

THE RELATIONSHIP BETWEEN VERBAL AND FACIAL MEASURES OF EMOTION,
AFFECT MATCH, AND EMPATHY IN TEN YEAR OLD FEMALES

by

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B. A. (Honors), Saint Francis Xavier University, 1987

THESIS SUBMITTED IN PARTIAL FULFILLMENT

OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in the Department

of

Psychology

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SIMON FRASER UNIVERSITY

October, 1991.

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of Emotion, Affect Match, and Empathy in Ten Year
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The Relationship Between Verbal and Facial Measures of Emotion,

Affect Match, and Empathy in Ten Year Old Females

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Abstract

The purpose of this study was to investigate the relationship between children's facially expressed and verbally reported emotion and empathy. The effects of a new button press procedure for recording emotional arousal were investigated. Specifically, relationships between the following measures were examined: (1) children's own facially displayed and verbally reported emotion; (2) the match between the emotion verbally reported for self and stimulus character; (3) the affect match between facially expressed emotion and the emotion reported for the stimulus character; (4) facial affect match scores and children's affective-cognitive empathy (EC scores); (5) social desirability scores and both affect match and empathy scores. Facial expressions of 60 female 10-year-olds were unobtrusively videotaped while they individually viewed six stimulus vignettes. Facial expressions were scored using AFFEX. Half of these subjects pressed buttons whenever they experienced an emotion while viewing stimuli; half served as controls. Post-viewing interviews assessed children's empathy and the match between children's reported emotion for themselves and stimulus characters. Children's response tendencies regarding social desirability were also assessed. Cramer's phi coefficient indicated medium effect magnitudes for the association between facially expressed and verbally reported emotion for each vignette; significant associations were found for 2 of 6 vignettes (depicting fear and happiness). Pearson Product Moment correlations indicated a significant relationship between verbal affect match scores and EC scores. No other correlations were significant. However, analyses of these same data analyzed using Cramer's phi coefficient resulted in significant associations between facial and verbal affect match scores for three of the six vignettes: the fear vignette, the sad vignette, and the happy vignette. Social desirability scores were unrelated to facial affect match, verbal affect match and children's empathy as assessed by the Empathy Continuum. A one-factor (button press/control) ANOVA, revealed no significant differences due to condition for any variables. Present findings are discussed in terms of comparable previous research, and the usefulness of facial measures in empathy research is considered.

Dedication

For my Father who told me to `Study hard'.

Acknowledgements

I would like to thank Dr. Janet Strayer and Dr. Elinor Ames for their support and assistance in the preparation of this thesis.

Thanks are also extended to Irene Gempton for her help with facial coding and to Richard Blackwell for his patient technical assistance.

Finally, I would like thank my family and friends for their patience and support throughout the duration of this thesis.

Table of Contents

Approval	ii
Abstract	iii
Dedication	iv
Acknowledgements	v
List of Tables	vii
Introduction	1
Method	15
Results	23
Button Press	31
Concordance between children's facial and verbal reports of their own emotion	31
Correlations between facial affect match scores, verbal affect match scores and EC scores	32
Concordance between facial affect match and verbal affect match	33
Social Desirability	38
Discussion	39
References	61
Appendix A. Parental Permission Form	91
Appendix B. Instructions to Subjects	94
Appendix C. Description of Televised Stimuli	96
Appendix D. Empathy Continuum Interview	98
Appendix E. Social Desirability Questionnaire	100
Appendix F. Facial Coding Segments for each Vignette	106
Appendix G. AFFEX Facial Codes	107

List of Tables

1. The Empathy Continuum Scoring System.	70
2. Omega squared (est. w^2) estimating the magnitude of effect for each variable as a function of condition (button press/control).	73
3. Children's verbal and facial responses across vignettes in terms of emotional valence.	74
4. Children's verbal reports and facial displays of specific emotions in response to individual vignettes.	75
5. Concordance between children's verbal and facial reports of their own emotion in response to individual vignettes.	78
6. Correlations between facial and verbal measures of affect match and empathy.	84
7. Concordance between children's verbal affect match scores and facial affect match scores.	85
8a. Concordance between children's verbal responses and the stimulus character's emotion.	89
8b. Concordance between children's facial displays of emotion and the emotion they report for the stimulus character.	90

Introduction

The major purpose of the present study was to examine two methods (verbal and facial) for assessing children's emotion and empathy. Although considerable discussion surrounds the definition of emotion (Lewis & Michalson, 1983; Lewis & Rosenblum, 1978), for the purposes of this study emotion was operationalized in two ways: (1) as children's self reported affect and (2) children's facial expression of affect.

Empathy, in accord with current views, (Hoffman, 1975) was defined as the sharing of affect that is more appropriate to another's situation than to one's own. Empathy was operationalized first in terms of affect match which was assessed by both verbal and facial measures. Affect match refers to an emotionally concordant verbal or facial response to a stimulus character's emotion. A second verbal measure assessed empathy in terms of both affect match and the cognitive mediation involved in children's reports permitting assessment of the degree to which children's affect matches were more or less other-person centered. Children's verbal reports and their facial displays of emotion were examined in response to videotapes of persons in emotionally evocative contexts.

A microanalytic technique for measuring facial expressions, AFFEX (Izard, Dougherty, & Hembree, 1983), was used to code children's facially expressed emotions while viewing stimulus vignettes. In conjunction with this facial measure, children's own verbally reported emotions and empathy to the same vignettes were scored using the Empathy Continuum (Strayer, 1989).

In addition to providing descriptive data on the extent of facial and verbal emotional responses to stimulus vignettes, a primary objective of the present research was to investigate the relationship between the facial and verbal measures in order to address two major questions:

- (1) How much do children's verbal reports of their own experienced emotion relate to objective facial measures of their emotional state?
- (2) Do children's verbal reports of affect match and affective-cognitive empathy relate to their inferred empathy based on the facial affect match measure?

Initially, the facial and verbal measures of children's own emotion will be discussed, followed by a discussion of the two measures as applied to children's affect match and empathy.

Facial and Verbal Reports of Participant's Own Emotion

The facial and verbal measures used in the present study are important to examine individually as indicators of children's emotion. As well, their relation to each other assesses whether children this age facially express the emotion they report experiencing.

Historically, researchers studying emotions have used physiological, facial and self report measures, but few studies have considered the relationship among these measures (Lewis and Michalson 1983). Among researchers who have considered this relationship there is disagreement concerning the interrelationship among facial, physiological and self report measures (Zuckerman, Klorman, Larrence & Spiegel, 1981).

Although extant data are equivocal, one reason for expecting a relationship comes from proponents of the facial feedback hypothesis (Laird, 1984; Lanzetta, Cartwright-Smith & Kleck, 1976; Tomkins, 1962, Zuckerman, Klorman, Larrence & Spiegel, 1981). These researchers suggest that facial expressions regulate the experience of emotion. This hypothesis has usually been tested using a paradigm wherein subjects in one condition are asked to inhibit their facial expressions and those in another condition are asked to exaggerate their facial expressions in response to slide sequences differing in affective content. A control group is given no instructions. Physiological measures and self reports of experienced emotions are then compared across the three groups. Findings have

demonstrated that manipulation of facial expressions results in augmentation (in the exaggerate expression condition) or attenuation (in the inhibit expression condition) of the emotional experience assessed by physiological and self report measures. Proponents of facial feedback theory predict a positive relationship between facial, physiological and self report measures of emotion.

Unlike facial feedback theories, the hydraulic theory of emotion (Buck, 1977; Buck, Miller, & Caul, 1974; Jones, 1935) suggests an inverse relationship between facial expressions of emotion and physiological measures of emotion. Proposed initially by Jones (1935), the model states that persons generally can be dichotomized into two groups. "Externalizers" show high facial expressiveness concomitant with low autonomic responses, whereas "internalizers" show low overt expressiveness and high autonomic arousal. In research testing this model, it has been demonstrated that subjects who verbally report and facially express emotion (externalizers) show lower physiological responses (i.e. skin conductance and heart rate) as compared to "internalizers" who do not verbally report or facially express emotion (Buck, 1977; Buck, Miller, & Caul, 1974; Notarius & Levenson, 1979). Although facial feedback theory and the hydraulic theory posit contradictory hypotheses concerning the relationship between facial and physiological measures both would predict a positive relationship between facial and self report measures.

In contrast to the facial feedback and hydraulic models of emotion, Schacter's theory of emotion (1964) stipulates that facial expression is the outcome, rather than the initiator, of emotional experience. It is *after* physiological arousal and cognitive analysis that emotion is expressed facially. The position of facial expression in the emotion experience sequence, however, is not relevant to the argument positing that there is a positive relationship between facial expression and verbal report measures of emotion.

Moreover, if one assumes facial expressions are an accurate depiction of emotional experience, adherents of Schacter's model of emotion would also expect a positive relationship between facial expression and self reports of emotion.

Most studies that have demonstrated a positive relationship between facial and verbal reports of emotion have used adult subjects. Given a developmental interest in whether any similar relationships to those found for adults would be obtained with children it is important to further examine this issue.

The aforementioned theories are based on the idea of biological, or in the case of Schacter, cognitive connectedness between facial expressions and emotional experience. Other theories of emotion focus on the social aspects of emotional displays. Lewis and Michalson (1983) who include socialization factors in their consideration of emotional development, stipulate that facial and verbal reports need not be congruent. They suggest the possibility of incongruence between facial expression and emotion experience as the result, for example, of learning display rules for particular emotions. They cite situations in which one may experience an emotion but feel it is inappropriate to express that emotion facially. Furthermore, one may express an emotion but deny the fact that one is experiencing it. According to such a model, no relationship need be expected between facial and verbal report measures.

Similarly, Campos, Barrett, Lamb, Goldsmith, and Sternberg (1983) suggest that in many cases the facial expression of emotion may not resemble the emotion being experienced. They contend that as a result of early socialization in the use of display rules it is only during early infancy that strong concordance between facial expressions and internal emotional state would be found. Thus, even if infants could report their emotions, verbal and facial data would likely be in agreement only in early infancy.

Additionally, research considering facial display rules suggests not only that verbal and facial measures need not be congruent but that concordance between verbal self report and facial expressions depends on the kind of emotion being experienced. For example, some researchers suggest that children may be more willing to facially express positive emotions than dysphoric emotions (Cole, 1986; Ekman & Friesen, 1975; Malatesta & Haviland, 1982; Saarni, 1984; 1985; 1989). Furthermore, dysphoric emotions are not only more likely to be masked but easier to mask as compared to positive emotions (Shennum & Bugental, 1982). Therefore, children in the present study may be less likely to facially express dysphoric emotions than positive emotions, even though they may be just as likely to verbally report both kinds of emotion.

Given the inconsistent findings and differing predictions based on theory, already discussed, there were insufficient grounds for a specific hypothesis concerning the relationship between children's verbal reports and facial expressions of their own emotions. In this study, children's facial expressions in response to stimulus vignettes were compared to their self reported emotion ("How did you feel while you were watching that story?"). Each measure provided information with respect to the kinds of emotions children facially display and verbally report in this context. Additionally, these two measures combined addressed whether there was concordance between children's facial and verbal reports.

Verbal and Facial Reports of Affect Match and Empathy

As well as considering the concordance between children's facial and verbal displays of their own emotion, the verbal and facial measures were also important to examine separately as measures of affect match and empathy. This was accomplished by examining the emotional concordance between children's reports of a stimulus character's emotions and both their facial displays and verbal reports of emotion.

Verbal report measures of affect match and empathy. Verbal report measures have been the predominant assessment tool used in the study of both children's and adults' empathy. Empathy in children typically has been studied using either self reported emotions to picture-story indices (Feshbach & Roe, 1968) or total scores on self report questionnaires (Bryant, 1982). More recently, the Empathy Continuum (Strayer, 1985; 1987) has provided a multidimensional affective-cognitive measure that assesses empathy using children's responses to emotionally evocative videotaped vignettes. Verbal self reports are necessary because they provide us with the child's subjective experience of emotion in response to another's emotion. Given that empathy relies on subjective experience, the subject provides the only valid source of this information (Strayer, 1987). This, however, does not mean that the information obtained from subjects is accurate, given the limitations to self report measures.

Some limitations of self report measures that need to be considered include children's verbal and introspective skills as well as possible demand characteristics of questionnaires or interviews. One of the most often noted sources relating to demand characteristics is possible social desirability influences on children's empathy reports. Some researchers have found a relationship between self report measures of empathy and social desirability in adults (Batson, Boelen, Cross, & Neuringer-Benefiel, 1986; Eisenberg, Miller, Schaller, Fabes, Fultz, Shell, & Shea, 1989) while others have not (Cialdini, Schaller, Houlihan, Arps, Fultz & Beaman, 1987; Davis, 1983; Mehrabian & Epstein, 1972). In general, no consistent relationship has been found between children's empathy and social desirability. For example, in one study, although a positive relationship was found between children's verbal reports and social desirability scores, this relationship was low and moderated by gender (Eisenberg, Schaller, Fabes, Bustamante, Mathy, Shell, & Rhodes, 1988). Findings from other studies have shown no relationship

between children's empathy and social desirability (Bryant, 1982; Chovil, 1985; Eisenberg, Fabes, Miller, Fultz, Shell, Mathy, & Reno, 1989).

In the present study, a social desirability questionnaire for children (Crandall, Crandall, & Katkovsky, 1965) was administered to assess the relationship between social desirability and children's verbally reported empathy. Given that the relationship between social desirability and verbal report measures of empathy is unclear, based on previous research, no specific hypotheses were generated concerning social desirability and children's verbal reports of empathy.

Another possible limitation of self report measures, especially for young children, concerns children's ability to label their emotions accurately in terms of adult usage. Strayer (1987) suggests that an affect match criterion using children's own plausible labels for a character's and their own emotion eliminates the demand that the child's emotion report fit the experimenter's label for a character's emotion. Previous research supports the idea that children's emotion labels are plausible, finding that children's reported emotions for characters are similar across ages (Strayer, 1989). Moreover, children's attributions regarding emotions and situations are also similar to the attributions that adults make (Barden, Zelco, Duncan & Masters, 1980; Fabes, Eisenberg, McCormick, & Wilson, 1988; Strayer, 1986).

In the present study the first focus with respect to the verbal measures was upon an affect match between a subject's own report of her experienced emotion and the emotion she reported for the stimulus character. This measure provided the verbal affect match scores. Secondly, Empathy Continuum (EC) scores focused upon the integration of affect and cognition in empathy. These two verbal measures were used because an affect match based on a simple report of emotion may be different from an affect match based on and integrating the cognitive appraisal of this emotion as it related to the stimulus (i.e., EC

scores). The importance of the first measure is recognized, as previous measures of children's empathy have relied on affect match directly (Feshbach & Roe, 1968). It also offers the most direct analog to the facial measure. The EC measure assesses empathy multidimensionally considering both affective and cognitive aspects of empathy.

