents

List of Tables

Introduction

Patterns of interactive behavior in children have been the focus of extensive investigative efforts within a variety of conceptual frameworks. In recent years, considerable attention has been given to social cognitive investigations of children's interaction patterns. One such approach which has spawned a sizeable amount of research is the application of information processing concepts to the analysis of social behavior.

Dodge, Pettit, McClaskey, and Brown (1986) presented a model of social information processing (SIP) as it applies to social interaction competence in children. These authors proposed a set of five major units of social interaction: (1) the presentation of social cues or stimuli; (2) information processing of those cues by the child; (3) the child's social behaviors that occur as a function of processing the cues; (4) judgements by peers about the child's behavior; and (5) peers' behavior toward the child.

Considerable research leading up to, and based on, this model has focused on the second unit, the child's processing of social stimuli. Dodge et al. (1986) subdivided this unit into five processing steps: encoding, interpretation, response search, response evaluation, and enactment. As presented in the model, the encoding step consists of attention, sensation, and perception of cues. Interpretation involves the mental representation of the encoded cues and the application of a set of inter-

pretive rules to derive meaning from them. Response search and evaluation consist of accessing or generating potential behavioral responses to interpreted cues, evaluating the probable efficacy and consequences of each, and selecting an optimal choice. Finally, response enactment involves enacting the chosen response in verbal and motor behavior.

This social information processing model has been employed in the investigation of social cognitive differences between children with disturbing (primarily aggressive) behaviors and normative children in the middle childhood years. In recent years, considerable support has been generated for the notion that behavioral status (i.e., aggressive versus non-aggressive) is related to differences in social information processing in children (Dodge, 1980; Dodge & Newman, 1981; Dodge and Frame, 1982; Milich & Dodge, 1984). Taken together, these studies suggest that aggressive boys may be more likely to gather less information before responding, to selectively recall hostile material, and to attribute hostile intent in ambiguous situations. (A review of the literature related to the present study may be found in Appendix A.)

Why does this hostile bias or deviance in processing occur? The SIP model suggests that it is based on faulty encoding and interpretation of social cues. Due to some as yet unknown factor, when social cues, particularly those which are somewhat ambiguous, are perceived by aggressive children, they are judged to contain more components indicative of hostility than when those same cues are perceived by non-aggressive children.

The preponderance of support for the SIP model has been generated from aggressive boys in middle childhood. Little attention has been devoted, thus far, to girls or to younger children, and there are, as yet, no data available regarding the question of social information processing deficits or biases in socially withdrawn populations. The present study sought to advance the understanding of SIP in children by addressing these areas.

The goal of the study was to determine the extent to which biased encoding and interpretation processes may be detected in preschoolers' responses to traditional affect recognition tasks. More

specifically, such biases were explored in three behavioral subgroups of the preschool population: children with well-adjusted interaction patterns, those with predominantly aggressive interaction patterns and those with predominantly withdrawn, socially isolated, interaction patterns.

The following hypotheses were examined in the study:

1. Systematic biases in the encoding of social information will be detected in the processing of problem groups of children as compared to the normative group;

2. Further, such systematic biases will not be accounted for by any systematic variations in developmental maturity between groups; that is, that effect will persist in analyses with developmental maturity as a covariate.

3. Finally, problem groups will show biases in their responses to test stimuli which are concordant with their behavioral style (e.g., aggressive subjects will perceive more anger in neutral stimuli while withdrawn subjects will perceive more sadness).

Method

Subjects

Sixty preschool children were recruited to participate in the study from a pool of approximately 200 children enrolled in local Head Start programs.

The identification of subgroups was accomplished using a teacher nomination procedure previously shown to be reliable and valid with boys and girls in the middle childhood years (Ollendick, Oswald, & Francis, 1989). Its reliability and validity with preschool children has not been determined. Teachers were asked to nominate up to two boys and two girls who met specific criteria (See Appendix B) for each of the three social adjustment categories (i.e., aggressive, withdrawn, and well-adjusted). Parents of the nominated children were then contacted to obtain permission for their child to participate in the project. A copy of the permission letter is included in Appendix C. Parental permission was obtained for approximately 75 percent of the nominated children.

Teacher ratings on the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983) were gathered to examine differences in problem behaviors between groups and a measure of develop-

mental maturity for all subjects was obtained from scores on the Carolina Developmental Profile (CDP). The CDP is a developmental assessment instrument which is administered routinely by Head Start teachers on every child in their classroom. Both the CDP and the CBCL have been shown to be reliable and valid measures for preschoolers.

Experimental Tasks

Experimental tasks consisted of standard affect recognition stimuli: facial expression photographs and context stories, each of which portrayed a particular emotion (Happy, Sad, Mad, or Neutral). Facial expression slides used in Reichenbach and Masters (1983) were transferred to print format for the present study. These pictures were face-only photos of children's spontaneous expressions of emotion generated by a standard affect-induction procedure and posed expressions generated by instruction: "Make yourself look like you are feeling _____." The set consisted of photos of two boys and two girls, approximately five years of age.

In extensive preliminary testing by Masters and colleagues, (Reichenbach & Masters, 1983; Felleman, Barden, Carlson, Rosenberg, & Masters, 1983) the photographs were judged to be clear but not extreme expressions of the affects in question. Accuracy of recognition of the affect portrayed in these photographs was examined in preschoolers (Felleman et al., 1983) and found to range from 86 to 91 percent for Happy, from 52 to 58 percent for Mad, and from 21 to 23 percent for Neutral photos; recognition accuracy for Sad photos was 63 percent.

Sixteen photographs from Reichenbach and Masters were selected which did not have problematic irrelevant feature differences such as differences in head orientation or background. This set consisted of a combination of spontaneous and posed expressions. A pilot project was conducted with this combined set to determine whether the recognizability of the expressions was comparable to

the set which contained only spontaneous expressions. Thirty-seven undergraduates (twenty-eight females, nine males) were asked to label the emotion portrayed in each of the selected photographs. Mean percentage correct figures for the four affects were: Happy - 99 percent, Sad - 75 percent, Mad - 65 percent, and Neutral - 63 percent.

Context stimuli were provided in the form of audio-taped vignettes. Scripts for the vignettes consisted of modifications of those developed by Reichenbach and Masters (1983) (See Appendix C for sample scripts); these scripts were designed to describe situations that elicited the same four affects portrayed in the photos (Happy, Mad, Sad, and Neutral). In their original form, the affect represented in each vignette was correctly identified by at least eight out of ten adult raters. Modifications for the present study consisted of inserting additional details to be included in the Encoding Accuracy assessment (see below).

The procedure for the study involved administering to each child five tasks:

1. Expression Alone -- Encoding

2. Expression Alone -- Labeling

3. Context Alone -- Encoding

4. Context Alone -- Labeling

5. Expression / Context Pairs -- Encoding and Labeling

Instructions for each of the tasks were modeled after those of Reichenbach and Masters (1983).

In the Expression Alone -- Encoding task, children were given the following instructions: "I'm going to show you some pictures of children's faces; try to remember what the child's face looks like so you can pick it out later." A photograph was presented for five seconds and then removed.

Subjects were then asked to pick the photo out of a matrix of four expression photos (Happy, Sad, Mad, and Neutral) for that actor ("Which picture did you see?"). This was repeated for sixteen trials so that all photos were used as the target for one trial.

In the Context Alone -- Encoding task, the child listened to sixteen vignettes with the following instructions: "I'm going to let you listen to stories about some different things that happened to children. I want you to try to remember everything that happened because I'm going to ask you some questions when the stories are finished." At the end of each story, subjects were asked to recall information from the vignettes using four questions in a cued recall procedure. Questions assessed recall of Mood Related details (e.g., the specific events that would be likely to result in the target affect) and Non Mood Related material (e.g., objects used in the vignette). Examples of cued recall questions may be found in Appendix D. Responses to story recall questions were recorded verbatim and scored as "correct" or "incorrect". Reliability of scoring was assessed by simultaneous scoring by an independent observer or by submitting transcripts of the responses to an independent scorer, blind to subject status. Overall percentage agreement was 97 percent.

In the Expression Alone -- Labeling task, the expression photographs were presented again with the following instructions: "Now I'm going to show you these pictures again and I'd like you to tell me how you think the child was feeling when the picture was taken. They can feel happy, sad, mad, or just OK. How does this child feel?" A reminder of the affect labels was given before every trial for the first four trials and before alternate trials thereafter and the order of the labels in the reminder was counterbalanced across trials.

The sixteen vignettes were subsequently presented again, in a Context Alone -- Labeling task, with the following instructions: "Now I'm going to let you listen to the stories again. This time, I'd like you to tell me how you think each child felt in the story. They can feel happy, sad, mad, or just OK." Reminders of the affect labels were given in the manner described above for the expression labeling task.

Finally, in the Expression / Context Pairs -- Encoding and Labeling task, subjects were presented with an expression photo and a story simultaneously and were given the following instructions: "Now I'm going to show you some pictures of children's faces and tell you what was happening when the picture was taken. Look at the picture and listen to the story carefully." Following each presentation of expression and context stimuli, subjects were given a matrix of four expressions (as above) and asked "Which picture did you see?". Story recall questions, two questions for each story, were also asked, as in the Context Alone: Encoding task, and the order of expression and context tasks was counterbalanced across trials. Finally, for each expression / context pair, the subject was asked to provide an affect label ("How did _____ feel?" Did (s)he feel Happy, Sad, Mad, or Just OK?). Label reminders were provided in this fashion on every trial and presentation order of the labels was counterbalanced across trials.

