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Understanding versus regulation of emotion: Associations with externalizing and internalizing behaviors in a sample of middle school children

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Understanding Versus Regulation of Emotion:
Associations with Externalizing and Internalizing Behaviors in a
Sample of Middle School Children

by

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Externalizing behavior disorders in children, such as conduct disorder, have been attributed both to emotional factors stemming from their early experience and to cognitive factors reflecting a disability of reasoning. However, while the lack of emotional control as exhibited by angry, aggressive behavior is definitive of such conduct problems, many of these children do evidence a skillful use of emotions when pursuing short-term social goals. Additionally, some research has raised the question of the role of internalizing factors in the etiology of disruptive behaviors. In order to further examine affective and cognitive contributions to behavior problems, this study compared the emotional functioning of 48 sixth-grade children to self-reports and teacher evaluations of externalizing and internalizing behavior problems. Emotional functioning was measured along two dimensions. The children's cognitive developmental level of understanding of emotion was determined in the context of a structured interview. Emotional control was indexed by coding facial expressions of emotions during a challenging task. Facial anger was hypothesized to be positively associated with externalizing behavior problems, while higher levels of sadness and fear were anticipated to indicate the presence of internalizing behaviors. Emotional understanding that has been shown to be maturational or stage-linked in quality was not expected to covary with behavior problems, while emotional understanding of the variety presumed to mediate social cognition was predicted to show departures from normal levels among children with externalizing problems. Analyzed separately, facial indicators and cognitive developmental level of emotional understanding did little to predict the presence of behavior problems. Among facial indicators, the only significant finding was that a higher frequency of expressions containing components of anger differentiated externalizing from internalizing children. No significant associations were found between understanding of emotion and behavior problems. However, interactive associations were demonstrated between facial displays of emotion and emotional understanding. Significant interactions indicated a joint role for sadness and the ability to discuss emotion in predicting externalizing and aggression, with high sadness and low ability to discuss emotion associated with these behaviors. Fear and the understanding of self and others interacted in the prediction of aspects of internalizing. Specifically, high fear and low understanding of emotion in oneself and other people were associated with physical symptoms of anxiety. There was a trend toward lowered displays of multiple emotions along with the cognitive indicators of discussing emotion and understanding self and other to predict depression. Additionally, a number of main effects revealed that positive adjustment (lower levels of externalizing and internalizing and higher levels of self-control) was predicted by increased understanding of self and others along with high degrees of self-consciousness expressed on the face during the challenging task.
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# Table of Contents

Abstract ........................................................................................................................ ii

Acknowledgments ..................................................................................................... iii

List of Figures ........................................................................................................... v

List of Tables ............................................................................................................. vi

Chapter

1. Introduction ........................................................................................................ 1

2. Methods ............................................................................................................. 50

3. Results ............................................................................................................... 62

4. Discussion ......................................................................................................... 76

References ............................................................................................................. 87

Tables and Figures ................................................................................................. 98

Appendices

A. Coding Manual for KAI-R ............................................................................. 105

B. Statement Of Parent Consent for Flagship Project ....................................... 126

C. Procedure for Flagship Measures ................................................................. 127

D. Study Recruitment Letter .............................................................................. 128
List of Figures

1. Sadness and Discussing Emotion predicts Externalizing ....................102
2. Sadness and Discussing Emotion predicts Aggression ......................102
3. Fear and Understanding Self/Other predicts Anxiety .....................102a
4. Fear and Understanding Self/Other predicts Depression ..................102a
5. Anger and Understanding Self/Other predicts Social Anxiety ..........103
6. Self-consciousness and Understanding Self/Other & Internalizing ......103
7. Self-consciousness and Understanding Self/Other & Depression ..........104
8. Self-consciousness and Understanding Self/Other & Somatizing ........104
9. Self-consciousness and Understanding Self/Other & Externalizing ......104a
10. Self-consciousness and Understanding Self/Other & Aggression .......104a
11. Self-consciousness and Understanding Self/Other & Self-control ......104b
12. Self-consciousness and Discussing Emotion & Self-control ............104b
List of Tables

1. Action Units Coded in the Study ............................................................ 99
2. Correlations among Behavior Measures and Facial Magnitude Scores ... 100
3. Correlations among Cognitive Subscales .............................................. 101
Understanding Versus Regulation of Emotion: Associations with
Externalizing and Internalizing Behaviors in a Sample of Middle School Children.