Facial measures of affect match. The use of a facial index of empathy has been suggested by researchers in recognition of the possible limitations in verbal report measures (Hoffman, 1982; Marcus, 1987). In its own right, a measure of facial expression provides information regarding emotional arousal and permits a nonverbal measure of empathy to the extent that the particular emotion aroused is congruent or incongruent with the emotion reported for a stimulus character.

Emotions can be measured reliably using microanalytic measures of facial expression (Izard, 1977; Ekman & Friesen, 1975). Such measures ensure accurate and objective scoring of emotions that may be involuntarily as well as voluntarily expressed. This somatic index of responsivity is somewhat analogous to a physiological measure of arousal, but it has greater emotional specificity. In this sense, facial microanalysis provides a reflection of which emotions may be present in the individual, regardless of his/her ability to identify them (Lewis & Michalson, 1983). Children's facially coded emotions will be used to assess the kinds of emotion displayed in response to stimulus vignettes. As well, facial affect match scores will index the affect match between the child's facially expressed emotion and the emotion they report for the stimulus character.

Facial measures, however sophisticated, are not measures of emotional "experience". Individuals must make sense of what they feel, and their own experience of emotion entails cognitive mediation, involving not only reports of what they feel but also their attributions for their feelings (Lewis & Michalson, 1983; Strayer, 1987). Verbal measures are needed to index this.

Although facial expressions may provide a useful addition to research on empathy, facial expressions may not always validly indicate one's emotional state. That is, facial expression may be used to dissimulate an individual's emotional state (Ekman & Friesen, 1975). Saarni's (1982; 1984; 1989) research on socialization of emotional display rules suggests that children learn that particular feelings like anger, fear and distress are "unacceptable" and that by not showing or by masking these feelings they avoid disapproval from others. The use of display rules may limit the usefulness of facial measures of affect match in this context.

Facial expressions of emotion and affect match, not unlike verbal report measures, may be susceptible to social desirability effects, especially in older children. This suggestion is based on findings using Saarni's "disappointment paradigm" (Saarni, 1984; Cole, 1986) wherein children's facial expressions are recorded in response to receiving a disappointing gift. Saarni found that ten year old children masked their disappointment with positive facial expressions of emotion when receiving an inappropriate gift. This behavior indicates children's awareness of the socially appropriate way to respond to receiving a gift. Therefore, in the present study, social desirability concerns may induce children to facially display more or less "emotion" than they are actually experiencing.

The Relationship between Verbal and Facial Measures of Affect Match and Empathy

As well as considering verbal and facial measures of affect match and empathy individually, investigating the relationship between these two measures provides useful validation information for researchers interested in using facial measures of empathy.

Validity. The validity of facial measures of empathy needs to be established by investigating their relationship with other measures of empathy, including verbal report measures. This is the focus in the present study. This is not unreasonable considering that systems for coding facial expressions of emotion (Izard, 1983; Ekman & Friesen, 1975;

Ekman, Friesen, & Ancoli, 1980; Ekman, Friesen, & Ellsworth, 1982) have relied on judges' verbal labels for facial expressions of emotion in order to validate their facial coding systems.

Although more research is needed to validate the construct of empathy as measured by verbal report, a small nomological network has developed wherein studies are providing concurrent and discriminant validity for verbal measures of affect match and empathy. As a result, it is reasonable to address the validity of facial measures by means of the relationship obtained between facial measures on the one hand and similar verbal measures on the other. Given that facial measures are relatively new in empathy research, it also seems reasonable to validate their use against verbal self report measures of empathy.

However, construct validity has yet to be firmly established for verbal report measures of empathy. This is the result of the different methodologies and operationalizations of empathy used across studies (Eisenberg & Miller, 1987). Given that the verbal affect match measure used in the present study is most similar to Feshbach and Roe's (1968) Affective Situations Test for Empathy (FASTE), it is appropriate to consider the validity of the FASTE measure. The FASTE assesses empathy as an affect match between self reported emotion and a story character's emotion. Some evidence of convergent validity has been demonstrated for the FASTE measure. Bryant (1983) reports positive correlations between children's scores on her empathy questionnaire and their scores on the FASTE measure. Providing discriminant validity for the FASTE measure, Kutchenbecker (1976; as cited in Feshbach (1968)) found 4-5 and 7-8 year-olds' scores on the FASTE measure were negatively correlated with hostile verbal and facial responses. Furthermore, Feshbach and Feshbach (1969) assessed the relationship between children's scores on the FASTE and teachers' ratings of aggression. Although 4-5 year olds' empathy (FASTE) and aggression scores were positively related, an inverse relationship

between these measures was demonstrated for 6-7 year olds. Similarly, Sawin (1979) reported an inverse relationship between boys' empathy to negative affect in peers and their levels of aggressive behavior. Concurrent validity has also been demonstrated for the FASTE measure. Marcus, Roke and Bruner (1985) found elementary school children's FASTE scores correlated positively with teachers' rating of children's cooperativeness among boys. Additionally, ratings of preschoolers' cooperation has been significantly related to their FASTE scores (Marcus, Telleen, & Roke, 1979). However, little predictive validity has been demonstrated for the FASTE measure. FASTE scores in most studies are not related to measures of prosocial behavior (Eisenberg & Miller, 1987; Lennon, Eisenberg & Carroll, 1986; Underwood & Moore, 1982). Sawin (1979), however, found that first graders' scores on the subscales of the FASTE (empathic sadness), rather than their total FASTE scores, predicted greater sharing with a less fortunate peer. Given that, theoretically, empathy is considered a motivator of prosocial behavior (Hoffman, 1981) this lack of predictive validity creates a problem for affect match measures of empathy.

Recent research, however, using the Empathy Continuum, demonstrates positive relationships between EC scores and prosocial behavior. Strayer and Schroeder (1989) found a significant positive relationship between children's scores on the EC and their willingness to help a stimulus character. Similarly, Poole (1991) found a positive relationship between children's scores on the EC and their prosocial behavior. Studies establishing the construct validity of the Empathy Continuum are continuing. Cohen (1991) found that conduct-disordered adolescents scored lower on the Empathy Continuum than did normal controls. Convergent validity between the EC and scores on the Bryant questionnaire have also been found. Cohen (1991) found a significant relationship ($r = .45, p < .05$) between adolescents' scores on Strayer's Empathy Continuum and Bryant's questionnaire. Similarly, Strayer (personal communication) obtained a significant

correlation between the Empathy Continuum and sympathy items on the Bryant. In summary, there is evidence of both predictive and convergent validity for the Empathy Continuum measure.

Having argued that it is reasonable to validate facial measures of affect match against verbal measures of affect match and empathy, it is important to review previous findings regarding the relationship between verbal and facial measures of children's empathy.

Research findings are inconsistent concerning the relationship between verbal and facial measures of empathy (Eisenberg, Fabes, Schaller, & Miller, 1989). In two studies, preschoolers' facial responses while being administered the Feshbach picture/story index (FASTE) were unrelated to their FASTE scores (Lennon, Eisenberg & Carroll, 1986; Marcus, Roke & Bruner, 1985). These findings more likely reflect the context in which the FASTE is administered rather than the relationship between verbal and facial affect match measures. That is, children's facial responses are coded while an experimenter is telling them a story about a picture. It is unlikely that these hypothetical stories would elicit sufficient facial affect from children (Eisenberg & Miller, 1987). Rather, it is more likely that children in this situation would display positive emotions as a result of the social interaction with the experimenter.

In other studies, wherein more evocative, realistic stimuli have been used, however, positive relationships have been found between children's verbal and facial empathic responses. Eisenberg, Fabes et al. (1988), using televised stimuli, found significant relationships between 4- and 7-year-olds' verbal reports of fear and their facial displays of gaze aversion in response to an anxiety film, and between their verbal reports and facial displays of sadness in response to a sympathy film. However, they found no significant relationship between children's verbal and facial displays of sadness in response

to a sad vignette. In another study, using adults, second grade, and fifth grade children Eisenberg, Fabes, Miller et al.,(1989) found few significant relationships between verbal and facial measures for either adults or the older children. For the younger children, however, facial sadness was positively related to their reports of negative mood, and facial displays of sympathy were inversely related to their reports of positive affect.

Additionally, Fabes, Eisenberg & Miller (1990) found a positive relationship between 2nd and 5th grade girls' verbal and facial reports of vicarious happiness. However, no other relationships were demonstrated between verbal and facial measures.

Other researchers have not found a relationship between verbal and facial measures of empathy. Eisenberg, McCreath & Ahn (1988) found no relationship between preschoolers' verbal and facial reports of anxiety or sadness. In addition, Peraino & Sawin (1981; as cited in Underwood & Moore, 1982) found that children's verbal responses to distressing televised material were unrelated to their facial expressions of emotion.

One explanation for the inconsistent findings may lie in the facial measures of affect match employed. None of these studies have relied exclusively on established microanalytic coding systems for measuring facial expressions. Many have used more general methods of scoring emotional valence or have relied on intensity measures of particular emotions (Eisenberg, Fabes et al., 1988; Lennon, Eisenberg & Carroll, 1986; Marcus, Roke, & Bruner 1985; Strayer, 1983). In the present study, it is more likely that, by using microanalytic techniques for the coding of facial expressions, a positive relationship will be found between children's verbal affect match scores and their facial affect match scores.

The Impact of Button Press Instructions on Verbal and Facial Affect Match and Empathy

The present study employed a button press condition in which subjects identified locations in the stimulus vignette that were emotionally arousing and that might have

contributed to their empathy. Subjects in this condition were given instructions to press a button if and when they felt an emotion during the viewing of emotionally evocative vignettes. A control group was given no button press instructions. This provided an exact index of emotion, unlike previous measures that have relied on subjects' summary responses. More particularly, for facial coding purposes, it seemed more appropriate to rely on subjects' own identification of the arousing segments rather than on what an experimenter inferred to be the most emotionally evocative segments of the videotape.

The button press procedure might have an impact on subjects' experience of emotions and empathy. That is, button press instructions might result in subjects' increased focus on the emotional content of the stimuli, which in turn might lead to an increase in empathic responding. Alternatively, it is possible that requiring subjects to press a button might interfere with attention to the emotional content of the vignettes, resulting in a decrease in empathic responding. Because the button press procedure was simple and nondemanding, it was not expected to interfere with attending. It was hypothesized that button press instructions would result in an increased focus on the emotional content of the vignette, leading to higher scores on both the verbal and facial measures of affect match and empathy as compared to the "no button press" condition.

In summary, the issues and hypotheses of the present study are outlined as follows:

Concordance Between Self Reports and Facial Expression of Own Emotions

These measures were examined in order to explore possible concordance between facial and verbal reports of emotion among children of this age group, and to assess whether such concordance between measures was a function of the particular emotion being depicted. Proposal of a specific hypothesis seemed premature given existing data and differing theories.

Button Press

Given that the button press condition focuses attention on emotional content, it was expected to result in greater empathic responding. Therefore, empathy as measured by both verbal and facial affect match and by the EC should be higher in the button press condition than in the control condition.

Affect Match and Empathy

Given that facial affect match can be used as a measure to infer empathy, facial affect match should have a positive relationship with both verbal affect match and Empathy Continuum scores.

Social Desirability

Social desirability was investigated as a factor possibly implicated in scores for facial affect match, verbal affect match and empathy (EC scores). No relationships were expected.

Method

Subjects

Sixty Grade 5 children ($M = 10.2$ years; range 9 to 11 years) were recruited from elementary schools in the Burnaby area and from children's summer camps at Simon Fraser University. The experimenter gave a brief talk to classes explaining the procedure to children, but not the purpose of the study. Any children who were interested in participating were given a sealed information and consent letter for their parents to sign. The experimenter returned a week later to retrieve the parental permission forms. Parents were then contacted by phone to set up an appointment for their child's participation. Children were paid \$5.00 for their participation.

Grade 5 children were chosen as representative of a fairly stable period in middle childhood during which cognitive developments are consolidated in concrete operations (Dworetzky, 1987) and there is a growing interest in and ability to verbalize social cognitions involving others (Selman, 1980). Therefore, this age was considered a useful starting point for the investigation of how facial expressions of emotion may relate to verbal reports of emotion and empathy. Only one sex was studied in order to maximize statistical power in each cell. Females were chosen because previous research findings suggested that, when there is a sex difference, females report more emotions and empathy than do males (Eisenberg & Lennon, 1983; Strayer, 1985) and also tend to be more facially expressive (Buck, Miller, & Caul, 1974; Eisenberg et al., 1988).

Parents provided written permission (see Appendix A) for their children to participate in this study and to be videotaped while viewing stimuli without being informed of this. The latter was necessary in order to minimize possible self-consciousness regarding facially expressed emotion in response to stimuli. Children were debriefed regarding the videotaping at the end of the experiment.

Equipment, Materials and Procedure

Participants were tested individually in a research lounge at the university by a female experimenter. Prior to testing, the experimenter interacted pleasantly with each child for approximately five minutes in order to dispel any discomfort children may have had as a result of the unfamiliar context. Participants were seated in a comfortable chair approximately six feet from the television screen.

Filming of participants' faces was done as unobtrusively as possible from a videocamera with zoom lens mounted on the ceiling opposite the child. All videotaping and remote camera equipment was stored in a separate room. Taping of participants' faces began with the onset of the stimulus films.

Instructions (see Appendix B) to participants explained that we were interested in children's and young people's reaction to people and events. Participants were told that they would be viewing short films and that they would be asked about their reactions to these films.

A short cartoon was presented prior to the stimuli in order to permit children to settle into their viewing of stimulus tapes. Six emotionally evocative vignettes on videotape were presented to each child in the same order. The vignettes replicated those used by Strayer (1985). A brief description of their content is presented in Appendix C.

The main theme of each vignette predominantly displayed one or two of four emotions: happy, sad, angry, and afraid. Videotaped vignettes represent more ecologically valid stimuli than do slides and/or stories (Strayer, 1987). In comparison to picture/story narratives or slide sequences used previously (Feshbach & Roe, 1968), these dramatic interactions were expected to increase children's involvement as a result of their familiarity with and interest in televised material (Marcus, 1987).