For this task, expression and context stimuli were paired so that each vignette affect was presented with each expression affect. Thus, there were four pairs in which the affects were concordant (e.g., Happy-Happy, Mad-Mad, etc.) and twelve pairs in which the affects were discordant (Happy-Mad, Sad-Neutral, etc.) The same expression photos as in the Expression Alone tasks were used, but a second set of sixteen vignettes was presented for this stage of the study. These vignettes were also taken from those used by Reichenbach and Masters (1983) and were used without modification.

At the conclusion of each experimental task, the subjects' attention to task was rated by the experimenter. The rating scale used for this purpose ranged from 1 (extremely distracted throughout; great difficulty restricting attention to task) to 5 (hyperattentive to task; eye contact and posture indicated extreme vigilance); a "3" on the scale represented "average attention to task; occasional distraction but returns to task with minimal direction". A second rater, blind to subject status, provided independent on-task ratings for 29 of the 180 sessions (16 percent). Percentage agreement between raters was 90%.

Mean on-task ratings across experimental task sessions were analyzed and revealed no differences among Subject Status groups ($F(2,57) = .37; p = .69$). With few exceptions, subjects appeared to enjoy the tasks and generally appeared to attend closely to them.

The tasks were presented in three assessment sessions which are summarized below:

Assessment Session One

- Expression Alone -- Encoding: Select the matching photograph.

- Context Alone -- Encoding: Respond to cued recall questions.

Assessment Session Two

- Expression Alone -- Labeling: Label the photographs.

- Context Alone -- Labeling: Label the vignettes.

Assessment Session Three

- Expression / Context Pairs -- Encoding and Labeling: Select the matching photo, respond to cued recall questions, and label the pair.

Assessment sessions were separated by at least one day and were conducted on successive days, or as nearly successive as possible, given the constraints of child illness, field trips, vacations, and weather-related closures. The three assessment sessions required a total of approximately one hour per subject.

Results

Subject Characteristics

Subjects ranged in age from 3.52 to 5.71 years of age with a mean of 4.68 years. Number of siblings

in the home ranged from 0 to 5 with a mean of 1.3. Fifty-five percent of the children came from

single parent (mother, in all cases) homes. Because such a large proportion of the children did not

have a father in the home, mother's level of education was used as an index of socio-economic

status; mothers had received from 6 to 16 years of formal education with a mean of 11.2. Subject

Status groups did not differ on any of these measures. (Group means and standard deviations are

presented in Table 1.)

Scores on the Carolina Developmental Profile (CDP) were used as an index of developmental

maturity. Because the age-equivalent scores on the CDP are relatively insensitive and because their

derivation is somewhat ambiguous, CDP scores for the present study consisted of the number of

items passed on each subscale and a total score consisting of the number of items passed on the

entire scale. Mean subscale and total scores and the results of Subject Status group means com-

Table 1. Subject Characteristics

	Aggressive	Withdrawn	Well-Adjusted	F-value
Age (in years)	4.77 (0.59)	4.61 (0.55)	4.66 (0.42)	0.44 ns
No. of Siblings	1.35 (0.67)	1.20 (1.01)	1.40 (1.31)	0.20 ns
Mother's Education	10.75 (1.65)	11.30 (1.92)	11.45 (2.44)	0.66 ns

Note: Standard deviations in parentheses

parisons are presented in Table 2. (Note: Subscales contain varying numbers of items and comparisons across subscales are not valid.)

Table 2. Carolina Developmental Profile Scores: Mean Number of Items Passed

	A	W	W-A	Means Comparisons
Gross Motor	15.65 (3.81)	13.45 (3.69)	15.80 (2.95)	ns
Fine Motor	10.40 (2.16)	11.05 (2.80)	11.65 (1.90)	ns
Visual Perception	8.50 (2.70)	8.70 (2.96)	10.15 (1.69)	ns
Reasoning	6.35 (2.43)	6.05 (3.15)	8.20 (2.84)	W-A > A,W
Receptive Language	8.50 (2.65)	8.15 (2.68)	9.95 (2.11)	ns
Expressive Language	9.25 (3.16)	8.80 (2.65)	10.40 (1.90)	ns
Social-Emotional	12.65 (2.43)	11.75 (3.73)	14.70 (2.05)	W-A > A,W
Total	71.30 (14.36)	67.95 (18.62)	80.85 (12.27)	W-A > W

Note 1: A = Aggressive, W = Withdrawn, W-A = Well-Adjusted
Note 2: Standard deviations are in parentheses.

As is apparent, the Well-Adjusted group generally passed the most items on the CDP, followed by the Aggressive, and then by the Withdrawn groups, although these differences did not always achieve statistical significance. Analyses on the Total score means, reflecting overall developmental maturity, indicated that the groups did differ significantly ($F(2,57) = 3.82$; $p = .03$) and that the Well-Adjusted children scored significantly higher than the Withdrawn children, with the Aggressive group score falling between the other two groups and not differing from either.

Scores on the Child Behavior Checklist (CBCL) were used to validate the teacher nomination process in assigning subjects to groups. In addition to comparing the group means of the Internalizing and Externalizing factor T-scores, the proportion of the total possible raw scores on the Social Withdrawal and Aggressive factors were examined.

As is clear from Table 3, the Aggressive group did score significantly higher than the other two groups on both the Aggressive factor and the overall Externalizing factor scores. The Withdrawn and Aggressive children appeared to score higher than the Well-Adjusted group on the Social Withdrawal factor but the means comparisons did not indicate significant differences. Further, the Aggressive group scored higher than the Well-Adjusted group on the Internalizing factor with the Withdrawn children falling between the other two groups and failing to differ significantly from either. The profile consisting of a high number of Externalizing and Internalizing problems is not uncommon in aggressive children and may be associated with a relatively poor prognosis (Ledingham, 1981).

Table 3.   Child Behavior Checklist Mean Scores

	A	W	W-A	Means Comparisons
Internalizing (T scores)	55.55	52.45	45.70	A > W-A
Externalizing (T scores)	63.55	39.30	41.45	A > W-A,W
Aggressive Factor *	.79	.12	.14	A > W-A,W
Withdrawn Factor *	.33	.34	.17	ns

* Proportion of total possible raw score

Note: A = Aggressive, W = Withdrawn, W-A = Well-Adjusted

Experimental Tasks

Pilot work with the experimental tasks raised concern about the possibility of floor or ceiling effects on some of the tasks. In order to rule out the presence of such effects, mean accuracy scores for all experimental tasks were examined across Subject Status groups. Encoding accuracy scores ranged from 33 percent to 74 percent (Mean scores: Happy - 51 percent; Sad - 55 percent; Mad - 60 percent; and Neutral - 44 percent). Labeling accuracy scores ranged from 13 percent to 74 percent for Context stimuli alone and Expression stimuli alone (Mean scores: Happy - 59 percent; Sad - 46 percent; Mad - 32 percent; and Neutral - 20 percent); a score of 25 percent accuracy is expected by chance alone. Labeling accuracy for the Expression / Context Pairs task (defined as a label which matched one or both of the stimuli) ranged from 19 percent to 81 percent with a mean of 46 percent (a score of 44 percent accuracy is expected by chance alone). Tests for group differences in accuracy scores are included in the results described below.

These data indicate that it is unlikely that floor or ceiling effects influenced the results on the encoding or labeling accuracy tasks for Context or Expression stimuli alone. However, the mean labeling accuracy for the Expression / Context Pairs task was so close to the value expected by chance that a floor effect was possible, rendering it unlikely that this task would discriminate among groups. As a result, the labeling accuracy data from this task were omitted in the analyses of Stimulus Labeling Accuracy reported below.

Three variables were derived from the experimental task data to investigate differences among status groups in the first step (encoding) of the social information processing model: Context Encoding Accuracy, Expression Encoding Accuracy, and Expression Encoding Errors. Two variables were derived to examine the second step (interpretation) of the model: Stimulus Labeling Accuracy and Stimulus Labeling Errors. The primary test of interest for each of the variables, with regard to the central hypotheses of the study, was the test of the interaction between subject status and stimulus

affect. A significant interaction effect with subsequent means comparisons showing that Aggressive children scored higher than the other two groups for Mad affect stimuli while Withdrawn children scored higher for Sad affect stimuli on any of the five variables of interest would provide support for the hypothesis of systematic bias in social information processing.

Since the groups differed with regard to level of developmental maturity, the Total score from the Carolina Developmental Profile was entered as a covariate in each of the analyses described below. An ANCOVA was performed on each of the five primary experimental task variables; main and interaction effects were subsequently probed with simple effects ANCOVA's. Means comparisons employed the Least Squares Means procedure which examines group means adjusted for the effect of the covariate. The alpha level chosen to determine significance for these comparisons was set at $p = .05$.

Context Encoding Accuracy (CEA)

CEA refers to the accuracy with which material from the context stories was encoded and retrieved. The CEA score was based on correct recall of story details. Each Stimulus Affect (Happy, Sad, Mad, and Neutral) was equally represented in the sixteen stories for each of two tasks. The two tasks which assessed this variable were administered in Session One with Context stimuli alone and in Session Three with Expression / Context pairs. Scores from Session Three were doubled prior to entering them into the analysis to equalize the total score possible for the two tasks (since there were only one-half as many items on the Expression / Context Pairs Task). This allowed for the inclusion of Task as a factor in the ANCOVA.