CHAPTER 1: INTRODUCTION

Children with disruptive behavior problems have been said to demonstrate characteristic differences in both cognitive and affective functioning as compared to children without these behavioral disturbances. Deficits in cognitive functioning, such as neurological abnormalities, low intellectual functioning (Moffit, 1993), or inadequate school learning (Schonfeld, Shaffer, O'Connor, & Portnoy, 1988), have been purported to precipitate or reflect conduct problems. Other research has focused on the role played by emotion in the etiology of behavior problems, in particular the identification of emotion disintegration patterns (Cole, Michel, & Teti, 1994). Poor emotional regulation is a common sequelae of maladaptive parenting characterized by deficiencies in warmth, supervision, and the granting of autonomy (Maccoby & Martin, 1983), and is seen to result from stressors presumably mediated by the affective system, such as high levels of familial conflict (Emery & O'Leary, 1982).

The purpose of this study was to compare the cognitive and affective functioning of 6th grade children who are at risk for developing disruptive behaviors. This type of child pathology has been defined variously as delinquent, a legal designation, and conduct
disordered, a clinical diagnosis considered to be a disruptive behavior disorder (American Psychiatric Association, 1994). A related conceptualization in the literature is that of the externalizing behaviors, a concept emerging out of factor analytic studies which have consistently shown a broad-band grouping of child problems which can be characterized as antisocial and undercontrolled (cf. for review Achenbach & Edelbrock, 1978). 

Externalizing behaviors seem to epitomize a deficit of emotional control as indicated by high levels of aggression (Cook, Greenberg, & Kusche, 1994). These behaviors may reflect a lowered understanding of situational social cues and a diminished capacity to comprehend the inner states of others, a common cognitive referent by which behavior is guided (Dodge, 1980).

The current study was proposed in order to gain a clearer view of how such cognitive and emotional deficits may be interrelated. Children's cognitive-developmental level of understanding of emotion as measured by a structured interview was compared with an indicator of actual behavioral control, children's facial expression of emotion. The goal of the study was to identify whether these cognitive and emotional indices correspond differentially, or in tandem, to manifest behavior problems.

While cognitive and emotional factors act in concert during daily functioning, research investigating children with disruptive behavior disorders has tended to focus on one or the other of these elements. The approach taken by this study was to separate aspects of cognitive development from emotional responding and correlate their occurrence with child behavior outcomes. This study limited its analysis to indicators of behavior disorder
contemporaneous to the time of the study, although longitudinal data would be expected to extend or limit the findings.

**THE DEVELOPMENT OF CHILDREN'S UNDERSTANDING OF EMOTION**

Children’s understanding of emotion encompasses both their apprehension of the emotions which they experience as well as their knowledge about the emotions of others. This area has been broadly explored in terms of the child’s achievement of cognitive-developmental level. The emergence of basic emotional expressions in infancy, (i.e., joy, fear, anger, sadness, and surprise) and the development of these emotions throughout childhood into more complex combinations such as guilt, empathy, or resentment, has been noted to follow a predictable sequence (Fisher, Shaver, & Carnochan, 1990). Similarly, causal understanding of emotion has been seen to parallel age-related increases in appraisal and judgement (Thompson, 1989).

The cognitive-developmental models owe their framework to Jean Piaget (1952), who pioneered the idea that development can be characterized as a sequence of stages which (a) unfold in a predictable fashion with respect to order and end stage, (b) entail an increasingly sophisticated use of logical structures and, (c) have an underlying form which is reproduced across various domains (Case, 1984). Thus such faculties as cognition, with its various stage transitions toward the emergence of object permanence, conservation, spatial perspective-taking, and seriation can be seen to roughly parallel that of moral development with its attendant stages of preconventional (moral decisions based upon avoiding punishment and obtaining rewards), conventional (based upon desire for social
approval and conformance to legitimate authority), and postconventional (morality based upon conception of community benefits and self-chosen ethical principles) understanding (Colby, Kohlberg, Gibbs, & Lieberman, 1983).

The paradigm used to investigate the increasing cognitive organization of children's understanding of emotion has employed a structured interview technique designed to elicit information about the ability of children to entertain increasingly complex ideas regarding emotional situations and the emotional reactions that they elicit. Sophistication of knowledge about emotions is indicated by children's endorsement of multiple emotions (simultaneity of emotions), differing emotional valence (conflicting emotions), and the ability to comprehend that conflicting emotions can be directed at the same target (ambivalence). The results of such interviews have consistently revealed that children progress through predictable stages in their ability to demonstrate these benchmarks of emotional understanding (Donaldson & Westerman, 1986; Harter & Buddin, 1987; Winter & Vallence, 1994).