A hand held "Button Press" mechanism was shown to the children in the button press condition. It entailed a small 2 inch cylinder, easily held in the palm of the hand, with a small black button on its top, over which the subject's thumb was placed. Subjects pressed the button with the thumb of their preferred hand. Children in the "Button Press" condition were instructed to press the button any time that they felt an emotion during the vignettes (see Appendix B). Subjects were assured that they might not feel any emotions and that they should only press the button if they did. Children were asked to repeat their understanding of the button press instructions, and all repetitions indicated correct understanding. Button presses were time-locked to the videotape recording participants' facial expressions. That is, the button press mechanism was connected to one of the audio channels of the VCR which recorded the child's facial expressions. Each time a child

pressed a button, a "beep" was recorded on the audio channel of the videotape. This beep was inaudible to subject children.

After answering any questions, and letting the subject know she could be reached nearby if needed, the experimenter left the room. Participants were alone in the room when they viewed the vignettes in order to decrease any social demands on facial expressiveness or masking of facial expressions (Yarczower & Daruns, 1982).

Immediately after the stimuli had been viewed the experimenter re-entered the room. At this time the Empathy Continuum interview (see Appendix D) was administered to the subject. Prior to the questions for each vignette, children were shown a photograph of a scene from each story, to ensure they recalled the vignette. In this interview participants were asked, for each vignette, to identify the emotion (including neutral or "O.K.", "fine") they felt most often and most strongly, the intensity of any non-neutral emotion (1 = a little, 2 = a lot), and their reasons for their emotions. Participants were similarly asked to report how the main character in each vignette felt and the intensity of the character's emotion. Scoring of this interview and of facial expressions is presented in subsequent sections.

Following the EC interview participants completed the Social Desirability Questionnaire for Children (see Appendix E) by Crandall, Crandall, and Katkovsky (1965). These authors report good reliabilities for this measure: the corrected split-half reliability coefficients for both boys and girls at various age levels range from .82 to .90; the test-retest reliability over a 1-month interval is .90.

The entire procedure took approximately one hour to complete and all children participated in the entire procedure.

Coding of Facial Expressions

Microanalytic coding of each subject's facial expressions while viewing the stimuli focused on the segment of each vignette, described in Appendix F, where the largest

percentage (mean percentage = 44%) of participants pressed a button. Such segments indicate emotional involvement in response to the stimuli presented. Coding began 5 seconds prior to these identified locations and continued to the end of each vignette. The same coding segments were used for participants in the button press and control conditions.

Facial expressions were coded using the AFFEX system developed by Izard, Dougherty & Hembree (1983). AFFEX considers only those facial movements that indicate affect, unlike other systems designed to code all facial movements (Ekman & Friesen, 1975). Therefore, it is more efficient and less labor intensive for addressing the concerns of the present study. AFFEX was developed from the original MAX coding system (Izard, 1979), in which facial movements are coded separately for three major facial regions reviewed sequentially. With AFFEX, coders trained to use MAX simultaneously code the three facial regions. AFFEX is able to identify eight fundamental emotion expressions (interest, joy, surprise, sadness, anger, disgust, contempt, fear) and can be used in testing from infancy through adulthood (Izard et al., 1983). In addition, a facial code of gaze aversion, used by Eisenberg, Fabes, et al. (1988) was integrated into the present coding system. Examples of the AFFEX codes used are presented in Appendix G.

Two coders, initially trained in using both MAX and AFFEX to Izard's (1983) criterion of at least 80% inter-rater agreement, subsequently coded the facial data. Coders, using a shuttle switch, shuttled through the specified segments of videotape at a rate of one hundredths of a second. Any appearance changes in the face were coded. In addition to percent agreement, Kappa coefficients (Cohen, 1960) were also computed as indices of inter-rater agreement on present data. A random selection of 10 complete videotapes from the total sample of videotapes was analyzed for reliability. Percent agreement between coders was 81% and mean Kappa = .77.

Verbal Measures of Emotion, Affect Match, and Empathy

Interviews were conducted after all stimulus material had been viewed. At the outset of each vignette's interview subjects were asked briefly to tell the experimenter what had happened in the story. This ensured that all children had attended to and understood the vignettes.

Self reported emotion for each vignette was coded categorically as happy, surprised, angry, afraid, sad or worried/concerned based upon children's report of the one emotion they felt the most during each vignette. These self reports of emotion provided information with respect to the kinds of emotion verbally reported as experienced by subjects for each vignette, and were also used in scoring for affect match between the child's and the character's reported emotion.

Scores for verbal affect match were based on the degree of match in kind and intensity (1 = a little; 2 = a lot) of emotion between a child's verbal report for herself and for the stimulus character in each vignette. Verbal affect match was scored as: 3 = same emotion, same intensity of emotion reported for self and stimulus character; 2 = same emotion reported for self and stimulus character but different intensity of emotion; 1 = any emotion reported for the self similar in valence to an emotion reported for the stimulus character (e.g., sad and angry); 0 = accurate emotion reported for character but no, or discordant, emotion reported for self. These scores were summed across all 6 vignettes to yield a total verbal affect match score for each subject.

In addition to affect match, which has been used to infer empathy in previous research (Feshbach & Roe, 1968), an emotional-cognitive (EC) empathy score was used. This affective-cognitive system of scoring (Strayer, 1989) is described in Table 1.

Insert Table 1 about here

Although affective responding remains the basis for deciding whether empathy may have been experienced, the EC system is based on developmental models positing increasingly other-person-focussed affective responses with age (Feshbach, 1975; Hoffman, 1975; Strayer, 1987). The Empathy Continuum scores empathy in terms of three degrees of affective match (scored as reported above) organized repeatedly at six progressively more complex levels of cognitive mediation (Strayer, 1987). The attribution a subject gives for her reported emotion during each vignette is used to assess the cognitive mediation involved in empathic responding. EC scores for each vignette can range from 0 to 19. These scores were summed across vignettes yielding one total EC score for each subject. All EC interviews were transcribed and scored by the experimenter. Twenty-five percent (12 complete interviews) of these data were scored by a second coder. Percent agreement was 87.5%; Kappa = .78.

Facial Measures of Emotion and Affect Match

In addition to the verbal measures of children's emotion and affect match just described, these two variables were assessed using facial expression data. Facial expressions for each vignette were coded categorically as interest, happy, surprised, angry, afraid, sad, and gaze aversion. If any facial expression of emotion was coded during the designated coding segment for each vignette this emotion was used for comparison with the verbal self report of emotion. If more than one facial expression of emotion was coded the facial expression that most closely matched the child's verbal report of her own emotion was used.

Correspondence of Facially Coded Emotions and Own Self-Reported Emotion

The correspondence of each child's facially expressed emotion with her self-reported emotion was examined in order to assess their relationship. Contingency tables for each vignette were used to assess the match between participants' verbal reports of their own emotion against their facially expressed emotion. Cramer's phi was used as a statistical measure of association between children's verbal reports of their own emotion and their facial expressions of emotion for each vignette.

Correspondence of Facially Coded Emotion and Character's Emotion

The second facial measure is termed facial affect match. Facial affect match refers to the correspondence between the child's facial expression and the character's emotion as identified by the child. This measure is a nonverbal index of affect match similar to the verbal affect match measure, already described.

Facial affect match was assessed as follows. If subjects showed any facial expression of emotion during the coding segment of each vignette where the most participants had pressed a button (see Appendix F), this expression was compared to subject's report of the stimulus character's emotion for that vignette. If subjects facially expressed more than one emotion, the emotion that matched most closely with their report of the character's emotion was used for analysis. These facial affect match scores were coded as: 2 = exact match between facial expression of emotion and character's reported emotion ; 1 = similar valence between facial expression of emotion and character's reported emotion; 0 = accurate emotion reported for character but no emotion or discordant emotion facially expressed. Facial affect match scores were summed across all vignettes yielding one total facial affect match score for each subject.

Relationship Between Verbal Affect Match and Facial Affect Match

The relationship between total verbal affect match scores and total facial affect match scores was assessed by Pearson product moment correlations. This analysis addressed the question of whether such new measures of facial affect match would relate positively to already established verbal measures of affect match that have been used in previous studies of children's empathy. If positive relationships were found, we would be confident that facial affect match could be used to infer empathy in children of this age.

Relationship Between Affect Match Scores and EC

Verbal and facial affect match scores were also correlated with EC scores in order to assess how well children's emotional-cognitive empathy (EC) related to their verbal and facial affect match scores. These two sets of correlations for facial affect match also help to address the validation of facial indices of empathy relative to verbal measures.

Social Desirability Questionnaire

The Social Desirability Questionnaire for Children (Crandall, Crandall, and Katkovsky, 1965) is composed of 48 True-False statements. Each socially desirable response is scored as 1, yielding a total possible score of 48. Social desirability scores were correlated with facial affect match scores, verbal affect match scores, and EC scores in order to establish the extent to which social desirability was related to children's facial and verbal reports of affect match and empathy.

Results

Button Press

One objective of the present study was to investigate whether "button press" instructions influenced participants' facial and verbal empathic responses. Button presses, according to the instructions given, indicate subject's emotional arousal. One possibility

considered was that the Button Press condition might induce greater emotional responsiveness with these subjects scoring higher than controls on all variables in the present study. Similarly, it was expected that such subjects would also score higher on facial affect match because both the button press and control groups' facial expressions were coded starting at the points at which buttons had been pressed by the button press group.

Three one-factor (button press and control groups) ANOVAS were used to assess differences in dependent measures due to condition effects. No significant differences were found for facial affect match scores, $F(1,58) = .02, p < .89$; verbal affect match scores, $F(1,58) = 2.51, p < .11$; or EC scores, $F(1,58) = .54, p < .46$. The magnitude of effect for each variable was assessed by calculating Omega square (est. w^2), and all values were near zero (Table 2).

Insert Table 2 about here

Clearly, "button press" instructions did not have an impact on children's responses, and hypotheses regarding increased empathic responsiveness were not supported.

Because present results demonstrate no significant differences due to the button press manipulation, identified button press segments provide a useful data reduction technique for microanalytic coding of facial expressions of emotion across groups. In the present study, this resulted in 30 hours of stimulus tape being reduced to 3 hours, with the resulting coding time reduced from 450 hours to 45 hours.

Do Children Respond With an Emotional Valence Consistent With Vignette Content?

Verbal self reports. In general, children's verbal reports of their own emotion were consistent with vignette content. Regarding emotional valence (positive/happy or

negative/dysphoric), results indicate that dysphoric vignettes were responded to mostly with dysphoric verbal reports, that the positive vignette received mostly positive verbal reports, and that the mixed vignette received a combination of positive and negative reports (see Table 3).

Insert Table 3 about here

For example, a median of 78% (47/60) of children reported dysphoric emotions to the 4 dysphoric vignettes (range = 77%- 82%). In contrast, a median of 1% of children reported positive emotions to these vignettes, with the remaining 21% (median) of reports being neutral. In response to the positive vignette (#5), 78% (47/60) of children reported a positive emotion (happy and positive surprised), while 7% reported a dysphoric emotion. The remaining 15% of children reported feeling neutral in response to the positive vignette. In response to the mixed valence vignette (#6) 57% (34/60) reported a dysphoric response while 18% (11/60) reported a positive response and 25% reported neutral responses. It appears that in response to vignettes children were just as likely to appropriately report experiencing dysphoric emotion as to appropriately report experiencing positive emotion.

Facial displays of emotion. As shown in Table 3 children's facial expressions were also generally consistent with each vignette's emotional valence, but percentages were lower than for verbal reports. For example, a median of 59% of children (35.5/60) facially expressed dysphoric emotion to the 4 dysphoric vignettes (range = 40% - 85%). In contrast, 3% (2/60) showed positive emotions and a median of 37% (22.5/60) showed neutral emotions in response to the dysphoric vignettes. Whereas 73% (44/60) showed a happy or positive surprised expression in response to the happy vignette, only 10% (6/60) displayed dysphoric emotions and 17% (10/60) displayed a neutral expression. In

response to the mixed valence vignette 15% displayed positive emotions and 17% displayed dysphoric emotions with the majority of children (68%, 41/60) displaying neutral emotion in response to this vignette. Given a higher percentage of facial responses to the positive vignette than facial responses to dysphoric vignettes, it appeared that more children were willing or able to express similar emotion in response to a stimulus character's positive than negative affect. The one exception was children's facial responses to vignette #3 in which 85% (51/60) of children facially displayed dysphoric emotion. This vignette appeared to be the most evocative dysphoric vignette for this sample when valence is considered.

Are Children's Specific Emotion Responses Consistent With Vignette Content?

Verbal self report. Examining the specific emotions verbally reported by children, it was found that they also were consistent with the specific emotion category predominant in each vignette, as shown in Table 4.

Insert Table 4 about here

For example, "afraid" was the most often reported (58% or 35/60) of all specific emotions to the afraid vignette (#1) and sadness was the most frequent response (37% and 50%) to the two sad vignettes (#2 & #3). In accord with Hoffman's (1982) view that emotional stimulus events permit several veridical emotions, other dysphoric responses occurred to these vignettes, but at lower frequencies. Verbal responses to the sad/angry vignette (#4) were mostly sadness (38%) and anger (18%), whereas children's responses to the happy vignette (#5) were most often reports of happiness (72%). Lastly, verbal responses to the sad/happy vignette (#6) were mostly sad (50%) followed by happy

expressions (18%). In conclusion, it appears that when children report experiencing emotion, this emotion is typically consistent with the emotional content of the vignette.

Facial displays of emotion. The specific emotions facially displayed by children were also fairly consistent with the specific emotion prevalent in each vignette (Table 4). However, there were fewer facial than verbal emotional responses. Of the dysphoric emotions, fear was the most prevalent specific emotion (17% or 10/60) facially displayed in response to the fear vignette (#1). Facial responses to the sad vignettes (#2 & #3) were mostly expressions of sadness (7% or 4/60 for #2 and #3) and negative surprise (7% for #2 and 10% or 6/60 for #3). Facial displays of sadness were most prevalent (15% or 9/60) for the sad/anger vignette (#4). Facial responses to vignette #6 were mostly expressions of happiness (15% or 9/60) followed by expressions of sadness (5% or 3/60). From these findings, we conclude that facial responses are much lower than verbal responses when the criterion is a verbal report or facial display of a specific emotion.

It should be noted that gaze aversion was a prevalent dysphoric expression to all dysphoric vignettes. However, it does not indicate a specific emotion in the AFFEX system and could only be used as a general index of dysphoric emotion. That it was an index of dysphoric emotion is clear from the following results. Across the dysphoric vignettes from 20% (12/60) to 63% (38/60) of children displayed gaze aversion. Specifically, 28% (17/60) of children displayed gaze aversion while watching the fear vignette (#1); 20% (12/60) and 63% (38/60) displayed gaze aversion while watching the two sad vignettes (#2 and #3), and 42% (25/60) displayed gaze aversion while watching the sad/angry vignette (#4). In contrast, only 8% (5/60) of children displayed gaze aversion to the happy vignette (#5) and 8% (5/60) displayed gaze aversion in response to the sad/happy vignette (#6). Similar to previous findings (Eisenberg, Fabes et al, 1988)

the present results support the view that gaze aversion is indicative of experiencing dysphoric emotion.