CEA scores were submitted to a 3-way (Status X Affect X Task) ANCOVA (see Table 4). This analysis failed to yield the predicted significant Status X Affect interaction effect ($F(6,168) = .67$; $p = .67$). The main effect for Status was not significant ($F(2,56) = .27$; $p = .77$), nor was the

main effect for Task (F(1,56) = .04; p = .84). The main effect for Stimulus Affect was, however, significant (F(3,168) = 3.51; p < .05). Comparisons of the adjusted Stimulus Affect means revealed that accuracy scores for Mad stimuli were greater than scores for Sad stimuli which were, in turn greater than Happy and Neutral stimuli; the latter two affects did not differ from one another.

The ANCOVA performed on CEA scores also revealed a significant Status X Task interaction effect (F(2,56) = 4.33; p < .05). Subsequent analyses of simple effects demonstrated that Status groups did not differ significantly on either task, although there was a tendency for Well-adjusted children to be more accurate than Withdrawn children on the Context Stimuli Alone task (for Sad and Neutral stimuli only, p = .09 and p = .07, respectively). No such trend was noted for the Expression / Context Pairs task.

Each CEA task included some questions regarding story details that were Mood Related (i.e., the details were essential in correctly capturing the affect represented in the story) and some that were Non-Mood Related (i.e., details not associated with story affect). In an effort to examine the effects of Mood Relation, CEA scores were submitted to a four-way (Subject Status X Stimulus Affect X Mood Relation X Task) ANCOVA (see Table 5). The Mood Relation factor was not included in the analyses described above because Mood Relation is irrelevant with regard to neutral stimuli; thus, only Happy, Sad, and Mad levels of the Stimulus Affect factor were included in the four-way ANCOVA.

A significant main effect for Affect (F(2,112) = 5.99; p < .005) was revealed in this ANCOVA. Comparisons of the Stimulus Affect adjusted means demonstrated that, as before, Mad stimulus scores were greater than Sad stimulus scores which were greater than Happy stimulus scores. None of the other main effects in this analysis were statistically significant. Significant three-way, Affect X Mood Relation X Task (F(2,112) = 5.55; p < .005) and two-way, Status X Task (F(2,56) = 4.60; p < .05), interactions were revealed.

Table 4. Context Encoding Accuracy (CEA) Mean Scores

Task 1	Aggressive	Withdrawn	Well-Adjusted
Happy	6.15 (3.20)	6.10 (4.05)	7.40 (3.08)
Sad	8.55 (3.24)	7.80 (3.69)	10.80 (2.55)
Mad	10.80 (3.55)	9.85 (3.66)	12.15 (2.56)
Neutral	8.15 (3.33)	6.45 (3.17)	9.40 (2.82)
Task 2	Aggressive	Withdrawn	Well-Adjusted
Happy	7.70 (4.36)	7.40 (3.78)	8.40 (4.08)
Sad	8.70 (3.13)	7.40 (4.94)	7.80 (3.66)
Mad	10.70 (3.38)	9.20 (4.42)	10.90 (3.22)
Neutral	5.20 (2.46)	5.00 (2.94)	5.60 (2.40)

Note: Standard deviations in parentheses

Probing of the three-way interaction revealed the significant main effect for Affect ($F(2,112) = 5.03$; $p < .01$) on the first task (but not the second) and a significant Affect X Mood Relation interaction effect on the second. Further exploration of task two scores demonstrated differences for Stimulus Affect on Mood Related stimuli only ($F(2,112) = 3.72$; $p < .05$). No affect differences were found on Non-Mood Related stimuli. Means comparisons indicated that Mad stimulus scores were significantly higher than Happy and Sad stimulus scores, the latter two of which did not differ from each other. In probing the Status X Task interaction, no significant Status differences were detected for either task.

Table 5. Context Encoding Accuracy (CEA): Mood Related and Non-Mood Related Mean Scores

Task 1	Mood Related			Non-Mood Related		
	A	W	W-A	A	W	W-A
Happy	2.60 (1.57)	2.45 (2.06)	3.25 (1.89)	3.55 (2.01)	3.65 (2.21)	4.15 (1.87)
Sad	4.80 (2.07)	4.35 (2.01)	6.00 (1.41)	3.75 (1.68)	3.45 (1.99)	4.80 (1.64)
Mad	5.15 (2.13)	4.50 (2.33)	6.20 (1.64)	5.65 (1.63)	5.35 (1.60)	5.95 (1.28)

Task 2	Mood Related			Non-Mood Related		
	A	W	W-A	A	W	W-A
Happy	2.80 (2.78)	2.90 (2.20)	3.00 (2.38)	4.90 (2.10)	4.50 (2.04)	5.40 (2.44)
Sad	3.70 (2.28)	2.70 (2.84)	2.50 (2.42)	5.00 (1.66)	4.70 (2.54)	5.30 (1.86)
Mad	6.20 (1.70)	4.80 (2.28)	6.00 (1.72)	5.50 (2.04)	4.40 (2.48)	4.90 (1.88)

Note 1: A = Aggressive, W = Withdrawn, W-A = Well-Adjusted

Note 2: Standard deviations in parentheses

Expression Encoding Accuracy (EEA)

EEA refers to the extent to which facial expressions were accurately encoded and retrieved in two tasks, one involving expression stimuli alone (Session One) and one involving Expression / Context pairs (Session Three). The subjects' EEA scores were based on correct recall of facial expressions. Again, each stimulus affect was equally represented in each task.

EEA scores were submitted to a three-way (Subject Status X Stimulus Affect X Task) ANCOVA (see Table 6). A significant Status X Affect interaction was detected in this analysis ($F(6,168) = 3.05$; $p < .01$); an examination of the simple effects revealed that while Well-adjusted and Withdrawn children did not differ in accuracy across the four affects, Aggressive children were more ac-

curate for Happy, Sad, and Mad, stimuli than for Neutral stimuli. None of the other main or interaction effects in the analysis were significant.

Table 6. Expression Encoding Accuracy (EEA) Mean Scores

Task 1	Aggressive	Withdrawn	Well-Adjusted
Happy	2.70 (1.03)	1.90 (1.07)	2.55 (1.36)
Sad	2.80 (0.89)	2.10 (1.17)	2.40 (1.05)
Mad	2.10 (0.97)	2.15 (1.27)	2.15 (1.18)
Neutral	1.50 (1.24)	2.05 (1.15)	2.25 (1.16)

Task 2	Aggressive	Withdrawn	Well-Adjusted
Happy	2.00 (1.17)	1.95 (1.43)	2.60 (0.75)
Sad	2.20 (1.20)	2.10 (0.97)	2.15 (1.14)
Mad	2.35 (1.04)	1.85 (0.81)	2.55 (1.19)
Neutral	1.45 (1.05)	1.90 (1.07)	2.05 (1.00)

Note: Standard deviations in parentheses

Expression Encoding Errors (EEE)

The derivation of EEE scores involved examining which expression was chosen by the subject on those trials on which an error occurred; that is, when the subject did not correctly choose the expression which (s)he had just seen, how frequently did (s)he choose each of the other three expressions? Thus, again, an EEE score was obtained for each of the four Affects within each of the two tasks which measured expression encoding (Expression alone: Encoding and Expression /

Context Pairs: Encoding). (NOTE: Similar analysis of errors on the context encoding tasks was impossible due to the fact that response errors could not be associated with any particular affect.)

EEE scores were submitted to a three-way (Subject Status X Stimulus Affect X Task) ANCOVA (see Table 7). This analysis revealed a main effect for Affect ($F(3,168) = 3.18$; $p < .05$). The affects, in descending numerical order of means, were Sad, Neutral, Mad, and Happy. Means comparisons revealed that Sad and Neutral errors were more frequent than Happy errors; Mad errors fell between Neutral and Happy and differed from none of the other affects. None of the other main effects or interaction effects were statistically significant.

Table 7. Expression Encoding Errors (EEE) Mean Scores

Task 1	Aggressive	Withdrawn	Well-Adjusted
Happy	1.15	1.85	1.35
Sad	1.70	1.95	1.85
Mad	2.45	2.00	1.70
Neutral	1.60	2.00	1.75
Task 2	Aggressive	Withdrawn	Well-Adjusted
Happy	2.00	1.85	1.15
Sad	2.15	2.25	2.05
Mad	1.70	1.85	1.60
Neutral	2.15	2.25	1.85

Stimulus Labeling Accuracy (SLA)

Scores for the first of the variables associated with the second (interpretation) step of the SIP model, Stimulus Labeling Accuracy, represented the extent to which subjects labeled expression and context stimuli with the affect which they actually depicted. Each of the four affects was equally represented in each of the two tasks, labeling context stories and labeling facial expressions. Thus, in this case, the two tasks involved responding to distinctly different types of stimuli rather than,

as above, responding to the same type of stimuli in two different settings (i.e., alone or in a stimulus pair).