At the preoperational level of development, when children can begin to represent experiences mentally rather than requiring the presence of objects and events in order to interact with them, only a single emotion is typically identified as possible in a given situation. However, even under 4 years of age, children demonstrate a sense of varying intensity, such as "very" scared or "a little" sad. By the age of four, most children can express an understanding of multiple emotions, but then only of the same valence, such as the simultaneous expression of being both sad and scared.
At the stage of concrete operations children can understand contradictory feelings. Thus, by approximately the age of 7 years, children are able to report being happy and sad due to a single set of events. They can, at this age, also grasp that multiple emotions may differ in intensity, allowing children to report being “very happy” and “a little scared”. These findings are consistent with the developing capacities by which multiple representations are integrated into a single perceptual experience. Because multiple attributes of a complex stimulus can now be attended to, the child is able to comprehend that conflicting emotions can be had for different people (e.g. happy with dad but mad at mom). However, children at this age still cannot verbalize that contradictory feelings can be had for a single target.

While research has varied in regard to the age when children fully appreciate that multiple emotions can be directed at the same target (largely due to the reliance of the methodology upon verbal versus nonverbal methods of probing the child’s responses; Wintre & Vallance, 1994), there is general agreement that, by the end of the 11th year, most children will evidence a full range of emotional understanding, the end state being the ability to identify the possibility of emotional ambivalence in a single situation, toward a single person.

An important distinction must be made between young children’s emotional understanding and their emotional experiencing. While years of development are required for a child to conceptualize the fullness of an emotional response to a socially complex situation, at a much younger age children are capable of behaviorally demonstrating that
they experience quite complex emotional reactions to affectively arousing stimuli. For example, as early as 21 months of age, children display empathy in the face of another’s distress, a response that entails the appropriate matching of another’s emotion with the child’s own, based on contextual cues (Strayer, 1989). Empathy is a relatively sophisticated response, given that early empathy shows evidence of the components of surprise, anger, fear, sadness, and amused interest (Zahn-Waxler & Radke-Yarrow, 1990) and provides some evidence that children do experience simultaneous emotions of differing valences in regard to the same person long before they can express doing so.

By the Piagetian view, over the course of development there occurs a hierarchical integration of cognitive structures (Case, 1984), resulting in the capacity to perform complex, multilevel operations “with regard to the number and type of representations that the child can simultaneously control, coordinate, or integrate,” (p. 86, Harter & Whitesell, 1989). This allows emotional information processing in the absence of physical stimuli or in the presence of contradictory physical cues.

Thus, a growing body of research has addressed how, throughout development, cognition increasingly informs the child’s experience of emotions in order to meet a parallel increase in environmental demands. Understanding of the coordination of multiple emotions and the comprehension of the coexistence of conflicting emotions is necessary to complete the conceptual complexity that is generally considered available in the mature stage of emotional development. Ideally, an adult human has, at the ready, a unified system of action, feeling, and control that can be applied both in socially straightforward
situations as well as under conditions that lack emotional clarity (Saarni, 1990).

Cognitive Factors in Conduct Problems

While a description of the normative developmental differences of children's understanding of emotion seems to have been well sketched, far fewer studies have applied cognitively based measures of emotional understanding to non-normative samples. The importance of finding that hypothesized cognitively-based developmental sequences apply in clinical populations of children is particularly germane to the understanding of behavior disorders. Such children, particularly those with conduct disorder, have been characterized as deficient in the ability to make well-considered behavioral choices due to biased cognitions (Dodge & Frame, 1982). Thus the relationship between cognitive behavioral controls and the understanding of anticipated outcome appears compromised in these children. Failure to inhibit impulses, such as is necessary in order to achieve a long-term goal, as well as the denial, diminishment, or misinterpretation of the goal appear as hallmarks of this condition. However, just how these factors are linked remains largely undiscovered.

An area considered to reflect cognitive factors that may contribute to the development of conduct problems is intelligence level. Intelligence, as measured by standardized tests, is a commonly cited protective factor against later criminality. In a large, longitudinal study, the highest IQs were found among low-risk children who later did not become delinquent in adolescence; among high risk boys, a high IQ was associated with a later nondelinquent status (White, Moffitt, & Silva, 1989). Structural equation
models have indicated that a low IQ at 8 years of age may be an antecedent variable in a developmental pathway contributing to later delinquency and lowered school achievement by age 15 (Fergusson & Horwood, 1995). However, it has also been shown that the relationship of early aggressive behavior to the frequency and seriousness of later offenses is largely independent of intelligence (Stattin & Magnusson, 1989).