Although the frequency of verbal reports of feeling "normal" or "fine" were low (see "Neutral" column Table 3) facial displays of "interest" occurred with much greater frequency. This was especially so in response to dysphoric vignettes as compared to the positive vignette. Summarizing data from Table 3, a median of 38% (22.5/60) of children facially displayed "interest" in response to vignettes while only 21% (12.5/60) of children's verbal responses were neutral. From these findings we conclude that although children are equally likely to report experiencing both positive and dysphoric emotion they are more likely to facially express positive emotion as compared to dysphoric emotion. That is, in response to dysphoric vignettes children are more likely to express "interest" than a specific dysphoric emotion. A further discussion of the "interest" expression is presented in a subsequent section.

In summary, despite lower frequencies for facial than verbal response measures, both sets of data indicate consistency with the stimulus content in terms of both emotional valence and specific emotion categories.

Are Children's Verbal and Facial Responses Consistent in Terms of Emotional Valence?

Establishing whether children facially displayed the emotion that they verbally reported experiencing was examined by considering the consistency between children's verbally reported and facially displayed emotion. Firstly, the instances of inconsistent verbal and facial responses are considered. There were very few cases in which the valence of children's verbal report was contrary to their facial expression (i.e., a positive-dysphoric mismatch). Only 3% (12 out of a total of 360) responses across vignettes showed contrasting positive facial expressions when a dysphoric emotion was verbally reported. Similarly, there were only 2% of responses (7 out of a 360) responses across

vignettes in which a positive emotion was verbally reported and a dysphoric emotion was facially expressed. Clearly, there are few instances when verbal and facial reports are inconsistent.

It is important to note that many children facially displayed "interest" in response to the stimulus vignettes. For example, a substantial number of responses ($92/360 = 26\%$) across all vignettes represented a combination of verbally reported dysphoric emotion and facially expressed interest. Because the interest expression in AFFEX can show furrowing in the brow region, a feature present to a greater extent in dysphoric than positive expressions, a component of dysphoric emotion may be in many of the present expressions of interest. Eisenberg, Fabes et al., (1988) suggest that furrowing in the brow region accompanied by a forward posture is indicative of feelings of concern on the part of subjects. Within the AFFEX system, brow furrowing is coded as one of three expressions of interest. The other codes for interest are "face is relaxed but attentive" and "brows are raised and eyes widened" (see Appendix G). A relatively large percentage of cases showed either a match in stated and facially expressed dysphoric emotion, or a combination of verbally reported dysphoric emotion and facially expressed interest: percentages ranged from 2% (1/60) for vignette #5 to 47% (28/60) for vignettes #1 and #2. This inclusion of "interest" suggests an even higher consistency between verbal and facial reports of emotion.

Much higher consistency is evident in verbal and facial reports of positive emotion as compared to dysphoric emotion reports. For example, across vignettes (Table 5), a median of 30% (18/60) of positive (happy and positive surprised) reports and displays were consistent while a median of 5.8% (3.5/60) of reports and displays of dysphoric emotion were consistent. Positive emotion was reported less frequently than dysphoric emotion as a response across vignettes, given their mainly dysphoric content. The

exception was in responses to the "happy" vignette (#5). Of the 47 reports of positive emotion to the happy vignette (#5), 74% (35/47) of facial expressions were also positive, with the next highest percentage (19% or 9/47) showing interest. From the small total of 13 positive emotion reports across the remaining vignettes 2/13 or 15% were exact matches, but the highest percentage (54% or 7/13) were combinations of a happy verbal report and a facial expression of interest.

To summarize, these data indicate little inconsistency between facial and verbal emotions. However, higher consistency of verbal and facial reports was noted in children's responses to positive than to dysphoric vignettes.

Are Children's Verbal and Facial Responses Consistent in Terms of Specific Emotions?

In contrast to the high percentage of consistency for valence of emotion as both reported and facially displayed by children, data from Table 4 indicate that there is less consistency when the criterion is an exact match between a specific emotion reported and facially displayed by children.

For example, in response to the "afraid" vignette (#1) 58% of children (35/60) verbally reported fear whereas only 17% (10/60) facially expressed fear. In response to the two sad vignettes 37% (22/60) and 50% (30/60) reported sadness to vignettes #2 and #3, respectively, whereas only 7% facially expressed sadness to these vignettes. In the sad/angry vignette (#4) 38% (23/60) and 18% (11/60) of children verbally reported sadness or anger, respectively, whereas only 15% (9/60) and less than 2% (1/60) facially displayed sadness or anger. In response to the mixed sad/happy vignette (#6) 50% of children verbally reported sadness whereas only 5% facially displayed sadness.

In contrast to these dysphoric stimuli, verbal and facial responses to the happy vignette (#5) were highly consistent. That is, 72% (43/60) of children verbally reported happy responses and 72% of children facially displayed happiness. In addition, 7% (4/60)

of children reported "positive surprise" in response to the "happy" vignette but only 2% (1/60) of children facially displayed "positive surprise".

In summary, these descriptive data, particularly for the dysphoric stimuli, indicate less consistency between subject's verbal and facial responses when the assessment requires a specific emotion match as compared to a match in general emotional valence.

Is There Concordance Between Children's Facial and Verbal Reports of Their Own Emotion?

A major objective in this study was the investigation of the concordance between participants' self reported emotion and facially expressed emotion for each vignette. This was assessed using Cramer's phi coefficients (Hays, 1981) for each vignette. These are shown in Table 5.

Insert Table 5 about here

Overall, Cramer's phis showed medium magnitudes of effect. Cohen (1988) indicates that low magnitude coefficients are indexed by $\phi = .10$; medium magnitude by $\phi = .30$ and large magnitude $\phi = .50$. Present magnitudes of effect, ranging from .19 (#6) to .37(#5) (with a median $\phi = .335$), indicate a moderate degree of concordance between children's verbal reports and facial displays of their own emotion.

However, when the coefficients are considered separately for each vignette, results were statistically significant for only 2 of the 6 vignettes: the "afraid" vignette (#1) $\phi = .35$, $p < .03$; and the "happy" vignette (#5) $\phi = .37$, $p < .005$. The ϕ for the "sad" vignette (#3) was marginally significant at $\phi = .34$ $p < .08$. This is probably explained by children's willingness to facially display happy emotions and a greater willingness to express fear.

In conclusion, although moderate overall magnitudes of effect were found 4 of the 6 vignettes, findings were weaker in terms of statistical significance. It is possible that with more subjects a larger number of significant associations might have been found.

Is There a Relationship Between the Facial Measure of Affect Match and Verbal Measures of Affect Match and Empathy?

Another major objective of the present study was to investigate the relationship of facial affect match scores with both verbal affect match as an affective empathy measure, and empathy assessed in terms of affective-cognitive (EC) scores. Obtained total facial affect match scores ranged from 0-9 ($M = 4.2$; $SD = 2.09$). Total verbal affect match scores ranged from 0-17 ($M = 8.3$; $SD = 3.7$). The possible range of scores for both of these variables was from 0 to 18. Obtained total EC scores ranged from 5-71 ($M = 40.9$; $SD = 15.9$). The relationships among these scores were assessed using Pearson Product Moment correlations, which are shown in Table 6. These two sets of correlations were not significant: $r = .03$ for facial affect match and verbal affect match and $r = .13$ for facial affect match and EC scores. These correlations indicate that children's facial expressions of concordant emotion with the stimulus character (facial affect match scores) are not related to their verbal reports of empathy, assessed as either affect match or empathy based on EC scores. Based on these results we must question the usefulness of facial expressions of affect match as measures of empathy in this age group.

Not surprisingly, a strong relationship ($r = .75$, $p < .05$) was found between children's verbal affect match scores and their EC scores. This finding was expected because affect match scores comprise one component of EC scores.

In summary, the expected positive relationships between the present facial measure of empathy and the two verbal measures of empathy (verbal affect match scores and EC

scores) were not supported. However, there are suggestions in the present data that this conclusion may need revision.

Insert Table 6 about here

Given the present findings of moderate concordance (phi coefficients) for children's facially displayed and verbally reported emotion, in contrast to the low correlation obtained for facial and verbal affect match scores, differences in statistical method might have been responsible for the different findings obtained. Therefore, a decision was made to assess the facial and verbal affect match data using the same method of analysis (Cramer's phi) that was applied to the facial and verbal self report data. Table 7 shows the concordance between children's verbal facial affect matches with the stimulus character's emotion for each vignette. Specifically, children's verbal and facial affect matches were each scored separately as: 0 = discordant emotion verbally or facially reported for self compared to emotion reported for the stimulus character; 1 = no emotion verbally or facially reported for self compared to report for stimulus character; 2 = similar emotion verbally or facially reported for self and character; 3 = same emotion verbally or facially reported for self and character.

Insert Table 7 about here

Medium to high magnitudes of effect were found in 3 of the 6 vignettes, for which significant phi coefficients were also obtained. Results (see Table 7) indicated significant phi coefficients for the "afraid" vignette (#1): $\phi = .35, p < .007$, the sad vignette (#3): $\phi = .59, p < .0001$, and the happy vignette (#5): $\phi = .32, p < .02$. These results are similar

to the findings already reported for concordance of facial and verbal reports of participant's own emotions in which the afraid vignette (#1) and the happy vignette (#5) were also significant.

Are Children's Verbal and Facial Affect Matches Consistent With the Stimulus Character's Emotion in Terms of Emotional Valence?

Verbal affect match. As may be seen in Table 8a, children's verbal affect matches were generally consistent with the emotion they reported for the stimulus character. Both dysphoric and positive valence vignettes were responded to mostly with an affect match with the stimulus character. That is, in response to both dysphoric and positive valence vignettes were responded to mostly with the same or similar emotion for self as for the stimulus character. These percentages ranged from 62% for vignette #6 to 82% for vignette #3.

Insert Table 8 about here

Facial affect match. Children's facial affect matches were also fairly consistent with the emotion they identified the stimulus character as feeling (Table 8b). However, similar to the previous findings with respect to children's reports and displays of their own emotions, the percentages for facial affect match were lower (median = 62%) than for verbal affect match (median = 78%). However, this was only the case in children's facial affect matches in response to dysphoric emotions in the character. The smallest number of facial affect matches was in response to the mixed valence vignette (#6). Only 27% (16/60) of children displayed the same or similar emotion to the stimulus character. This is probably explained by the high number of interest expressions in response to this vignette. A majority of children display the same or similar emotion as the stimulus character in

vignette #3. This is the result of the high frequency of gaze aversion in response to this vignette. Facial affect matches were also fairly consistent in the happy vignette (#5). The same or similar emotion as identified for the character was facially displayed by 75% (45/60) of the children.

In summary, when children verbally report and facially display emotion in response to vignettes, their emotion is most often an affect match with the emotion they report for the stimulus character. However, it is also important to consider how often children verbally report or facially display no emotion in response to vignettes.

How Often Do Children Verbally Report or Facially Display No Emotion in Response to Vignettes?

Verbal reports of no emotion. There were cases in which children did not verbally report an affect match with the stimulus character's emotion, especially in response to dysphoric vignettes (see Table 8a). A median of 21% (12.5/60) of children report experiencing no emotion themselves in response to the four dysphoric vignettes (range = 17%-22%). Similarly, in response to the mixed vignette (#6), 18% (11/60) of children report experiencing no emotion. In response to the happy vignette, only 15% (9/60) of children report not having experienced an emotion. In summary, the percentages of children reporting not experiencing an emotion in response to stimulus vignettes are clearly much lower (median 19%) than the percentage of children reporting a verbal affect match (median 77.5%) with the stimulus characters.

Facial displays of no emotion. Secondly, the incidence of children facially displaying no emotion in response to vignettes is considered. The percentages of children showing no facial affect match with character's emotion are somewhat higher than the percentages for verbal reports of no emotion (see Table 8b). A median of 34% (range = 12%-57%) of children facially display no affect match with the stimulus character's

emotion. Facial displays of "no emotion" were highest in response to the sad/happy vignette (#6) in which 60% of children facially displayed no emotion. This is consistent with the finding of Eisenberg, Fabes et al. (1988) that the highest reports of "no emotion" in their study were in response to the same vignette (#6). In summary, in response to stimulus character's emotions children of this age are much more likely to verbally and facially display an affect match consistent with a stimulus character's emotion than to report or display no affect match.

How Often Do Children Verbally Report or Facially Display a Discordant Emotion to the Stimulus Character's Emotion?

Verbal reports of discordant emotion. Although in some cases children reported or displayed no affect match with a stimulus character's emotion, in very few instances do children report having experienced a discordant emotion compared to the emotion they report for stimulus characters (see Table 8a). Across vignettes, a median of 3.5% (2) of children reported experiencing a discordant emotion as compared to the stimulus character's emotion (range = 0-20%). Given these low percentages it is rarely the case that children verbally report an emotion for themselves that is discordant to the emotion they report for the stimulus character.

Facial displays of discordant emotion. Similarly, very few children facially expressed a discordant emotion in comparison to their reports for stimulus characters (see Table 8b). For example, across vignettes a median of 3% of children facially expressed a discordant emotion as compared to their reports of stimulus character's emotion. Overall, very few children reported or displayed a discordant emotion as compared to the emotion they report for the stimulus character.

Are Children's Verbal and Facial Affect Matches Consistent With the Stimulus Character's Emotion in Terms of Specific Emotions?

Just as higher concordance was obtained for children's reports of their own emotion, when concordance was assessed using emotional valence instead of specific emotions, the same can be said of affect matches to the stimulus character's emotion.

Verbal affect match. Whether subjects verbally report a similar (emotional valence) or the same emotion (specific emotion) as they report for a character depends on the emotion being depicted in the vignette (see Table 7). For example, in response to 3 of the 6 vignettes (the afraid vignette (#1), the happy vignette (#5), and the sad/happy vignette (#6)) children were more likely to report they had experienced the same rather than a similar emotion to the stimulus character. Responses to other dysphoric vignettes are not as clear. More children reported a similar emotion in response to vignette #2 while the similar and the same emotion were equally reported for vignettes #3 and #4. It is less likely that children will report a specific emotion match in response to a character's dysphoric emotion than in response to a character's positive emotion.