SLA scores were submitted to a three-way (Subject Status X Stimulus Affect X Task) ANCOVA (see Table 8). No significant main or interaction effects were detected. Interestingly, in the corresponding three-way ANOVA, without CDP scores entered as a covariate, a highly significant main effect for Affect ($F(3,171) = 28.96$; $p < .0001$) was detected. Stimulus affects in descending numerical order of means were Happy, Sad, Mad, and Neutral, and least squares means comparisons indicated that each differed significantly from all others. As noted above, however, this effect was not found in the ANCOVA.

Table 8. Stimulus Labeling Accuracy (SLA) Mean Scores

Task 1	Aggressive	Withdrawn	Well-Adjusted
Happy	2.05 (1.57)	1.45 (1.36)	1.80 (0.89)
Sad	1.60 (1.60)	1.60 (1.23)	2.10 (1.41)
Mad	1.55 (1.23)	1.25 (0.91)	1.00 (0.97)
Neutral	0.60 (0.99)	0.35 (0.59)	0.60 (1.14)
Task 2	Aggressive	Withdrawn	Well-Adjusted
Happy	2.95 (1.39)	2.65 (1.42)	3.30 (0.86)
Sad	1.75 (1.55)	1.70 (1.42)	2.40 (1.14)
Mad	1.35 (1.04)	1.45 (1.15)	1.20 (1.06)
Neutral	1.25 (1.16)	1.10 (1.02)	0.95 (1.19)

Note: Standard deviations in parentheses

Stimulus Labeling Errors (SLE)

Finally, Stimulus Labeling Errors were examined in much the same fashion as the Expression Encoding Errors above; that is, the score represents the frequency with which each of the affect labels was employed on those labeling trials that were scored incorrect. In addition to the tasks involving labeling context stories or facial expressions in isolation (Session Two), SLE scores for a third task, labeling of Expression / Context pairs (Session Three) were included. In this latter case, a trial was scored incorrect if the label given matched neither the facial expression nor the context story which made up the pair.

SLE scores were submitted to a three-way (Subject Status X Stimulus Affect X Task) ANCOVA (see Table 9). The Status X Affect interaction effect was not significant ($F(6,168) = .63$; $p = .70$), nor were the main effects for Affect, Task, or Status.

A significant Status X Affect X Task interaction was revealed ($F(12,336) = 1.78$; $p < .05$). An analysis of the simple effects indicated that, for the Expression / Context Pairs labeling task, Aggressive children were more likely to use the Neutral label than were Withdrawn children.

Additional Exploratory Analyses

Since systematic biases in processing were not apparent in the interaction-style groups identified by teachers, exploratory analyses were initiated to determine whether such biases could be found on the basis of the experimental task data alone, without regard to interaction style. To this end, individual subject response distributions for the labeling tasks were examined and each subject was assigned to one of five groups: Happy Bias, Sad Bias, Mad Bias, Neutral Bias, or No Bias. The criterion for determining the presence of bias was based on a chi-square analysis of the number of

Table 9. Stimulus Labeling Errors (SLE) Mean Scores

Task 1	Aggressive	Withdrawn	Well-Adjusted
Happy	2.05 (1.67)	2.75 (2.67)	3.00 (2.18)
Sad	3.00 (2.53)	3.60 (2.21)	4.00 (2.49)
Mad	3.25 (2.99)	3.85 (2.50)	2.25 (1.89)
Neutral	1.90 (2.45)	1.15 (1.69)	1.25 (2.00)

Task 2	Aggressive	Withdrawn	Well-Adjusted
Happy	2.95 (2.01)	2.45 (1.82)	3.05 (1.67)
Sad	1.85 (1.81)	2.00 (1.45)	1.85 (1.60)
Mad	2.65 (2.39)	2.75 (2.51)	2.15 (1.57)
Neutral	1.25 (1.77)	1.90 (2.17)	1.10 (1.25)

Task 3	Aggressive	Withdrawn	Well-Adjusted
Happy	2.20 (2.09)	3.25 (2.36)	2.35 (1.60)
Sad	2.20 (2.09)	1.90 (1.37)	3.10 (1.92)
Mad	2.15 (2.11)	2.40 (2.76)	1.65 (2.32)
Neutral	2.25 (2.43)	0.80 (1.24)	1.55 (1.61)

Note: Standard deviations in parentheses

responses in any one category needed to exceed the critical value ($p = .05$) of the chi-square distribution; on the basis of this computation, it was discovered that if 21 or more of the 48 labeling

responses included in the three labeling tasks fell into one affect category, the chi-square test was significant, i.e., observed cell values differed significantly from the expected values.

Using the criterion so obtained, 35 of the subjects were determined to display an identifiable labeling bias: 13 for the Happy label (five popular status, three aggressive, five withdrawn), 9 for Mad (one popular, four aggressive, four withdrawn), 10 for Sad (six popular, three aggressive, one withdrawn), and 3 for Neutral. The remaining 25 did not exceed the critical valued required to warrant a designation of bias.

In additional exploratory analyses, the three emotion-bias groups (Happy, Sad, and Mad) were compared on a variety of descriptive measures. Neutral bias subjects were not included because they hold less interest conceptually, and because the size of the group was so small. ANOVAs indicated that the bias groups did not differ on demographic variables (age, number of siblings, mother's level of education), on-task scores, or CBCL scores. Nor was membership in the bias groups associated with teacher nominated status, gender, or number of parents in the home (as tested by chi- square analyses). ANOVAs and SNK means comparisons indicated that the groups did, however, differ with regard to level of developmental maturity; children with a Sad bias consistently, though not significantly in all cases, scored higher than the other two groups on each of the CDP subscales (see Table 10). Finally, ANOVAs indicated that the groups did not differ with regard to overall encoding accuracy or encoding accuracy by stimulus affect.

Table 10. Carolina Developmental Profile Scores: Mean Number of Items Passed

	H	S	M	Means Comparisons
Gross Motor	13.85	17.90	13.33	S > H,M
Fine Motor	10.77	12.00	10.89	ns
Visual Perception	8.46	9.80	9.00	ns
Reasoning	5.85	8.90	6.11	S > H,M
Receptive Language	8.61	9.90	8.56	ns
Expressive Language	9.31	10.90	8.56	ns
Social-Emotional	13.31	14.50	11.33	S > M

Note 1: H = Happy Bias, S = Sad Bias, M = Mad Bias

Discussion

The findings of the present study with regard to the hypothesized interactions between teacher-nominated subject status and stimulus affect were largely negative. While a significant Status X Affect interaction effect was detected on one of the five variables of interest, none of the predicted differences across status groups within the Sad and Mad Affect stimuli were detected. The finding that Aggressive children were more accurate for emotional stimuli (Happy, Sad, and Mad) than for Neutral stimuli, while Well-adjusted and Withdrawn children showed no such differences was of limited interest with regard to the primary hypotheses of the present study.

Several explanations might be offered for this absence of support for the hypotheses of bias in social information encoding and labeling. One such explanation is that the biases in SIP, associated with an aggressive interaction style and observed in older children, simply may not occur in the pre-school age population. The findings reported above, however, call into question such a conclusion and suggest that biases do exist and can be detected; what is lacking in the present data is any association between SIP biases and social interaction style variables.

It is difficult to integrate the variables which were associated with those biases, i.e., the CDP scores, into any meaningful conceptual scheme. Just why children who are not chronologically older, but

are developmentally more mature than their peers, should display a bias toward labeling social stimuli as Sad is not readily apparent.

A second possible explanation for the absence of predicted effects relates to characteristics of the subject sample. The present sample was made up largely of children of low SES families. The range of scores may have been restricted by this bias in sampling and the differences within the low SES group may not be sufficient to appear in a study such as this. One is tempted to call on this feature of the present sample to interpret the puzzling relationship between developmental maturity and a Sad bias; children who live in relatively deprived or, in some cases, chaotic surroundings, and who are also relatively advanced for their age, could be more aware of the environmental deficits they experience. Such an awareness might result in a tendency toward sad affect in these children and toward seeing sadness where their less mature peers do not.

An adequate test of the SES "restricted range" explanation would require sampling a classroom where low and middle SES children were present in the same group both because the nomination process is, to an extent, relative (i.e., children are undoubtedly compared to one another in deciding who is aggressive, withdrawn, and well- adjusted) and because interaction styles within a group are likely to evolve, based in part on the characteristics of the other members of the group. Thus, for example, a well-adjusted child in the present sample may display a more withdrawn style of peer-related behavior in a more homogenous group where (s)he is not perceived by peers and teachers as being one of the brightest and most likeable children.

These questions raise a larger issue which is related to subject characteristics; the data from the present study may be interpreted to call into question the validity of the teacher nomination process for preschool age children, particularly with regard to the withdrawn population. While there is considerable support for the process with older children, the use of teacher nominations at the preschool age has not been widely investigated. The present findings suggest that further validation of the nomination procedure is indicated before it is used extensively with preschool children.

In addition to the restriction of range which may have been present due to skewed SES represen-
tation, some of the more severely withdrawn children nominated for the study refused to participate
in the experimental tasks. In four cases, the extent of the child's social isolation and fearfulness
was such that they either refused to accompany the experimenter or refused to respond to the tasks.
Further, in each case, teachers reported that it was unlikely that the child would respond to the task,
even if it were presented by a familiar adult. These children were, by teacher report and exper-
imenter observation, the most severely withdrawn subjects in the sample. The withdrawn group
reported above, thus, clearly does not include the extremes of even this non-clinically identified
population. This fact supports the notion that the range of interaction disturbance seen in the
present sample may not have allowed for an adequate test of the hypotheses, at least for the with-
drawn children.