Facial Affect Match. Considering facial affect match, the pattern is somewhat clearer. That is, for dysphoric vignettes, children were more likely to facially display a similar emotion as compared to the same emotion they reported for a stimulus character. For example, across dysphoric vignettes a range from 33% to 77% of children facially displayed a similar emotion to the stimulus character. This is in contrast to a smaller range (7% to 20%) of children who displayed the same emotion as the emotion reported for the stimulus character, across dysphoric vignettes. The opposite pattern is found when we consider facial affect match in response to the positive happy vignette and the mixed valence vignette. Children were more likely to facially display the same emotion that they

reported for the character in response to these vignettes. Therefore, it appears that facial displays of specific emotion matches with a stimulus character's emotion are much more likely in response to a character's positive emotion as compared to a character's dysphoric emotion.

In summary, in response to stimulus character's positive emotion, children both verbally report and facially display the same emotion. For character's dysphoric emotion, children under most conditions also verbally report experiencing the same emotion as they report for a stimulus character. However, in their dysphoric facial displays they are more likely to express a similar emotion, rather than exactly the same emotion to the stimulus character. Although facial displays may provide an adequate measure of affect match in terms of emotional valence, verbal reports provide more specific information with respect to a child's experience of emotion.

Is Social Desirability Associated With Children's Verbal and Facial Responses?

Obtained scores on the social desirability questionnaire ranged from 1-36 ($M = 15.6$; $SD = 8.4$). Verbal reports are possibly influenced by the implicit demand to give socially desired responses. Social desirability may also be related to the facial expression of emotion, as was presented in the introduction. To address these issues, three Pearson Product moment correlations were calculated for social desirability scores and (1) facial affect match scores, (2) verbal affect match scores, and (3) EC scores. Magnitudes of these correlations were near zero for all variables: $r = .03$ for facial affect match scores; $r = .01$ for verbal affect match scores; $r = .12$ for EC scores. Therefore, it can be concluded that social desirability was not related to participants' facial or verbal affect match scores or to their EC scores. Furthermore, there were no differences in social desirability scores between button press and control groups as shown by a one factor (button press and control group) ANOVA: $F(1,58) = .070$, $p < .78$. Clearly, button press instructions do not

affect socially desirable responding in subjects of this age group. In conclusion, the possibility that social desirability might have affected verbal or facial results in the present study is not supported.

Discussion

There are several important results in the present study. Firstly, the new button press procedure had no significant impact on any of the facial or verbal report measures. The hypothesis that an increased focus on emotional content for children in the button press (versus control) condition would result in increased empathic responding was unconfirmed. One explanation for this finding rests on the alternative hypothesis that button pressing might have diverted attention away from the stimulus, given the increased demands on information processing and a recording strategy for monitoring one's own emotions. This alternative is not supported given that control subjects, who did not have this extra cognitive load, did not score more highly than the button press group. Means and standard deviations for the control group versus the button press group were 37.6 ($SD = 18.26$) versus 41.9 ($SD = 13.94$) for EC scores; 7.7 ($SD = 4.17$) versus 9.06 ($SD = 3.2$) for verbal affect match scores. If anything, these means show slightly higher scores for verbal reports in the button press condition, in line with the original hypothesis. Facial affect match score means were also slightly higher in the button press than control condition. Therefore the clearest conclusion is that button pressing does not result in either an increased or decreased processing of emotional content.

One reason for button pressing instructions having no effect is that the films may have been sufficiently evocative for both groups of children so that attention to emotional content was equally focused across groups, regardless of button press instructions. This conclusion is also supported by present findings of no difference in facial affect match scores between groups. Means and standard deviations for the control versus button press

condition were 4.2 ($SD = 1.5$) versus 4.4 ($SD = 2.5$) indicating that the segments of film identified by the button press group were equally evocative for children in the control group. In addition, socially desirable responding was no more likely in the button press group than in the control group. Therefore, button press instructions do not present a demand characteristic wherein children are cued to respond in a socially desirable way.

Present findings of no differences between button press and control groups are important because they lend support to the use of this procedure as a data reduction technique in the coding of facial expressions of emotion. Using this as a means of meaningfully reducing facial data may encourage others to further investigate microanalytic facial expressions as variables in studies of emotion and empathy.

Although present results are clear, the specific impact of button press instructions on facial responses may benefit from further study. In this study, facial expressions were coded from button press onset to the end of the vignette, resulting in a fairly lengthy duration (average time coded per vignette = 1 minute) of facial coding for each vignette. Possible differences in facial expressions for the two groups may have been attenuated over this time period. In contrast, if facial expressions were coded over a smaller time interval, directly before and after the button press location, group differences may result. Ongoing research with adults and children is presently investigating this question.

Do Children Report and Facially Express an Emotional Valence Consistent With Stimulus Vignette Content?

The general answer to this question is yes. Children's verbal reports and facial displays of their own emotion were consistent with the emotional content of vignettes in terms of emotional valence (positive or dysphoric). Children both verbally reported and facially expressed dysphoric emotions in response to dysphoric vignettes and, likewise, reported and expressed positive emotions to the positive stimulus.

Firstly, children's verbal responses to vignettes will be examined. Most children (a median of 77% of children across vignettes) verbally reported experiencing dysphoric emotions in response to dysphoric vignettes. Similarly, most children (78% or 47/60) verbally reported a positive emotion in response to the positive vignette. These findings demonstrate both that (1) most children do report experiencing emotion in response to stimulus vignettes; and (2) they do so with about equal frequency in response to dysphoric and positive stimuli.

Children's facial displays of emotion were similarly consistent with the stimulus vignette in terms of emotion valence. Most children (a median of 62% of children across vignettes) facially displayed dysphoric emotions. This percentage was somewhat lower than the 77% providing verbal dysphoric reports. Stimulus content will necessarily vary in its evocativeness. Researchers such as Fabes et al., (1990) suggest that stimulus vignettes must be particularly evocative in order to ensure dysphoric facial responses. From present results, vignette #3 appeared to be more evocative than other dysphoric vignettes as shown by 82% of children facially displaying dysphoric emotion in response this vignette.

Children's facial displays in response to the positive vignette were also consistent in emotional valence with the stimulus vignette. That a majority of children (73%) facially displayed positive emotion in response to the positive vignette indicates that participant's were quite willing to share a character's positive emotion, in accord with previous research (Denham, 1986).

As demonstrated, greater consistency with the emotional valence of stimuli is evident in children's verbal as compared to their facial responses. Although children verbally report experiencing dysphoric emotion as much as positive emotion in response to stimuli a smaller percentage facially express dysphoric emotions as compared to positive emotions. This is consistent with previous research (Strayer, 1986; Wilson & Cantor,

1985) which suggests that children of this age are cognitively mature enough to acknowledge and verbally report dysphoric emotions. This suggests that children would be just as likely to report dysphoric and positive emotions. However, the use of display rules for facial expressions increases with age (Saarni, 1982; Ekman & Friesen, 1975) which might explain the lower percentage of facial expressions of dysphoric emotion than positive emotion.

Do Children Verbally Report and Facially Display Specific Emotions Consistent With Vignette Content?

Verbal self report. The specific emotions children verbally reported and facially displayed in response to vignettes were generally consistent with vignette content. This was especially so for responses to the positive vignette for which 72% of children both verbally reported and facially displayed happiness.

Verbal responses to dysphoric stimuli also were fairly consistent, but the percentage of children reporting a specific emotion consistent with vignette content is lower than when the criterion is consistency in emotional valence. This makes sense given the greater probability of a match in valence when several emotions can be scored as generally consistent in content to the narrower range specified for an affect match of specific emotion.

Present findings regarding verbal responses to dysphoric stimuli are consistent with previous research. Eisenberg, Fabes et al. (1988) found that children verbally reported the greatest amount of fear in response to fearful televised stimuli as compared to reports of fear in response to "sad" and "sympathy" inducing stimuli. Similarly, they found the greatest amount of sadness in children's responses to sad stimuli as compared to "sad" responses to fearful stimuli. This is consistent with present findings that demonstrate children's verbal reports of fear were highest in response to the "afraid" vignette and their

verbal reports of sadness were highest in response to the sad/happy vignette (#6) and the two sad vignettes (#2 & #3) than to vignettes depicting different dysphoric content.

In summary, although children report experiencing emotion in response to vignette content we cannot be assured their emotion will be the same as the specific emotion depicted in the vignette.

Facial displays of specific emotions. The specific emotions facially displayed by children in response to dysphoric vignettes were not as consistent as verbal reports of specific emotion. In response to dysphoric vignettes there were few facial displays of pure emotions like fear, sadness, or anger. In particular, anger was rarely facially displayed among children in this study (5 times across all children and all vignettes), even though anger would be a legitimate response to vignette content (especially #4). This low frequency of displayed anger is consistent with children's verbal reports in a previous study (Strayer, 1989) using the same stimuli for three age groups. In that study, anger was the least frequent emotion reported by children either for themselves or for stimulus characters.

One explanation for these findings lies in socialization theory. Several studies have provided evidence that children, especially girls, are socialized at an early age against the expression of anger. For example, Malatesta & Haviland (1982) found that mothers responded to infant boys' anger with a sympathetic expression while they responded to infant girls' anger with an anger expression. They interpreted their findings to demonstrate early socialization constraints against displays of anger among girls. Strayer (1989) also found that girls reported less anger than did boys in her samples. The composition of the present subject sample, consisting only of girls, may be one reason for present rare reports or displays of anger.

There may be another explanation for the low facial displays of anger in the present study. Given that anger is a high arousal emotion (Russell, 1980) this may also contribute to the unwillingness in children to share angry emotion. As a result of high arousal, it would suggest that children's vicarious experience of anger may result in greater personal distress than empathy. As a result, children may be less likely to share a character's angry emotion.

Although children's emotion-specific facial displays in response to dysphoric vignettes were not as consistent as their verbal reports of specific emotion this does not mean that they displayed no emotion. When viewing dysphoric stimuli, children typically displayed either gaze aversion away from the stimulus or an expression of "interest". Gaze aversion is considered first.

There are several possible explanations for the high frequency of gaze aversion in response to dysphoric vignettes. Gaze aversion away from dysphoric stimuli may serve a regulatory function for children, not unlike the infant's use of gaze aversion from a stranger as a means of regulating emotional arousal (Waters, Matas, & Sroufe, 1975). Eisenberg et al. (1988) suggest that gaze aversion is indicative of dysphoric emotional arousal, but it is unclear whether gaze aversion is an indicator of any specific emotion.

Some previous findings suggest that gaze aversion may be indicative of specific emotions. For example, Exline, Gottheil, Parades, & Winkelmayr (1979) found in comparison to schizophrenics, that normal adults conversing with an experimenter, demonstrated direct gaze when recounting happy experiences, showed the most gaze aversion when telling of a sad experience, and showed an intermediate amount of gaze aversion when recounting an angry experience. Although gaze behavior in the Exline et al. study was assessed in a social context, which undoubtedly had an impact on responses, similar patterns of gaze behavior were found in the present study in response to televised

stimuli. That is, the highest percentage of children (63%) displayed gaze aversion in response to a sad vignette (#3). The second highest percentage (42%) of children displaying gaze aversion was in response to the sad/angry vignette (#4). In contrast to similarities in the present and previous study cited, Eisenberg, Fabes et al. (1988) found more instances of gaze aversion in children's responses to fear stimuli than to sad stimuli.

Findings from these three studies provide initial evidence that gaze aversion may be indicative of general dysphoric arousal and of particular kinds of dysphoric emotions like sadness, anger and fear. Furthermore, the relatively large amount of gaze aversion in response to dysphoric vignettes found in the present study demonstrates the importance of considering this facial response in further studies of children's facial displays to dysphoric events. In summary, if in further studies gaze aversion is considered indicative of more specific dysphoric emotions children's facial displays of dysphoric emotion will show greater consistency than is evident in the present study.

Another explanation for the low consistency between children's facial responses and the specific dysphoric emotion depicted in stimulus vignettes may involve the high frequency of facial expressions of "interest". That is, rather than facially displaying specific dysphoric emotions in response to dysphoric vignettes, a high percentage of children facially displayed "interest". Facial expressions of "interest" were the predominant facial display in response to the afraid vignette (43%), the sad vignette (#2) (57%), and sad/happy vignette (68%). As previously stated, one of the three AFFEX codes for "interest" includes a furrowing in the brow, a feature present to a greater extent in dysphoric as compared to positive emotion. It is therefore possible that some component of dysphoric emotion is present in some of the present expressions of interest as suggested by other researchers (Eisenberg, Fabes et al., 1988). If so, this may indicate higher

consistency in facial displays of specific dysphoric emotions than is apparent in the present study.

To summarize, although there is consistency in both verbal and facial responses when the criterion is a specific emotion, these percentages are much lower than when the criterion is emotional valence. This is especially so when we consider facial responses to dysphoric vignettes. This presents a question with respect to whether we should demand a specific emotion match as the criterion for a match between children's verbal reports and facial displays of emotion. For specific dysphoric emotions to be facially displayed, an unethically high degree of emotional arousal in stimulus material may be needed.

Concordance of Facial and Verbal Reports of Participant's Own Emotions

The concordance between participants' verbal and facial indicators of their own emotion was of particular interest in this study because both facial feedback theory and hydraulic models of emotion stipulate that a positive relationship exists between facial expressions and self reports of emotion.

Concordance between verbal and facial reports is first considered in terms of general concordance in emotional valence. A large majority of children's facial responses were not inconsistent with their verbal reports of emotion. In only 3% (12/360) of the cases across all vignettes did children facially express a positive emotion when they reported having felt a dysphoric emotion. Similarly, in only 2% (7/360) of the cases did children report a positive emotion and facially express a dysphoric emotion. Thus, children in the present study did not show a high frequency of emotion masking, when masking is defined as substituting a facial expression that differs in emotional valence from the emotion that one is actually experiencing (Ekman et al., 1975; Shennum & Bugenthal, 1982). Even though masking of facial expressions may have been operating in these cases, it is notable how seldom children's verbal reports and facial displays were discordant.

These data may be interpreted to support the various theories proposed in the introduction, but can not be used to discriminate between them.

In addition to such general concordance (i.e., emotional valence), the present study also examined specific concordance in terms of specific emotion match (e.g., happy facial expression and happy verbal report of own emotion). The degree of concordance obtained was moderate. Specifically, in response to the happy vignette (#5), children facially expressed happiness as often as they verbally reported feeling happy. This finding is consistent with previous research. Fabes et al. (1990) reported a positive relationship between verbal and facial reports of happiness among second and fifth grade girls in their study. Children may be particularly likely to respond with happy expressions as shown by Strayer (1980) who found happy expressions, more than other emotions, received the greatest response matches from other children in a naturalistic study. Similarly, Denham (1986) found a puppet's "happy" facial displays, as compared to displays of dysphoric emotion, were more often matched by preschool children's own expressions of happiness. Consistent with these authors' suggestions, "happiness" may be the easiest emotion to share.

Fear was the only dysphoric emotion for which a significant association (ϕ) was obtained between children's verbally reported and facially displayed emotions. This finding was somewhat surprising given the presumed adaptive utility of not facially expressing fear (Izard, 1977). It may be that children are freer to experience fear in response to televised stimuli than to social contexts. If this is the case, they may more willingly express fear when it is safe to do so as compared to other dysphoric emotions.

Gender role socialization may provide another explanation for the consistency in verbal and facial reports of fear. The present finding is consistent with previous research showing that girls report more fear in response to fearful stimuli than do boys (Eisenberg,

Fabes et al., 1988; Shennum & Bugenthal, 1982; Strayer, 1989). The fact that all subjects in the present study were female may have heightened the consistent relationship between verbal reports and facial expressions of fear.

An alternative, but weak, explanation for these findings regarding responses to the "afraid" vignette may be a function of the experimental context. Because the fear vignette was the first viewed by children in an unfamiliar setting, they may have been more uncomfortable or "afraid" at the beginning of the procedure. This is unlikely, however, because of both the social familiarization period and the use of an initial cartoon vignette to ease children into the procedure.

Although significant concordance was found in children's responses to the "afraid" (#1) and the "happy" (#5) vignette, when the criterion is a specific emotion match there is less concordance between children's verbal and facial reports in response to dysphoric events. This low concordance is a function of children's limited facial expressions of specific dysphoric emotions in response to dysphoric vignettes. There are several possibilities for this.

One possibility is that stimuli were not sufficiently evocative and children did not display specific dysphoric emotions because they did not experience them. This suggestion seems untenable, however, because children did verbally report experiencing dysphoric emotion. Verbal responses are the only assessment we have of children's subjective experience of their own emotion and, therefore we must rely on children's verbal reports in order to gain insight into how they are feeling (Strayer, 1989). Furthermore, children's verbal reports were unrelated to their social desirability scores. This provides some measure of objective confidence in the veracity of children's verbal reports. In addition, in several cases children reported an accurate emotion for the character but did not feel compelled to report that they had experienced an emotion.

I would suggest that finding fewer facial expressions of specific dysphoric emotions than positive emotions is best explained by the use of "display rules". Saarni (1982) suggests children learn that particular feelings, like anger, fear and distress are socially "unacceptable", and that by not expressing these feelings facially they avoid disapproval from others. Therefore, children in the present study may have facially "neutralized" (Saarni, 1982) the dysphoric emotion they were experiencing resulting in little facial affect being shown. Although children in the present study viewed stimuli in a room by themselves in order to minimize the use of display rules, it may be that display rules are so well learned by this age that children use them even when they are in an apparently nonsocial context. Saarni (1989) contends that even when children are alone, their "imaginary audience" may react to their expressed emotion. She suggests that display rules may be internally monitored even in solitary contexts. Although present findings for fear expressions do not fit the display rule model, it may apply more generally to suggest that children may have felt some inhibition in displaying genuine dysphoric emotion especially in an unfamiliar setting (research lab) involving interactions with an unfamiliar adult.

The Interrelations Between Facial Affect Match, Verbal Affect Match and Empathy

Although general concordance was found between facial and verbal reports of participants' own emotion based on assessments of both emotional valence and specific emotion responses, correlations showed no significant relationship between facial and verbal affect match, or between facial affect match and empathy (EC) scores.

There are several possible explanations for the different findings with respect to verbal and facial emotions that refer to the child herself, and those that refer to the stimulus character (i.e., verbal and facial affect match scores). It seems reasonable that a stronger relationship should be expected between two measures of a child's own emotion than between two measures of a child's emotion in relation to a third person (the stimulus

character). Facial expressions as indicators of emotional state can be considered to reflect the same person's emotional experience. However, they can only be inferred to relate to a third person's (the stimulus character's) emotion.

However, procedural differences in data analyses for self related and empathy related measures seem the strongest explanation for present differences in matches of verbal and facial measures relating to one's own versus the character's emotion. In particular, one explanation for these different findings may lie in the different treatment of verbal reports of feeling "normal" or "fine" and facial displays of "interest". In the present study, a basic criterion for empathy was an affect match between self and a stimulus character. Given the emotions attributed to a stimulus character, a child's verbal response of feeling "normal" or "fine" was scored as 0, indicating no verbal affect match with the character. Facial expressions of "interest" (indicating attention but no codeable emotion) would also receive a score of 0, indicating no affect match with the character. Conversely, in verbal and facial reports of subjects' own emotion, a self report of "normal" or "feeling fine" concomitant with an "interest" expression (an "interest" expression in this context is indicative of feeling fine) was coded as a match. Thus, a greater number of facial-verbal match scores were possible in the analyses of the child's own emotions (empathic and non-empathic) than in the analyses of the child's empathy (affect match) with stimulus characters.

Another possible explanation for the differences in findings between self-related and empathy-related verbal and facial reports may be based on the restricted range of facial affect match scores. Variability was evident in children's verbal affect match scores (range = 0-17) and their EC scores (range = 5-71). In contrast, a much narrower range of scores (0-9) occurred for facial affect match data. Restriction of the range in one set of scores usually results in lowering any correlation between two variables (Howell, 1987).

Another procedural difference between the two sets of measures may be that total scores were entered in the original correlations. Specifically, children received both a verbal affect match score and a facial affect match score for each vignette and these were then summed across vignettes resulting in one verbal and one facial affect match score for each child. As a result, reports of "no emotion" for particular vignettes attenuate children's overall affect match scores. For example, suppose a child reports experiencing an emotion and reports an emotion for the stimulus character across all vignettes. If the same child displayed no facial emotion across 3 vignettes and displayed the same emotion as a character for 3 vignettes her overall affect match score is lowered by the 3 zeroes she receives for the first three vignettes. In contrast, for children's reports and displays of their own emotion, their reports are considered separately for each vignette.

In considering affect match, it may be conceptually as well as procedurally beneficial to assess affect matches for specific vignettes rather than summing across vignettes. Researchers have indicated that empathy may be situationally influenced and one should not expect that a child who experiences empathy in one situation will necessarily experience it in another (Peraino & Sawin, 1981; as cited in Underwood & Moore, 1982; Strayer, 1987).

The lack of a significant relationship between verbal and facial affect match scores may have been the result of either a restricted range in the facial affect match data or a result of the summing procedure used in the correlational analysis. Therefore a decision was made to re-code the verbal and facial affect match data.

When the affect match data was re-coded into categories and analyzed similarly to the self related data there was a significant association between facial and verbal affect match scores for three of the six vignettes: the "happy" vignette (#5), the afraid vignette (#1), and the sad vignette (#3). These results duplicate present results for the self-related

verbal and facial measures. They are also consistent with previous studies finding a positive relationship between children's verbal and facial reports (Eisenberg, Fabes et al., 1988; Eisenberg, Schaller et al., 1988).

Specifically, the high degree of concordance between children's verbal and facial affect match scores in response to the "happy" vignette (#5) is consistent with Fabes et al. (1990) who found a positive relationship between 2nd and 5th grade girls verbal and facial reports of happiness.

Concordant facial and verbal affect matches were also demonstrated in response to the fear vignette. This is consistent with previous findings of a positive relationship between younger children's verbal reports of fear and their facial expressions of gaze aversion (Eisenberg, Fabes et al., 1988). In the present study, facial expressions of both fear and gaze aversion contributed to the significant concordance for this vignette.

Additionally, in the present study, significant concordance between children's facial and verbal affect match scores was demonstrated in response to a sad vignette (#3). This is in contrast to previous findings (Eisenberg, Fabes et al., 1988) of no relationship between children's verbal and facial reports of sadness in response to a sad vignette. However, in the cited study, a positive relationship was found between children's facial and verbal reports of sadness in response to the present vignette #6. Participants in the Eisenberg study were preschoolers and second graders, whereas present participants were fifth and sixth graders. Older children may be less likely to deny feelings of sadness (Glasberg & Aboud, 1982), and as a result may be more able to share in a character's sad emotion.

A more likely explanation for the different findings between these studies with respect to children's verbal and facial affect matches in response to sad vignettes may lie in the stimuli used. The sad vignette used in the present study may simply be more evocative for children than the vignette employed by Eisenberg, Fabes, et al. (1988). In the present

vignette (#3), a woman relates to the listener her experiences of abuse by her husband. From my own perspective, this is one of the most evocative vignettes in the present series. Fabes et al., (1990) suggest that more evocative stimuli may be needed to evoke facial expressions of emotion in older children. Because younger children in the Eisenberg study do display sad facial expressions, it appears more likely that the different findings are the result of vignettes that differ in the amount of emotion they evoke.

It is also possible to compare findings for the same vignette (#6) obtained in the present study and the Eisenberg, Fabes et al., (1988) study. Although Eisenberg et al. reported a positive relationship between children's verbal and facial reports of sadness in response to this vignette, significant concordance between facial and verbal affect match was not obtained in the present study. Despite the majority of present children having reported a verbal affect match with the stimulus character in response to vignette 6, facial affect matches were split between showing the same emotion and showing no emotion. The majority of children in the previous study also reported "no emotion" in response to this vignette despite the positive relationship between children's verbal and facial reports of sadness.

Although concordance in facial and verbal affect matches is demonstrated when scores are considered separately for each vignette, when children's affect match scores are summed and correlated no relationship between scores is found. Further, no relationship is demonstrated between children's facial affect match scores and their cognitive empathy scores (EC). These findings differ from previous reports demonstrating a positive relationship between children's verbal and facial measures of affect match and empathy (Eisenberg, Fabes et al., 1988; Eisenberg, Schaller, et al., 1988). Several issues must be considered as possible explanations for these different findings.

Some differences between present and previous measures of empathy should be clarified. The operationalizations of empathy often differ across studies. In the present study empathy was operationalized in two ways: empathy was considered in terms of an affect match alone and in terms of EC scores measuring affect match mediated by cognitive reasoning. Empathy assessed as both verbal and facial affect match is considered first.

In the present study assessments of verbal and facial affect match compared both children's reported emotion and their facial expressions to their reports of the character's emotion ("How did the girl in that story feel?"). The procedure for affect match in most previous research has been to compare the child's reported emotion and the pre-determined emotional content of slides or vignettes (Eisenberg, Fabes, et al., 1988; Feshbach & Roe, 1968; Lennon, Eisenberg & Carroll, 1986; Marcus, Roke & Bruner, 1985). In the present study it was thought that by relying on children's own perceptions and attributions regarding a character's emotions, we would gain a more accurate assessment of a child's own experience of the events presented. As a result, there may have been greater variability in children's responses. Exact matches with stimulus character's emotion may be more likely when relying solely on a match between children's report of how they feel and vignette content.

Another explanation for the different findings in this study may lie in the way in which affect match has been scored across studies. Marcus et al. (1985) measured affect match in terms of intensity rather than kind (category) of emotion. In their study, verbal and facial affect matches were scored on 5 point scales assessing the degree to which each expression matched the emotional content of particular slides. Similarly, Lennon, Eisenberg, & Carroll (1986) scored children's negative facial expressions and gestures on a 5 point intensity scale. The specific procedure used to code facial expressions is not reported. Eisenberg, Fabes, et al., (1988), although procedurally more similar to the

present research, also used an intensity measure for both verbal and facial responses. In their study, facial responses for each vignette were coded using an intensity score ranging from 1 = no sign of emotion to 5= exceptionally strong display of emotion, while verbal reports of emotion were coded as 1 = absence of report; 2 = presence of report for each emotion. From the limited information available, the criterion for emotional displays and reports were stricter in the present study. As a result of this more conservative AFFEX facial coding system, one possibility is that we may have coded only the emotions that in the Eisenberg system would be coded as 4 or 5 (strong or exceptionally strong display of emotion). Thus, we would be less likely to find a relationship between verbal and facial affect match scores because less facial affect would be coded. Furthermore, because Eisenberg, Fabes et al., (1988) were not restricted to microanalytic (AFFEX) coding of specific emotions on the face, the increased range of facial indicators may have increased their likelihood of finding a relationship between verbal and facial responses.

As well as considering differences in coding, the number of stimulus vignettes used in each study may also have contributed to differences in findings. In the present study we relied on data from six vignettes whereas Eisenberg, Fabes et al. (1988) used three vignettes. The wider sampling of facial behaviors should increase confidence in the present findings. Eisenberg, Fabes et al., (1988) found a significant relationship between children's verbal and facial reports in response to two of their three vignettes: their afraid vignette and their cognitive sympathy vignette. If two vignettes were selected from the present data it is possible that results would be similarly significant.

The age of subjects in the present study is another source of difference between these studies given the possibility of increased masking of facial expressions with age (Ekman & Friesen, 1975). Several studies in which positive relationships have been found between verbal and facial measures of empathy have used preschoolers and early

elementary school aged children (Lennon, Eisenberg, & Carroll, 1984; Eisenberg, Fabes et al. 1988) More recently, Fabes et al.,(1990) found weaker relationships between the facial expressions and verbal reports of fifth graders as compared to second graders. These authors suggest that the relationship between facial and verbal measures may be stronger in younger subjects due to increased masking of facial emotion with age. The present findings with respect to children's facial expressions of emotion also support this view.

Although several researchers (Hoffman, 1982; Marcus, 1987; Eisenberg, Fabes et al., 1988) have suggested that facial measures of emotion can provide a more objective measure of empathy as compared to verbal report measures of empathy, the present findings question their usefulness. In the present age group, highly consistent relationships were not found between children's verbal and facial reports. In general, there was a relatively low incidence of specific facial expressions of emotion compared to reports of stimulus character's emotions. Whether children's facial expressions of emotion are considered valid measures of affect match rests on whether we demand a specific match of emotion or whether a match in general emotion valence is considered adequate to infer facial empathy with a stimulus character. Present findings are stronger for the latter measure.

The need for multi-method assessments of empathy has been well recognized. Facial expression of emotion may contribute to a multi-method assessment of empathy, especially if agreement can be reached on the meaning of gaze aversion in children's responses to evocative vignettes. However, in accord with Fabes, et al. (1990), due to the lack of specificity inherent in children's facial responses, empathy cannot be assessed without a concomitant verbal measure.

Does Social Desirability Have an Impact on Children's Verbal and Facial Responses?