The restricted range of interaction disturbance raises the question of the extent to which interaction
style is stable in the preschool population, particularly in those children, like the majority of the
present sample, with less severe manifestations of problem behaviors. Indeed, three of the subjects
in the sample (two aggressive and one withdrawn) were reported by their teachers to have shown,
over the six months required to complete the present study, marked attenuation of the problems
for which they were initially nominated. Since there was, in some cases, as long as six months be-
tween teacher nomination and performance on the experimental tasks, stability of interaction style
becomes an important issue.

Further, the children were involved in an educational program aimed at encouraging adaptive social
responses and ameliorating behavior disturbances. Thus, changes in interaction behavior during the
course of the study may have occurred, not only due to random instability, but also due to the ef-
fects of schooling.

With regard to another issue associated with the question of stability of interaction style, there was
underlying the present study an assumption, implicit in the work of Dodge and colleagues, that SIP
biases were trait-like features. These cognitive biases have generally been described as though they

were stable across time, place, and person. An alternative interpretation suggests that these biases may be evident only when the child experiences particular emotional states or that different biases occur based on one's specific emotional state.

Carlson, Felleman, and Masters (1983) investigated just this relationship between emotional state and systematic biases in affect recognition. These authors employed an affect induction procedure and found that a sad emotional state did, in fact, produce a systematic bias; the direction of the bias, however, was not in favor of perceiving increased sadness as they had predicted, but rather in favor of perceiving increased anger. It appeared that the connection between emotional state and biases in affect recognition is present, but not as straightforward as might be thought.

In an attempt to assess the impact of the child's emotional state on task performance in the present study, the experimenter had noted subjects' apparent mood at the onset of each of the experimental task sessions. A forced choice of Happy, Sad, or Angry was used for the rating. The majority of the ratings were Happy (88 percent) while the remainder were Sad (12 percent). The absence of Angry ratings may be explained by the fact that subjects could choose not to participate at any given time; thus, if a child was angry, (s)he was likely to decline until another time, at which point the mood had changed. The frequency of Sad ratings on any one experimental task was so low as to preclude separate analyses based on emotional state; thus, the question of the impact of emotional state on SIP task performance remained unanswered with regard to the present findings.

The Carlson et al. (1983) findings that emotional state influenced biases appears to decrease the likelihood of finding an association between SIP biases and interaction style, except in extreme cases where the child was under the almost constant influence of a particular mood (e.g., severe depression), or in situations where the experimental tasks themselves induced an emotional state similar to that experienced in social situations.

With regard to the latter possibility, i.e., that some experimental tasks may induce an emotional state which influences SIP, Dodge and Frame (1982) reported that older aggressive children dem-

onstrated biases in SIP only when the emotional stimuli were directed at them (as opposed to observing those stimuli directed at a peer.) This effect may be most easily understood as a result of emotional states induced by personal involvement in stimulus situations and offers support for the notion that it is the emotional state which produces the SIP bias rather than a stable, cognitive feature. Another model might suggest that personal involvement alone produces biases (without hypothesizing the additional step of the induction of an emotional state) but an alternate mechanism for such a process is not readily apparent.

This suggestion that emotional state may lie at the root of the cognitive biases seen in older aggressive children is clearly at odds with the Dodge et al. (1986) model. As noted above, the model is based on an assumption of a relatively stable cognitive style which biases the processing of social information, without regard to emotional state. A "primacy of affect" hypothesis, on the other hand, has been advanced elsewhere (Zajonc 1980, 1984) and is not without empirical support. Nothing in the available SIP data allows a determination in favor of either position, however.

The stimuli presented in the present study were clearly not "personal" in the sense that the subjects were directly involved in the emotions portrayed, nor were they asked to imagine themselves so involved. In defense of the rationale for the present study, it was considered possible, and even likely, that this bias limited to "personal" stimuli in older children, was the result of a discrimination process which began, at a younger age, with a generalized bias in the processing of social stimuli without regard to their personal impact. It is conceivable, however, that the negative results of the present study are based, in part, on the fact that the stimuli did not demand the "personal" involvement of the subjects.

Another limiting feature of the present experimental tasks is that they were relatively static in nature, whereas real-time social contact is far more dynamic. The stimuli were presented and then a response was solicited; the children were not limited in the time allowed to respond nor were there competing stimuli present to draw on processing capacity. Such a task cannot hope to duplicate the complexity of the stimuli present in social interaction and may not place sufficient demands on

the SIP system to reveal biases. The Expression / Context Pairs condition was an effort to address this limitation and to increase the demands on the system but, even so, hardly approximates the complexity of real-time social interactions with peers.

Careful consideration of the emotion stimuli also raises a more conceptual question: given that the accuracy of affect recognition is, in some cases, relatively modest, are the inaccuracies better viewed as a result of imperfect stimuli or of biased perception? While the answer for any set of stimuli is likely to a combination of both influences, the question highlights an important issue in affect recognition research. While no absolute answer is possible at this time, it is incumbent on investigators to recognize the issue both in the selection of stimuli and in the interpretation of results.

Finally, it was of interest to note that, for those tasks which replicated Reichenbach and Masters' (1983) procedure, the data from the present sample did not in all cases replicate their findings. For example, they reported that Context stimuli alone were labeled more accurately than Expression stimuli alone. No such effect was noted in the present study, although the Context stimuli were expanded somewhat and, perhaps, made proportionally more difficult to label.

The differences, reported by Reichenbach and Masters (1983), in accuracy of stimulus labeling across affects (Happy > Sad > Mad > Neutral) were replicated but, as noted above, the effect was not significant when the subject's level of developmental maturity was included as a covariate. The Reichenbach and Masters study included both preschoolers and third graders and they did not specifically report whether the labeling accuracy effect obtained for both ages; consequently, it was difficult to determine whether the level of developmental maturity of their subjects influenced the effects which they reported.

Conclusion

The present study examined the extent to which preschool children reported to display different interaction styles also display biased processing of social, specifically emotional, information. Such biases did not emerge as expected. Seen against a background of literature in which SIP biases are associated with interactional style in older, aggressive children, the present research appears to raise more questions than it answers and suggests a variety of directions for future research.

Replication with slightly older subjects and with a more heterogenous sample with regard to SES would address two of the issues raised in the present discussion. Further, administration of the tasks to clinically identified populations would help in examining the question of the severity of disturbance required to produce biased processing. Exploration of more "personal", subject-directed stimuli, and stimuli which are more dynamic and thus more like genuine social contact, such as videotaped or role played interactions, may be fruitful as well.

Perhaps most potentially fruitful in terms of future research efforts, is the question of the impact of emotional state on processing biases. The present study, and the literature reviewed, offer hints that this area may be an illuminating issue to explore in further research.

References

Achenbach, T. M. & Edelbrock, C. S. (1981). Behavioral problems and competencies reported by parents of normal and disturbed children aged four through sixteen. *Monographs of the Society for Research in Child Development, 46*, (1, Serial No. 188).

Achenbach, T. M. & Edelbrock, C. S. (1983). *Manual for the child behavior checklist and revised child behavior profile.* Burlington, Vermont: University of Vermont, Child Psychiatry.

Cairns, R. B. (1979). *Social development: The origins and plasticity of interchanges.* San Francisco: W. H. Freeman & Company.

Carlson, C.R., Felleman, E.S., & Masters, J.C. (1983). Influence of children's emotional states on the recognition of emotion in peers and social motives to change another's emotional state. *Motivation and Emotion, 7*, 61-79.

Dodge, K. A. (1980). Social cognition and children's aggressive behavior. *Child Development, 51*, 162-170.

Dodge, K. A. & Frame, C. L. (1982). Social cognitive biases and deficits in aggressive boys. *Child Development, 53*, 620-635.

Dodge, K. A. & Newman, J. P. (1981). Biased decision-making processes in aggressive boys. *Journal of Abnormal Psychology, 90*, 375-379.

Dodge, K. A., Pettit, G. S., McClaskey, C. L., & Brown, M. M. (1986). Social competence in children. *Monographs of the Society for Research in Child Development, 51*, (2, Serial No. 213).

Felleman, E. S., Barden, R. C., Carlson, C. R., Rosenberg, L., & Masters, J. C. (1983). Children's and adult's recognition of spontaneous and posed emotional expressions in young children. *Developmental Psychology, 19*, 405-413.

Fischetti, M., Curran, J. P., and Wessberg, H. W. (1977). Sense of timing: A skill deficit in heterosexual-socially anxious males. *Behavior Modification, 1*, 179-194.

Girgus, J. S. & Wolf, J. (1975). Age changes in the ability to encode social cues. *Developmental Psychology, 11*, 118.

Gottman, J. M. (1986). Merging social cognition and social behavior. In K.A. Dodge, G.S. Pettit, C.L. McClaskey, & M.M. Brown, Social competence in children. *Monographs of the Society for Research in Child Development, 51,* (2, Serial No. 213).

Greenwood, C. R., Walker, H. M., Todd, N. M., & Hops, H. (1979). Selecting a cost-effective screening measure for the assessment of preschool social withdrawal. *Journal of Applied Behavior Analysis, 12,* 639-652.