The possibility of social desirability effects in children's self reports of empathy has been the main impetus behind suggestions that facial measures may provide a more reliable and objective measure of empathy in children. Previous research findings, however, have been equivocal with respect to the impact of social desirability on children's and adults' verbal reports of empathy. Researchers have found a relationship between adults' verbal reports of sympathy (Eisenberg, Schaller, Fabes, Bustamante, Mathy, Shell, & Rhodes, 1988) and personal distress (Eisenberg, Fabes et al., 1989) and their scores on the Crown-Marlowe social desirability scale. In contrast, Davis (1983) found no relationship between adults' social desirability scores assessed using both the Public Self-consciousness scale and the other-directed factor of the Self-monitoring scale and his Interpersonal Reactivity Scale.

Findings regarding the relationship between children's reports of empathy and social desirability are also equivocal. In one study Eisenberg, Schaller et al. (1988) found a significant positive relationship between third and sixth grade girls' self-reported sympathy and their scores on 10 items of a social desirability questionnaire (Crandall et al., 1965). No relationship was found between social desirability and boys' verbal reports. Eisenberg et al. (1989) found no relationship between second and fifth grader's reports of empathy and social desirability using the same questionnaire. This is consistent with other null findings reported for affect match with the same social desirability questionnaire (Chovil, 1985).

In this study girls' scores on a social desirability questionnaire (Crandall et al., 1965) were clearly unrelated to either verbal or facial measures of affect match or to

empathy measured by the EC. These findings provide further support for the contention that children do not have the need, in this context, to report socially desirable responses.

Finding no relationship between social desirability with the present variables also addresses the issue of whether facial measures provide a better assessment of affect match and empathy than do verbal report measures because of their greater imperviousness to social demand characteristics. Although facial measures may contribute to a multi-method assessment of empathy, verbal measures were as unaffected by social desirability effects as were facial measures.

Conclusion

The present findings indicate there is a moderate amount of concordance between children's verbal reports and facial displays of their own emotions. Descriptive data indicate fewer facial displays than verbal reports of specific emotion, affecting comparisons between these two data sets. Whether facial measures are useful for research employing affect match measures of empathy depends largely on the criterion required for concordance between facial and verbal measures of affect match. On the basis of findings for the present age group, if the criterion is a specific emotion match, facial measures may be too infrequent and lack the specificity noted in verbal reports. However, if the criterion for affect match is a match in emotional valence between verbal and facial measures, moderate concordance is demonstrated. Researchers studying empathy have required a match in emotional valence as a minimal indicator of empathy. In most models of empathy, however, a specific emotion match is a better indicator of empathy than a match in emotional valence (Feshbach & Roe, 1968; Hoffman, 1978; Strayer, 1987). Nevertheless, if researchers can agree that several emotions similar in emotional valence are possible as indicators of empathy, facial measures can provide useful convergent data concomitant with verbal self report measures of emotion, affect match and empathy.

Given the high percentage of facial displays of gaze aversion in this study and related previous research, future research should attempt to establish whether gaze aversion is indicative of particular dysphoric emotions, or whether it can merely be considered an indicator of dysphoric arousal.

Present differences in findings with respect to the verbal and facial affect match data point to the importance of evaluating different levels of analysis used in studies. In the present study no relationship was found when children's verbal and facial affect match scores were summed across vignettes and correlated. However, significant concordance for 3 of the 6 vignettes was demonstrated when verbal and facial affect match scores were considered separately for each vignette. These findings also question whether, in empathy research, we should rely on summed measures of affect match or whether we should rely on responses to specific events. The latter is reasonable given previous suggestions that empathy may be situation specific (Eisenberg & Miller, 1987; Peraino & Sawin, 1981, as cited in Underwood & Moore, 1982). Given this position one would not expect children's reports of empathy to be consistent across vignettes. By considering children's responses to specific vignettes, greater concordance may be demonstrated.

Having used only one age group in the present study the need for future research using both younger and older age groups is obvious. I would agree with other researchers who have suggested that facial measures of emotion may be particularly useful when younger subject populations are studied.

Present findings of no relationship between social desirability and the verbal and facial measures studied contribute importantly to the empathy literature. In this case, null results are noteworthy. The predominant criticism of verbal reports of empathy has been their susceptibility to social desirability effects. Additionally, this criticism has been a major impetus behind the use of facial measures of empathy. However, on the basis of

present findings it appears that social desirability effects contribute neither to children's verbal reports of affect match or empathy nor to facial measures.

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Table 1.

The Empathy Continuum (EC) Scoring System

<u>EC</u> <u>Score</u>	<u>EC Level</u> (Cognitive Mediation)	<u>Affect</u> <u>Match</u>	<u>Description</u>
0	I	0	No emotion reported for character.
1		0	Accurate emotion reported for character but no (or discordant) emotion for self

2	II	1	Similar emotion in self & character.
3		2	Same emotion, different intensity.
4		3	Same emotion, same intensity.

NO ATTRIBUTION OR IRRELEVANT REASONS ARE PROVIDED FOR ONE'S EMOTION: "I just didn't like it."

table continues

5	III	1	Similar emotion.
6		2	Same emotion, different intensity.
7		3	Same emotion, same intensity.

ATTRIBUTION BASED ON STORY EVENTS/SITUATION: " I felt scared of that creepy, old house."

8, 9, 10	IV	1, 2, 3	As above
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ATTRIBUTION REFERS TO A SPECIFIC CHARACTER'S SITUATION: " I felt scared when he went up to that old house."

11, 12, 13	V	1, 2, 3	As above
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ATTRIBUTION INDICATES TRANSPOSITION OF SELF INTO SITUATION AND/OR ASSOCIATION TO ONE'S OWN EXPERIENCE: "Well, I'm scared but curious, like him, about stuff like that."

table continues

14, 15, 16 VI 1, 2, 3 As above

ATTRIBUTION INDICATES RESPONSIVENESS TO CHARACTER'S FEELINGS OR
INTERNAL STATE: " I felt sad because she felt so put down."

17, 18, 19 VII 1, 2, 3 As above

ATTRIBUTION INDICATES SEMANTICALLY EXPLICIT ROLE-TAKING: "If I were
in her place, I'd be angry at him for treating me like that."

Table 2

Omega squared (est. w^2) estimating the magnitude of effect for each variable as a function of condition (button press/control)

<u>Scores</u>	<u>est. w^2</u>
Facial Affect Match	.01
Verbal Affect Match	.02
Empathy Continuum	.007
Social Desirability	.01

Table 3

Children's verbal and facial responses across vignettes in terms of emotional valenceVerbal Responses

<u>Vignette</u>	<u>Neutral</u>	<u>Positive Valence</u>	<u>Negative Valence</u>
Afraid (#1)	13 (22%)	1 (2%)	46 (77%)
Sad (#2)	12 (20%)	0	48 (80%)
Sad (#3)	11 (18%)	0	49 (82%)
Sad/Angry (#4)	13 (22%)	1 (2%)	46 (77%)
Happy (#5)	9 (15%)	47 (78%)	4 (7%)
Sad/Happy (#6)	15 (25%)	11 (18%)	34 (57%)

Facial Responses

<u>Vignette</u>	<u>Neutral</u>	<u>Positive Valence</u>	<u>Negative Valence</u>
Afraid (#1)	26 (43%)	2 (3%)	32 (53%)
Sad(#2)	34 (57%)	2 (3%)	24 (40%)
Sad(#3)	9 (15%)	0	51 (85%)
Sad/Angry(#4)	19 (32%)	2 (3%)	39 (65%)
Happy(#5)	10 (17%)	44 (73%)	6 (10%)
Sad/Happy(#6)	41 (68%)	9 (15%)	10 (17%)

Table 4

Children's verbal reports and facial displays of specific emotions in response to individual vignettes

	Afraid # 1	
	<u>Total Verbal</u>	<u>Total Facial</u>
Interest	13 (22%)	26 (43%)
Happy	1 (2%)	2 (3%)
Surprised	6 (10%)	4 (7%)
Afraid	35 (58%)	10 (17%)
Angry	0	0
Sad	2 (3%)	1 (2%)
Concerned	3 (5%)	N/A
Gaze Aversion	N/A	17 (28%)

	Sad #2	
	<u>Total Verbal</u>	<u>Total Facial</u>
Interest	12 (20%)	34 (57%)
Happy	0	2 (3%)
Surprised	6 (10%)	4 (7%)
Afraid	4 (7%)	2 (3%)
Angry	10 (17%)	2 (3%)
Sad	22 (37%)	4 (7%)
Concerned	6 (10%)	N/A
Gaze Aversion	N/A	12 (20%)

table continues

Sad #3

	<u>Total Verbal</u>	<u>Total Facial</u>
Interest	11 (18%)	9 (15%)
Happy	0	0
Surprised	3 (5%)	6 (10%)
Afraid	3 (5%)	1 (2%)
Angry	9 (15%)	2 (3%)
Sad	30 (50%)	4 (7%)
Concerned	4 (7%)	N/A
Gaze Aversion	N/A	38 (63%)

Sad/Angry #4

	<u>Total Verbal</u>	<u>Total Facial</u>
Interest	13 (22%)	19 (32%)
Happy	1 (2%)	2 (3%)
Surprised	7 (12%)	3 (5%)
Afraid	1 (2%)	1 (2%)
Angry	11 (18%)	1 (2%)
Sad	23 (38%)	9 (15%)
Concerned	4 (7%)	N/A
Gaze Aversion	N/A	25 (42%)

table continues

Happy #5

	<u>Total Verbal</u>	<u>Total Facial</u>
Interest	9 (15%)	10 (17%)
Happy	43 (72%)	43 (72%)
Surprised	4 (7%)	1 (2%)
Afraid	2 (3%)	1 (2%)
Angry	0	0
Sad	2 (3%)	0
Concerned	0	N/A
Gaze Aversion	N/A	5 (8%)

Sad/Happy #6

	<u>Total Verbal</u>	<u>Total Facial</u>
Interest	15 (25%)	41 (68%)
Happy	11 (18%)	9 (15%)
Surprised	3 (5%)	1 (2%)
Afraid	0	1 (2%)
Angry	0	0
Sad	30 (50%)	3 (5%)
Concerned	1 (2%)	N/A
Gaze Aversion	N/A	5 (8%)

Table 5

Concordance Between Children's Verbal and Facial Reports of Their Own Emotion in response to individual vignettes.

	<u>Afraid #1</u>						Verbal Total
	<u>Facial Code</u>						
	Interest	Happy	Surprised	Afraid	Sad	Gaze	
<u>Verbal report</u>							
Neutral	5	0	3	2	0	3	13(22%)
Happy	0	0	0	1	0	0	1 (2%)
Surprised	2	1	0	0	1	2	6 (10%)
Afraid	16	0	1	7	0	11	35(58%)
Sad	1	1	0	0	0	0	2 (3%)
Concerned	2	0	0	0	0	1	3 (5%)
Facial Total	26 (43%)	2 (3%)	4 (7%)	10 (17%)	1 (2%)	17 (28%)	60(100%)

Cramer's phi = .35* $p < .03$

Numbers refer to number of children.

If a particular emotion does not appear in table there was no report of that emotion for particular vignette.

Surprise was reported as a "bad" surprise in all vignettes except #5 (happy) in which surprise was reported as a "good" surprise.

table continues

SAD #2Facial Code

<u>Verbal</u> <u>Report</u>	Interest	Happy	Surprised	Afraid	Angry	Sad	Gaze	Verbal Total
Neutral	6	0	0	1	0	3	2	12(20%)
Surprise	1	0	2	0	0-	0	3	6 (10%)
Afraid	2	0	1	0	0	0	1	4 (7%)
Angry	7	1	1	0	0	0	1	10(17%)
Sad	15	1	0	0	2	1	3	22(37%)
Concern	3	0	0	1	0	0	2	6 (10%)
Facial	34	2	4	2	2	4	12	60
Total	(57%)	(3%)	(7%)	(3%)	(3%)	(7%)	(20%)	

Cramer's phi = .33 $p < .28$

table continues

SAD #3Facial Code

<u>Verbal</u> <u>Report</u>	Interest	Surprised	Afraid	Angry	Sad	Gaze	Verbal Total
Neutral	3	1	0	0	2	5	11(18%)
Surprise	0	1	1	0	0	1	3 (5%)
Afraid	0	1	0	0	0	2	3 (5%)
Angry	1	2	0	1	0	5	9(15%)
Sad	4	1	0	1	2	22	30(50%)
Concern	1	0	0	0	0	3	4 (7%)
Facial	9	6	1	2	4	38	60
Total	(15%)	(10%)	(2%)	(3%)	(7%)	(63%)	

Cramer's phi = .34 $p < .08$

table continues

SAD/ANGER #4Facial Code

<u>Verbal</u> <u>Report</u>	Interest	Happy	Surprised	Afraid	Angry	Sad	Gaze	Verbal Total
Neutral	7	0	0	1	0	0	5	13(22%)
Happy	0	0	0	0	0	0	1	1 (2%)
Surprise	2	0	1	0	0	1	3	7 (12%)
Afraid	1	0	0	0	0	0	0	1 (2%)
Angry	6	0	1	0	0	1	3	11(18%)
Sad	3	2	1	0	1	7	9	23(38%)
Concern	0	0	0	0	0	0	4	4 (7%)
Facial	19	2	3	1	1	9	25	60
Total	(32%)	(3%)	(5%)	(2%)	(2%)	(15%)	(42%)	

Cramer's phi = .29 $p < .64$

table continues

HAPPY #5

Facial Code

<u>Verbal</u> <u>Report</u>	Interest	Happy	Surprised	Afraid	Gaze	Verbal Total
Neutral	1	6	0	0	2	9(15%)
Happy	8	31	1	0	3	43 (72%)
Surprised	1	3	0	0	0	4 (7%)
Afraid	0	1	0	1	0	2(3%)
Sad	0	2	0	0	0	2(3%)
Facial	10	43	1	1	5	60
Total	(17%)	(72%)	(2%)	(2%)	(8%)	

Cramer's phi = .37* $p < .005$

table continues

HAPPY/SAD #6Facial Code

<u>Verbal</u> <u>Report</u>	Interest	Happy	Surprised	Afraid	Sad	Gaze	Verbal Total
Neutral	9	4	0	0	1	1	15(25%)
Happy	7	2	0	0	0	2	11 (18%)
Surprised	2	1	0	0	0	0	3 (5%)
Sad	22	2	1	1	2	2	30(50%)
Concern	1	0	0	0	0	0	1 (2%)
Facial	41	9	1	1	3	5	60
Total	(68%)	(15%)	(2%)	(2%)	(5%)	(7%)	

Cramer's phi = .19 $p < .98$

Table 6

Correlations Between Facial and Verbal Measures of Affect Match and Empathy.

	Empathy Continuum	Verbal Affect match	Facial Affect Match
Empathy Continuum	1.00		
Verbal Affect Match	.75*	1.00	
Facial Affect Match	.13	.03	1.00

Note: * significant at $p < .05$.