Hamilton, M. L. (1973). Imitative behavior and expressive ability in facial expression of emotion. *Developmental Psychology, 8,* 138.

Knight, G. P., Dubro, A. F., & Chao, C-C. (1985). Information processing and the development of cooperative, competitive, and individualistic social values. *Developmental Psychology, 21,* 37-45.

Ledingham, J. E. (1981). Developmental patterns of aggressive and withdrawn behavior in childhood: A possible method for identifying preschizophrenics. *Journal of Abnormal Child Psychology, 9,* 1-22.

McFall, R. M. (1982). A review and reformulation of the concept of social skills. *Behavioral Assessment, 4,* 1-33.

Meikamp, J. A. (1985). Accuracy for decoding facial expression in mildly mentally handicapped and average intelligence children (Doctoral dissertation, Ball State University, 1984). *Dissertation Abstracts International, 45.*

Milich, R. & Dodge, K. A. (1984). Social information processing in child psychiatric populations. *Journal of Abnormal Child Psychology, 12,* 471-490.

Odom, R. D. & Lemond, C. M. (1972). Developmental differences in the perception and production of facial expressions. *Child Development, 43,* 359-369.

Ollendick, T. H., Oswald, D. P., & Francis, G. (1989). The validity of a teacher nomination procedure for identifying aggressive, withdrawn, and popular children. *Journal of Clinical Child Psychology, 18,* 221-229.

Pines, C. D. (1986). Facial expression of emotion decoding and encoding in emotionally disturbed and normal children and their mothers (Doctoral dissertation, Emory University, 1985). *Dissertation Abstracts International, 47,* 386-B.

Reichenbach, L. & Masters, J. C. (1983). Children's use of expressive and contextual cues in judgements of emotion. *Child Development, 54,* 993-1004.

Rosenhan, D. L., Underwood, B., & Moore, B. S. (1974). Affect moderates self-gratification and altruism. *Journal of Personality and Social Psychology, 30,* 546-552.

Shields, S. A. & Padawar, J. A. (1983). Children's standards for judging their own facial expressions of emotion. *Journal of Nonverbal Behavior, 8,* 109-125.

Wiggers, M. & van Lieshout, C. F. M. (1985). Development of recognition of emotions: Children's reliance on situational and facial expressive cues. *Developmental Psychology, 21,* 338-349.

Zajonc, R.B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist, 35,* 151- 175.

Zajonc, R.B. (1984). On the primacy of affect. *American Psychologist, 39,* 117-123.

Appendix A. Extended Literature Review

Introduction

Patterns of interactive behavior in children have been the focus of extensive investigative efforts within a variety of theoretical frameworks. In recent years, considerable attention has been given to a social cognitive approach to understanding children's interaction patterns.

While much research in the area of social cognition has been based on a structure-of-thought, or structuralist model, recent authors have been investigating the utility of information processing models for studying social interactions. Although the investigation of the processing of social information is far less advanced than its counterpart in cognitive psychology, there are indications that an information processing perspective may provide a useful model for understanding variations in children's abilities to interact competently.

In reference to this notion, Cairns (1979) stated:

> Human beings have the distinctive capabilities of being able to process information about another's activities, of responding, instantly, in ways that are immediately relevant to the other's acts, and of provoking counter-responses that support one's own activities. Accordingly, these properties may combine to make the actions of other persons the preferred basis for behavior organization. The range of synchrony that is observed in the child's behavior should then be determined by (1) the

child's ability to process information about other persons and to respond contingently and flexibly to their actions, and (2) these capabilities in the others with whom the child interacts (p. 305).

McFall (1982) elaborated on this idea, drawing on the information processing literature in cognitive psychology. He proposed that a judgement about an individual's competence at a social task is dependent on his or her facility with a variety of information processing skills by which incoming stimulus information is transformed into the behavioral programs which are evident in task performance. These information processing skills consist of what he called "decoding skills" (reception, perception, and interpretation), "decision skills" (response search, response test, response selection, repertoire search, and utility evaluation), and "encoding skills" (execution and self- monitoring).

Dodge, Pettit, McClaskey, and Brown (1986) applied the social information processing (SIP) model to social interaction competence in children. These authors propose a set of five major units of social interaction: (1) the presentation of social cues or stimuli; (2) information processing of those cues by the child; (3) the child's social behaviors that occur as a function of processing the cues; (4) judgements by peers about the child's behavior; and (5) peers' behavior toward the child.

Considerable research leading up to, and based upon, this model has focused on the second unit, the child's processing of social stimuli. Dodge et al. (1986) subdivided this unit into five processing steps: encoding, interpretation, response search, response evaluation, and enactment. As presented in this model, the encoding step consists of attention, sensation, and perception of cues. Interpretation involves the mental representation of the encoded cues and the application of a set of interpretive rules to derive meaning from them.

Similarities between this model and McFall's (1982) earlier formulation are apparent (and acknowledged); it should be noted, however, that the uses of the term "encoding" refer to very different stages of information processing. For the remainder of the present work, "encoding" will be employed in the sense used by Dodge et al. (1986) because the proposed research is based on the social information processing conceptual framework which has emerged from and guided the work of Dodge and his colleagues.

This social information processing model has been employed in the investigation of social cognitive differences between children with disturbing (primarily aggressive) behaviors and normative children in the middle childhood years. The present study proposed to pursue a similar objective with a preschool population with a narrowed focus on the first two processing steps, encoding and interpretation. More specifically, the goal of the proposed study was to identify preschool children who manifest different interactive behavior patterns and to determine whether the processing of social information, in this case information about the interaction partner's affect, distinguishes these groups. Specific predictions about those differences were made, based in part on the processing model, regarding the manner in which the social information is perceived, remembered, and labeled.

Background Literature Review

In reviewing the literature for related strands of research, the investigation of affect recognition in children emerged as an important precursor to the information processing model proposed by Dodge et al. (1986). As a result, a review of selected findings with regard to developmental sequences and individual differences in affect recognition is included below, with special attention to the procedures employed and their relation to an information processing framework. The connection between affect recognition research and the SIP model is based on two assumptions: (1) that the process by which the recognition of affect occurs may be broken down into steps describing how stimuli suggesting the presence of emotion are cognitively processed, and (2) that the processing of these "emotion" stimuli is an important component of social interchange.

Following this, a summary of the methodology and findings of several studies which have explicitly employed an information processing model to guide the research will be presented. A brief dis-

cussion of some of the conceptual and methodological issues associated with identifying groups of children with differing social interaction patterns will conclude the literature review section.

Affect Recognition: Developmental Studies

In the investigation of developmental progression in affect recognition, much attention has been given to the child's ability to accurately identify the affect expressed in others' facial expressions. Consistent support has been generated for the hypothesis that, in children, this ability increases with age.

Odom and Lemond (1972), for example, used three sets of facial expression photographs, each set consisting of portrayals of eight emotions (fear, anger, distress, shame, disgust, surprise, joy, and interest). Using four photos from one set as a standard, kindergarten and fifth-grade subjects were asked to match a comparison picture to one of the standards. In a second task, subjects were shown four emotion photos while listening to a short situation story. They were then asked to choose an expression photo which matched the situation. Fifth grade children were significantly more accurate than kindergartners at these discrimination tasks. No significant sex effect was found.

Hamilton (1973) used a procedure similar to the first Odom and Lemond task described above, with only six emotions. Subjects were drawn from nursery school, and second and fifth grades. Analyses by sex and grade level revealed significant increases in mean scores for this task across grade levels; again, no significant effect for sex was reported.

In a study reported by Shields and Padawer (1983), three-to- seven-year-old subjects were photographed posing four emotions (happy, sad, angry, and scared). Each was then presented with the four photos of him/herself and asked to "pick out the happy/sad/etc. face". Finally, children were asked to label the emotion in each photo. 69 percent of the sample could recognize the poses which were subsequently judged "accurate" portrayals of the specified emotion, and 55 percent could label

those they had recognized. Analysis of both recognition and labeling data revealed a significant main effect for age (younger versus older by median split) with the older group being more accurate on both tasks. There was no significant effect for sex.

These data clearly support the notion that children generally increase in accuracy at recognizing emotion as they grow older. Further, the absence of gender differences in affect recognition in early childhood appears to be a relatively robust finding.

The studies cited above also reveal some of the conceptual difficulties one encounters in attempting to integrate an information processing perspective and the findings of developmental studies. Because the emphasis of the research has been on the broad skill of affect recognition, the methodologies employed in the various studies do not allow us to clearly distinguish the component tasks of (1) perceiving the relevant stimuli and (2) labeling the stimulus complex. From an information processing perspective the distinction is critical if we are to understand the processes by which social information is received and acted upon.

The apparent problem with the first Odom and Lemond task, for example, is that it is not certain what must occur to successfully match emotion in two different faces. Clearly there is no direct visual image match between stimuli; success may require something like the following steps: encoding of the relevant components of the comparison and standard stimuli, placing each into a more general category (perhaps by internal labeling of the affect, e.g., "happy faces", "angry faces", etc.), and testing for a match between the two general categories. If such a process actually occurs, incorrect responses may follow (1) failure to attend to or accurately perceive the relevant stimulus components, (2) accurate perception but inaccurate (internal) labeling, or (3) accurate perception and labeling but failure to test the match correctly.

A similar problem exists for Odom and Lemond's second task, except that the "match" process is even more complex, requiring integration of the processing of visual (expression) and auditory (situation or context) stimuli.

Other efforts have endeavored to provide a more detailed analysis of the process of development of affect recognition. In a study reported by Girgus and Wolf (1975), children in four age groups (mean ages: 5.5, 7.4, 9.5, and 20.5 years) were asked to identify whether facial expression, movement pattern, and intonation were the same or different across a pair of filmed stylized animation episodes. A developmental trend of increasing accuracy was reported for the detection of "different" episodes, but no differences across age groups were found for "same" episodes. Recognition of differences in intonation was easiest, movement pattern the next easiest, and facial expression most difficult. However, the use of animation rather than photographs or videotaped stimuli, renders these findings difficult to interpret with regard to the recognition of emotion in real faces.

Reichenbach and Masters (1983) reported a study which compared preschoolers' and third graders' ability to judge emotion from a single source, expression or context. Children were shown a series of slides of facial expressions and were asked after each how the child felt. Possible emotional labels (happy, sad, mad, or just OK) were provided for the child to choose from. Similarly, for the context stimuli, a brief story was read and children were asked how the main character felt; again the possible emotion labels were provided. Somewhat surprisingly, these authors found that younger children were more accurate in recognizing happy and angry expressions or contexts while older children were more accurate for sad expressions or contexts.

In a second study, Reichenbach and Masters (1983) presented both a facial expression slide and a context story; sometimes the two stimuli were consonant and sometimes discrepant. Again, the subject was asked to say how the child felt. When given two sources of information, expressive cues and context, overall accuracy of judgement did not improve, except for consistent cues indicative of sadness.

The authors suggest that additional information may require integration of the two sources of information which the younger children, for the most part, did not perform, and thus failed to benefit from it. The fact that older children's accuracy was somewhat better than younger subjects with two sources of information supports this interpretation. In addition, younger children's judgements

tended to be more in agreement with expressive cues although they showed no significant preference for expressive or contextual cues. Older children, on the other hand, preferred contextual information.

Wiggers and van Lieshout (1985) examined 4- and 8-year-old girls' identification of emotion portrayed in videotaped episodes involving interaction between a child and a mother or father. Following each episode, subjects were asked: (1) how does the mother/father feel? (2) (given a choice of three labels, e.g., happy, angry, or just normal) how does the mother/father feel? (3) How can you tell that the mother/father is ____? (4) How does it come that the mother/father feels ____?

These authors considered simple versus complex emotions (happiness, sadness, anger, fear, and disgust versus surprise, shame, and contempt), reliance on situational versus expressive cues, and consonant versus discrepant cues (across situation and expression). Simple emotions were more easily recognized than complex emotions, and, the authors maintain, not just because of a lack of a label for the complex emotions. No clear preference for expressive or situational cues was detected when they were discrepant; the children relied on simple (rather than complex) emotion cue or on emotion (rather than neutral) cue, regardless of whether reflected in expression or situation.

Wiggers and van Lieshout (1985) reported a developmental progression from noticing only one type of cue to noticing both types of cues; for those who perceived both, references to types of cues became more accurate with age. Subjects relied more on situational cues when both types of cues conveyed simple emotions, but only when emotion labels were supplied. This finding increased in strength with age and reflects, according to the authors, not egocentrism, but an awareness that facial expression of emotions can be masked.

No greater reliance on more salient (i.e., more intense emotion) cues was detected. Wiggers and van Lieshout (1985) conclude that "the developmental processes of egocentrism- nonegocentrism and centration-decentration cannot be evaluated adequately by only examining the emotion inferences . . . Rather, an assessment of the cues perceived by the children is required" (p. 348).

The significance of both facial expression and situational context in affect recognition is borne out by these latter studies. Both sources of stimuli appear to contribute to the information available in social interchange. Thus, any effort to experimentally present the information found in social interchanges should include careful control of expression and context stimuli. Further, the data suggest a need to assess not only the interpretation or labeling process, but also the perception of social stimuli which are subsequently interpreted.

Accurate perception and interpretation of cues from both sources, intuitively, should result in social information processing that contributes to more successful interaction; the findings summarized above appear to support this intuition, but explicit testing of this hypothesis has not been conducted.

Affect Recognition: Individual Differences

Another approach to the investigation of affect recognition has been to assess specific subgroups of children with varying behavioral characteristics, with hypotheses of specific differences in recognition ability across subgroups. In what may be seen as an extension of the developmental trend studies, mental age has been found to be a significant determinant of affect recognition. For example, mildly mentally retarded children have been found to be less accurate than non-handicapped children at labeling the emotion in facial expressions presented with accompanying vignettes (Meikamp, 1985).

Other researchers have explored differences among groups defined by social behavior characteristics. Forsyth (1978) found differences in the way in which normal first-graders used facial features to make emotion (interest and fear) judgements. Children were shown pairs of schematic faces which differed in specific features and were asked "how interested" and "how afraid" the faces appeared to be, whether one face was more interested/afraid than the other, and, if so, how much more. Factor analysis of the resulting data produced five subgroups, subsequently re-combined into two

groups, one which used single features in making judgements and one which used multiple features in an interactive way.

Subjects were also rated by teachers on academic proficiency and on quality of social relationships. Those children who used more complex processing of features showed better academic performance and were more likely to be described by teachers as getting along well with others.

Pines (1986) reported that clinic-referred 6.5-9.5 year old children who were identified as having difficulty with social interaction were found to be less able to label facial expression (from posed photographs) than well-adjusted peers. Reichenbach and Masters (1983) also reported that children in their sample who came from disrupted families were more often inaccurate in their judgements of emotion than children from intact families. Further, the inaccuracies were not random but suggested systematic bias; children from disrupted families tended to judge others as feeling less happy and more angry and they resembled younger children in terms of reduced accuracy and lower agreement with contextual cues.

Consideration of these studies suggests alternate hypotheses. The Pines (1986) and Forsyth (1978) studies suggest that social interaction difficulties may be related to something akin to a developmental delay in affect recognition, i.e., a higher rate of inaccuracies or lower level of sophistication in cue utilization. The Reichenbach and Masters (1983) study introduces the notion that not only apparent developmental delay, but also deviance (i.e., bias toward more angry, less happy emotion labels) may be seen in the affect recognition processes of children who are at risk for problem behaviors, emphasizing the need for a careful analysis of inaccuracies. This apparent deviance or bias emerges again in the social information processing literature to which we turn next.

An Information Processing Model of Social Interchange

Early work with adults suggested that assessment of overt social behaviors alone at times fails to differentiate between socially proficient and maladroit persons. However, in these cases, more subtle differences may be detected in the ability to constantly monitor and respond to social interchange information. For example, Fischetti, Curran, and Wessberg (1977) found that focus on frequency of social behaviors alone did not distinguish between socially anxious and non-anxious groups. However, differences in the timing of social behaviors in socially anxious adults were an important predictor of their social skill deficits.

The process of social interaction is more than a simple execution of carefully rehearsed social behaviors; there appears to be an active processing of the social information to be found in such contacts which controls not only the initiation of social behaviors but also the more subtle features such as timing, intensity, and modulation of affect. In recent years interest has been generated in examining social interchange from an information processing perspective. An area that has been particularly fruitful is the study of social information processing in children.

Knight, Dubro, and Chao (1985) comment that there are developmental improvements in information processing capabilities in early childhood, the age range in which individual social decision-making differences have been found. "Thus these age differences in social decision making may, in part, be due to the differential information processing requirements associated with the particular social decisions and the development of information processing capabilities" (p. 37). The logic of this statement is basic to the rationale for the present study. Can we detect and measure differences in the information processing capabilities which tend to support successful interchange in preschoolers? Are there individual encoding and interpretation differences which are related to characteristic aggressive or withdrawn behavior patterns and which distinguish those who demonstrate such problems from normative children?

A program of research pursued by Dodge and colleagues and resulting in the presentation of a SIP model (Dodge et al., 1986) has provided the most extensive investigation of similar questions focusing on aggressive children in middle childhood.

Dodge (1980) exposed second, fourth, and sixth grade aggressive and non-aggressive boys to a situation in which a negative outcome was supposedly instigated by an unknown peer. The subjects heard the peer making statements which indicated hostile, benign, or ambiguous intent. Subsequently, the boys were given the opportunity to respond in a positive, hostile, or neutral fashion and to provide a positive or negative outcome to the peer. Hostile responses and initiating negative outcomes for the peer were interpreted as indicators or an attribution of hostile intent.

Dodge reported that aggressive and non-aggressive boys did not respond differently (indicating different attributions) given explicitly aggressive and benign stimuli. However, with ambiguous stimuli the aggressive children acted as if hostile intent were present while non-aggressive children acted as if benign intent were present.

In an attempt to examine attention to and retention of relevant cues as a part of the processing of social information, Dodge and Newman (1981) found, among kindergarten to fifth grade boys, that the amount of information solicited prior to making a determination about a peer's behavior increased with age and that aggressive boys solicited less information (like much younger, non-aggressives) before deciding. In addition, aggressive boys tended to recall more information depicting hostile behavior than did non-aggressives. However, they found that aggressive boys who did not respond quickly did not differ from non-aggressive groups in terms of hostile bias. These authors concluded that quick responding and selective recall are cognitive paths that lead to attributional bias in aggressive boys. Dodge and Frame (1982), on the other hand, failed to find a bias toward recall of hostile material in aggressive boys in a task which involved listening to videotaped interviews and recalling the information. While aggressive boys were less accurate in recognizing statements they had heard in the interviews, they were not biased toward hostile statements.