Table 7

Concordance between children's verbal affect match scores
and facial affect match scores

		Afraid #1				
		<u>Facial Display</u>				
		<u>Discordant</u>	<u>No Emotion</u>	<u>Similar</u>	<u>Same</u>	<u>Verbal Total</u>
<u>Verbal Report</u>						
Discordant	0	0	0	0	3	3(5%)
No Emotion	0	5	6	2	13	13(22%)
Similar	2	6	5	0	13	13(22%)
Same	0	12	12	7	31	31(52%)
Facial Total	2 3%	23 38%	23 38%	12 20%	60	60(100%) 100%

Cramer's phi = .35* $p < .007$

Note: numbers refer to children

Categories depict children's reports and displays of emotion matched to the emotion they report for the stimulus character. That is: 0 = discordant emotion between report for self and character; 1 = no emotion for self; 2 = similar emotion for self and character; 3 = same emotion reported for self and character.

table continues

Sad #2Facial Display

	<u>Discordant</u>	<u>No Emotion</u>	<u>Similar</u>	<u>Same</u>	<u>Verbal Total</u>
<u>Verbal Report</u>					
Discordant	0	0	0	0	0 (0%)
No Emotion	0	6	5	1	12(20%)
Similar	2	19	13	3	37(62%)
Same	0	9	2	0	11(18%)
Facial Total	2 3%	34 57%	20 33%	4 7%	60(100%) 100%

Cramer's phi = .19 $p < .58$

Sad #3Facial Display

	<u>Discordant</u>	<u>No Emotion</u>	<u>Similar</u>	<u>Same</u>	<u>Verbal Total</u>
<u>Verbal Report</u>					
Discordant	1	0	0	0	1 (2%)
No Emotion	0	2	7	1	10(17%)
Similar	0	4	18	2	24(40%)
Same	0	1	21	3	25(42%)
Facial Total	1 2%	7 12%	46 77%	6 10%	60(100%) 100%

Cramer's phi=.59* $p < .0001$

table continues

Sad/Angry #4Facial Display

	<u>Discordant</u>	<u>No Emotion</u>	<u>Similar</u>	<u>Same</u>	<u>Verbal Total</u>
<u>Verbal Report</u>					
Discordant	0	0	1	0	1 (2%)
No Emotion	0	7	6	0	13(22%)
Similar	1	5	13	5	24(40%)
Same	1	6	9	6	22(37%)
Facial	2	18	29	11	60(100%)
Total	3%	30%	48%	18%	100%

Cramer's phi = .21 $p < .46$

Happy #5Facial Display

	<u>Discordant</u>	<u>No Emotion</u>	<u>Similar</u>	<u>Same</u>	<u>Verbal Total</u>
<u>Verbal Report</u>					
Discordant	0	0	1	3	4 (7%)
No Emotion	2	1	0	6	9 (15%)
Similar	1	0	2	3	6 (10%)
Same	1	10	1	29	41(68%)
Facial	4	11	4	41	60(100%)
Total	7%	18%	7%	68%	100%

Cramer's phi = .32* $p < .02$

table continues

Sad/Happy #6Facial Display

	<u>Discordant</u>	<u>No Emotion</u>	<u>Similar</u>	<u>Same</u>	<u>Verbal Total</u>
<u>Verbal Report</u>					
Discordant	4	4	0	4	12(20%)
No Emotion	1	7	0	3	11(18%)
Similar	1	8	2	1	12(20%)
Same	2	17	2	4	25(42%)
Facial	8	36	4	12	60(100%)
Total	13%	60%	7%	20%	100%

Cramer's phi = .25 $p < .20$

Table 8a

Concordance between subjects' verbal responses
and stimulus character's emotion

<u>Vignette</u>	<u>Affect Match</u>	<u>No Emotion</u>	<u>Discordant Emotion</u>
Afraid #1	73%	22%	5%
Sad #2	80%	20%	0%
Sad #3	82%	17%	2%
Sad/Angry #4	77%	22%	2%
Happy #5	78%	15%	7%
Sad/Happy #6	62%	18%	20%

Note: Affect match includes both responses that were the same and similar to the emotion reported for the stimulus character.

table continues

Table 8b

Concordance between subjects' facial displays of emotion
and the emotion they report for the stimulus character

<u>Vignette</u>	<u>Affect Match</u>	<u>No Emotion</u>	<u>Discordant Emotion</u>
Afraid #1	58%	38%	3%
Sad #2	40%	57%	3%
Sad #3	87%	12%	2%
Sad/Angry #4	67%	30%	3%
Happy #5	75%	18%	7%
Sad/Happy #6	27%	60%	13%

Appendix A

Parental Permission Form

STUDY OF EMPATHY IN CHILDREN

Dear parent:

I am investigating empathy in children, that is, how children understand and respond to emotional expressions and characteristic situations that may make people feel happy or sad. I would like to invite your child to participate in this study, supervised by Dr. Janet Strayer/Dr. Elinor Ames of Simon Fraser University. Your child's involvement in the study will be greatly appreciated.

The procedures to be used are fairly simple. Children's facial reactions while viewing a short videotape will be recorded. Your child will be unaware that they are being filmed until the end of the procedure in order that a child's facial expressions are not affected by an awareness that they are being recorded. After viewing the videotape children will be interviewed concerning their reactions to events and characters in the videotape. My purpose is to compare facial and verbal measures of empathy in order to establish whether facial expression provides a useful measure in the study of empathy in children.

Each child will be seen individually at Simon Fraser University and the whole procedure will take approximately an hour. All materials used in the study will be available for parents to preview.

Care will be taken to ensure that the activities are in no way upsetting to participants or disrespectful of the rights of any persons involved. Ethical approval for this study has been obtained from the Ethics review Committee of Simon Fraser University and the

Burnaby District School Board. Parents may, if they like, observe all procedures from an adjacent room. Participants will, of course, be able to discontinue at any time, and all attempts will be made to make participation convenient for you. Children will be paid \$5.00 for their participation in the study.

The information gathered in the study concerning your child will remain anonymous and confidential. A summary of the findings of the study will be made available upon request to participants.

If you have any questions, feel free to contact the project researcher, Kim Chisholm (420-0273/291-3543). Thank you. I trust the study will be both enjoyable and interesting for you.

Sincerely

Kim Chisholm

Appendix A

Parental Permission Form

I _____ give my permission for
_____ to participate in the study entitled The Study of
Empathy in Children, taking place at Simon Fraser University. I will be contacted by the
project researcher Kim Chisholm to answer any questions I may have regarding this project
and to set up a testing time that is convenient for myself and my child. I understand that the
researcher abides by all ethical standards and will ensure that the experience will be an
enjoyable one for my child. I further understand that my child will be assured that she may
withdraw from this study at any time.

Parent's Signature _____

Parent's Phone Number _____

Appendix B

Instructions to Subjects

First of all I'd like to let you know that this is supposed to be fun and interesting for you. Anytime that you feel like stopping or you don't feel like doing this anymore you just let me know. What you are going to be doing is watching 6 short stories and after you've watched them all I'll be asking you about what you thought of them.

A little cartoon will come on first which is just to make sure you're paying attention to the television.

Between each film you'll hear a "beep" sound which is just to tell you that the next story is coming on. It takes about half an hour to watch all the stories.

While you are watching these stories I'll just be in the hall. If you need me you can just call for me or come on out and I'll just be outside the door. When they're all done I'll come back in and we'll talk about them.

Button press Instructions

Do you see this button? What I would like you to do while you are watching the films is to press this button anytime that you feel an emotion while you are watching. Do you know what an emotion is? Can you tell me what an emotion is? (All subjects were able to

provide a definition of emotion that assured me they understood the instructions). That doesn't mean you have to feel an emotion. Some kids do; some kids don't. But if you do feel an emotion I'd like you to press the button. Give it a try.

Appendix C

Description of Televised StimuliOLD HOUSE (from commercially produced film)

Three children sneak into a fenced-in yard at night. A boy climbs up creaking stairs to peer through a window into the house. A looming shadow of a man appears above him, and the children run away.

SPILLED MILK (from Twelve and a Half Cents, National Film Board of Canada)

A husband and wife have an angry exchange while their daughter is watching T.V. in the background. The man slams the door as he leaves; the woman shouts at the girl to come to dinner; the girl accidentally knocks over a glass of milk and the mother slaps her.

JEANNIE (from Loved, Honored and Bruised, National Film Board of Canada)

A young woman is shown talking directly to the viewer about the difficult life she and her children had on an isolated farm with her abusive husband.

SKATES (from a commercially produced film, Our Vines Have Tender Grapes; film segments obtained from Dorothy Flapan, who used them in a 1968 study)

A girl and boy argue over taking turns on her new skates. The boy calls her names and threatens to tattle. She pushes him down and he runs crying to the girl's mother. The father is called in to pursue the issue. The boy lies and the father believes his story. The girl defiantly maintains her story, is punished, and her skates given away to the boy. The girl is shown crying.

CIRCUS (from Our Vines Have Tender Grapes)

A father and daughter go to see the circus train on stopover one night. The elephant is let out to perform some tricks. The girl jumps and laughs excitedly, and is lifted up on the elephant's trunk.

CANES (from I'll Find a Way, National Film Board of Canada)

A girl introduces herself to viewers and talks pleasantly about her life and fun, despite her physical disability. She is then shown practicing walking up and down stairs with canes, while joking with the adult physiotherapist.

Appendix D

Empathy Continuum Interview

For each of the six vignettes the following questions were asked:

1. Can you tell me in your own words what happened in this story?

2. How did you feel when you were watching that story?

a) if the subject says "bad", "upset", "worried/concerned", or gives a vague reply,

E. says "Tell me more about what you mean by _____".

b) if the subject says "surprised" or "excited" E. asks if that is a

good _____ or bad _____ feeling.

c) if the response is still vague, prompt with the emotion list below. Do not query natural responses, i.e. "ok" "fine".

Happy

Surprised

Angry

Afraid

Sad

Yucky/worried

Nothing much

3. Did you feel (emotion) a little or a lot?

4. What made you feel (emotion) a little/lot?

5. How do you think (name of character) in the story felt?

Happy

Surprised

Angry

Afraid

Yucky/worried

Nothing

6. Did he/she feel that _____ a little or a lot?

7. Why do you think she/he felt that (emotion)?

Appendix E

Social Desirability Questionnaire for Children

- | | | |
|--|------|-------|
| 1. I always enjoy myself at a party. | True | False |
| 2. Sometimes I don't like to share my things with my friends. | True | False |
| 3. I am always polite to older people. | True | False |
| 4. I never get angry if I have to stop in the middle of something I'm doing to eat dinner or go to school. | True | False |
| 5. I tell a little lie sometimes. | True | False |
| 6. I would never hit a boy or girl who is smaller than me. | True | False |
| 7. Sometimes I do not feel like doing what my teachers want me to do. | True | False |
| 8. I never act fresh or talk back to my mother or my father. | True | False |

9. When I make a mistake, I always admit I am wrong. True False
10. I feel my parents aren't always right. True False
11. I have never felt like saying unkind things to a friend. True False
12. I always finish all of my homework on time. True False
13. Sometimes I have felt like throwing or breaking things. True False
14. I never let someone else get blamed for what I have done. True False
15. Sometimes I say something just so my friends will think I'm important. True False
16. I am always careful about keeping my clothing neat and my room picked up. True False
17. I never shout when I feel angry. True False

18. Sometimes I feel like staying home from school even when I am not sick. True False
19. Sometimes I wish my parents didn't check up on me so closely. True False
20. I always help people who need help. True False
21. Sometimes I argue with my mother to do something she doesn't want me to do. True False
22. I never say anything that would make a person feel bad. True False
23. My teachers always know more about everything than I do. True False
24. I am always polite, even to people who are not very nice. True False
25. Sometimes I do things I've been told not to do. True False
26. I never get angry. True False

27. I sometimes want to own things just because my friends have them. True False
28. I always listen to my parents. True False
29. I never forget to say "please" and "thank-you". True False
30. Sometimes I wish I could just "mess around" instead of having to go to school. True False
31. I always wash my hands before every meal. True False
32. Sometimes I dislike helping my parents even though I know I should. True False
33. I never find it hard to make friends. True False
34. I have never been tempted to break a rule or law. True False
35. Sometimes I try to get even when someone does something to me. True False
36. I sometimes feel angry when I don't True False

get my way.

37. I always help an injured animal.

True False

38. Sometimes I want to do things my
parents think I am too young to do.

True False

39. I sometimes feel like making fun
of other people.

True False

40. I have never borrowed anything
without asking permission first.

True False

41. Sometimes I get annoyed when someone
disturbs something I've been working on.

True False

42. I am always glad to help others when
they need it.

True False

43. I never get annoyed when my best
friend wants to do something I don't want to do.

True False

44. Sometimes I wish that other people
would pay more attention to what I say.

True False

45. I always do the right things. True False
46. Sometimes I don't like to obey my parents. True False
47. Sometimes I don't like it when another person asks me to do things for them. True False
48. Sometimes I get mad when people don't do what I want. True False

Appendix F

Facial Coding Segment for each Vignette

1. Old House- Shadow looms over boy on the porch.
2. Spilled Milk- Mother slaps daughter for spilling milk.
3. Jeannie- Third close up of woman's face. She is describing getting punched in the face by her husband.
4. Skates- Father takes little girl's skates off her shoulder and gives them to the little boy while admonishing her for selfishness.
5. Circus- After much anticipation the elephant comes out of the truck.
6. Canes- The girl reaches the top of the stairs.

Appendix G

AFFEX Facial Codes

Interest

- a). brow raised with bulging or furrowing of forehead; eyes are widened and roundish; move is either open or closed but relaxed.
- b). Brows are drawn together; eyes are narrowed or squinted; lips are pursed.
- c). forehead is smooth; eyes normally opened; mouth relaxed.

Happy

forehead smooth; cheeks raised, furrow below eye; corners of mouth drawn back and up.

Surprised

brows raised; bulging or long furrows completely across forehead; mouth opened oval or roundish.

Sad

inner corners of brow raised; horizontal wrinkles in forehead; nasal root narrowed; eyes squinted with raised lower lid and cheeks; corners of mouth drawn downward; furrows from nose to mouth corners.

Angry

brows drawn sharply downward and together; nasal bridge bulges or furrows; eyes squinted or narrowed; cheeks raised; rectangular or squarish mouth; wide open tense mouth; lips pressed tightly together teeth clenched.

Afraid

brows straight or normal shape, slightly raised and drawn together; upper lids raised, tense, white of eye shows more than normal; mouth opened corners retracted straight back.