Milich and Dodge (1984) also found six-to-twelve year old hyperactive/aggressive boys to be deficient in attention to relevant social cues. They attended to fewer cues before making attributional decision, and they recalled fewer cues. They also showed a hostile attribution bias in the interpretation of cues. These authors conclude that both attentional difficulties and impulsivity were involved in these results.

Taken together, these studies support the notion that behavioral status (e.g., aggressive versus non-aggressive) is related to differences in social information processing in children. Another factor which emerges as contributing to these differences relates to the explicitness of the social stimuli; ambiguous stimuli are more likely to produce biased processing.

Why does this bias or deviance in processing occur? The SIP model suggests, and some empirical evidence has been marshalled to support, the notion that it is based on faulty encoding and interpretation of social cues. Due to some as yet unknown factor, when social cues, particularly those which are somewhat ambiguous, are perceived by aggressive children, they are judged to contain more components indicative of hostility than when those same cues are perceived by non-aggressive children.

There are, as yet, no data available regarding the question of social information processing deficits or biases in socially withdrawn populations. The present study sought to advance the understanding of SIP in children by considering this question.

In drawing on a social information processing model and the affect recognition literature, the present study sought to determine the extent to which biased encoding and interpretation processes may be detected in preschoolers responses to traditional affect recognition tasks. More specifically, such biases were explored in three behavioral subgroups of the preschool population: children with well-adjusted interaction patterns, those with predominantly aggressive interaction patterns and those with predominantly withdrawn interaction patterns.

The application of a SIP model to preschool children highlights a weakness noted by Gottman (1986) in his critique of the Dodge et al. (1986) paper. Gottman suggests that the model is not developmental and does not take into account the cognitive and social changes which occur throughout early and middle childhood. In examining preschoolers' behavior from an information processing perspective, there is the risk of promulgating that error. Merely reproducing the procedures used by Dodge and colleagues with pre-school-age children may result in exceeding the limits of those procedures and yielding uninterpretable results. Further, the question raised by Gottman (1986) of whether middle childhood youngsters actually go through the steps described in the SIP model is even more salient when the model is applied to preschoolers. In making such an application, what is required is the design of materials and procedures which succeed in tapping the stages of information processing of interest, which are carefully matched to the cognitive functioning of preschoolers and which relate more directly and explicitly to the processing of social information.

By drawing on and modifying assessment procedures which have been used successfully with pre-school children we have sought to accomplish these objectives and to increase the likelihood of a more fruitful outcome. The present study aimed to contribute to the elaboration of the SIP model by incorporating affect recognition tasks as one example of the processing of social information and to further test the model's utility by extending it to younger children and to a withdrawn population.

Identification of Interactive-Behavior Subgroups

A fundamental issue in the present research related to the understanding of different patterns of interactive behavior and manner in which the subgroups of children who manifest those patterns are identified.

Extensive research (e.g., Achenbach & Edelbrock, 1981) has produced evidence for the existence of two broad patterns of socially dysfunctional behavior in children. Frequently designated as "externalizing" and "internalizing", these categories appear to be distinct, robust, and potentially fruitful in predicting concurrent and future deficits in social interaction competence. Subgroups of these larger dysfunctional categories which have received significant amounts of attention at the preschool level include a group of children designated aggressive and a group designated withdrawn.

Teacher nomination procedures have been shown to be valid and cost-effective means of identifying problem subgroups of children. Greenwood, Walker, Todd, and Hops (1979) reported excellent convergence between a teacher ranking process and behavior observation procedures in identifying socially withdrawn preschoolers. Teacher nomination procedures identifying withdrawn and conduct problem children have been shown to be valid in that they identify groups of children who differ on sociometric, academic, self-report, and behavior observation measures (Green, Beck, Forehand, & Vosk, 1980; Ollendick, Oswald, & Francis, 1988). In view of these results, a teacher nomination procedure was proposed as the primary means of identifying, within participating classrooms, representatives of the three groups of interest: withdrawn, aggressive, and normative.

Appendix B. Teacher Nomination Form

Teacher _____   Center _____

All teachers have several children who are regular discipline problems. These children show their anger by such things as abusive language, pushing, hitting, fighting, and destroying property. These children's behavior may also involve less open acts of anger, such as taking other children's toys, making faces at someone, or trying to get others into trouble. Usually these are children with whom you've tried all kinds of discipline and sometimes it works and sometimes it doesn't. Please nominate up to two boys and two girls in your class who best fit this description.

    Boys   Girls

    _____   _____

    _____   _____

Another type of child regularly seen in classrooms is the withdrawn child. This child is shy and prefers to be alone most of the time. This child will seldom speak up for him/herself. If this child becomes the center of attention, he or she appears uncomfortable. This child avoids assuming any

type of leadership and may appear sad, fearful, and easy to offend. Please nominate up to two boys and two girls in your class who best fit this description.

Boys   Girls

_____   _____

_____   _____

Still another type of child regularly seen in the classroom is the well-adjusted child. This child is usually outgoing, friendly, and likes to be with other children. This child will usually speak up for him/herself and is oftentimes perceived by other children, as well as the teacher, to be a leader. This child usually appears happy and to be well-liked by the other children. Please nominate up to two boys and two girls in your class who best fit this description.

Boys   Girls

_____   _____

_____   _____

Appendix C. Parent Permission Form

Dear Parent,

Don Oswald, a graduate clinician in the Clinical Psychology program at Virginia Tech, is conducting a project at the Head Start centers which is intended to understand better some of the things that help preschool-age children play together successfully. He has asked that the Center Directors identify several children who fit descriptions of the different ways children play together (for example, those who tend to be aggressive in their play, those who tend to be more withdrawn, and those who are generally more successful). Those children identified by the Directors will then have the opportunity to participate in the project.

The project involves, first, gathering some additional information about the participating children and their families. Parents will be asked to complete an information form and to fill out a checklist, describing the kinds of things their child does at home. Center Directors will also complete the checklist and will provide Don with the results of the developmental testing done by Head Start.

Next, the children will be invited to participate in three testing session of about 20 minutes each. Each child will be asked to agree verbally to participate and may decline without any penalty or prejudice. The first session will involve photographs of children's faces which show happy, sad,

mad, and neutral expressions and stories about children which describe situations that would be associated with those same feelings. Participating children will look at a photograph and then pick it out of a set of four photographs of the same child; they will then listen to the stories and answer some questions about them.

In the second session, participating children will again look at the pictures and listen to the stories, this time saying how they think the child in the picture or story feels. Finally, in the third session, a picture and a story will be presented together, and the tasks will be the same as before: pick out the picture, answer the questions, and then tell how the child feels. Participating children will earn stickers and a certificate of appreciation for their cooperation in the project; they may also choose not to participate at any time.

All individually identifying information gathered as a part of this project will be considered confidential and will be available only to Don and to Head Start staff. When the results of the project are presented, no individually identifying information will be included and only group scores will be reported.

Your child has been chosen by the Center Director to participate in this project. If you are willing for your child to participate, please sign below and complete the information form. Should you choose not to allow your child to participate, the fact that he/she was selected for the project will be known only by the Center Director. You are free to withdraw your permission at any time without prejudice or penalty to yourself or your child.

This project has been approved by the Human Subjects Research Committee and the Institutional Review Board of Virginia Polytechnic Institute and State University. Questions regarding the project may be directed to your child's Center Director, Maureen Scigaj, Head Start Director (   ), Don Oswald, project coordinator (   ), or Dr. Helen Crawford, chair of the Human Subjects Committee   .

I hereby voluntarily agree to allow my child, _____, to participate in the research project described above and under the conditions described above.

_____

Parent/guardian signature

Child's date of birth _____

Number of brothers and sisters living in the home _____

Do the child's mother and father both live in the home? Yes   No

Highest grade in school completed: Mother _____   Father _____

Occupation: Mother _____   Father _____

Appendix D. Sample Context Stories and Encoding Accuracy Questions

Happy

All the children in Mary's class drew a picture. The children voted that Mary's was the best picture. Mary's picture had an airplane in it. Mary got a sticker for drawing the best picture.

What did all the children do?

Whose picture was voted best?

What was in Mary's picture?

What did Mary get for drawing the best picture?

Sad

John was flying a kit high up in the sky. He had flown it only once before. The kite had a long, green tail. The string on John's kite broke and the kite flew away for good.

What was John playing with?

How many times had he flown it before?

What color was the tail?

What happened to the kite?

Mad

Susan had a big balloon. She got it at her birthday party. When Susan wasn't looking, another child came over and grabbed the balloon. The child sat on it and popped it on purpose.

What did Susan have?

Where did she get the balloon?

When did the other child grab the balloon?

How did the other child pop the balloon?

Neutral

Robert had seen an old shoe lying in the street. He saw a dog go by and sniff it. Robert walked by the spot again after lunch and he saw that the shoe was still there.

What did Robert see lying in the street?

What went by and sniffed the shoe?

When did Robert walk by the spot again?

What did he see then?

The __7__ page vita has been removed from the scanned document

The vita has been removed from
the scanned document