Schonfeld, Shaffer, O’Conner, & Portnoy (1988) found results supporting the hypothesis that cognitive deficits as measured by the Wechsler Intelligence Scale for Children (WISC) were causally related to the development of conduct disorder. However this finding obtained only on those subscales reflecting acquired intelligence such as the Information, Vocabulary, and Arithmetic subscales. Conversely, the subscales of Block Design, Object Assembly, and Picture Completion, which the authors identify as more closely linked to biologically-based, innate capacities, were not shown to be related to the incidence of conduct problems. These authors conclude that deficits of “crystallized” intelligence, acquired though acculturation, provides a link between the cognitive deficiencies noted in children with disruptive behavior problems and their unsuccessful negotiation of social events.

Other cognitive approaches to the study of acting-out disorders suggest that it is the interpretation of events that determines the characteristically abnormal responding. Attributing emotions accurately requires taking into account the goals of others, the outcome of events, and the interpretation of those outcomes by others. A cognitive approach to conduct disorder emphasizes that behavior problems reflect a child’s
characteristically negative way of viewing events. Dodge (1980) found that aggressive children do not interpret the negative cues associated with malevolent intent any differently than do other children. However, when confronted with ambiguous social cues, they tend to attribute them to a hostile intention. Thus, cognition surrounding the processing of emotions has been found to depend upon social factors and has been regarded by various researchers to be part of the domain of "social cognition."

Studies exploring social cognition can be seen as an attempt to conceptually acknowledge the interdependence of emotional and cognitive functioning. Social cognition is a faculty presumed to reflect a child’s ability to differentiate social cues and to appropriately accommodate those cues in executing a behavioral response (Dodge, 1980). Social cognition was conceptualized by Pettit, Dodge, & Brown (1988) to embody social information processing and problem solving which they posited would be affected by emotional factors, specifically early family experiences. Looking at children’s affective responding to simulations of emotionally provocative interpersonal situations, the authors asked children what they would do if they were the one being provoked in the hypothetical situations. They found that a summary measure of aggressiveness, including attributional biases of hostility to others, predicted the child’s social competence in the classroom (as measured by sociometric nominations and teacher ratings) and was associated with several dimensions of family experience. It was concluded that early negative social experiences, particularly aberrant maternal attitudes, values, and behaviors, may be predictive of poor social problem-solving and, commensurately, inadequate social competence.
Studies looking at the effects of social cognition on maladjusted children have assumed that such child variables as interpersonal problem-solving competency and causal beliefs mediate the directional effect of risk factors on child outcomes. Thus Downy and Walker (1989) found that children who exhibit greater alternative thinking (i.e., can generate more answers to the question “What are all the possible ways to solve this problem?”), consequential thinking (i.e., can answer “What might happen using this solution?”) and solution adequacy (i.e., the generation of likely and effective solutions) were also rated lower on measures of aggression and peer aggression. Similar studies have found that children who exhibited greater social competence, such as high rates of prosocial behavior and low rates of aggression, were also those demonstrating interpersonal problem-solving competency such as the ability to generate alternative solutions and the ability to express relevant consequences (Denham, McKinley, Couchoud, & Holt, 1990; Weiner & Handel, 1985).

Unfortunately, due to the measures used in the social cognition literature, it is often difficult to determine which portion of the responding is due to cognitive factors and which is due to affective factors. In some studies of social cognition, the methodology used has induced personal involvement by instructing the child to role-play an emotional vignette or remember in depth a vivid emotional situation. Other measures of social cognition have combined cognitive components, such as assessment of causal beliefs and problem solving competency, concurrently with assessments of emotional reactivity. Thus, children were encouraged to respond emotionally and those same responses were
used to derive the cognitive measures.

Little research has been conducted to examine more purely the cognitive influences on children's ability to understand and describe emotion. However, Gnepp (1989) assessed a nonclinical sample of children on their ability to consider the personal history of a hypothetical child and then infer the resulting emotions that would be logical in the context of the story. The study found that, even when effects of mental capacity (i.e., speed of processing) were partialed out, a significant correlation remained between sociometric status (by peer ratings on questions like "How much do you like to play with this person?") and the ability to make accurate appraisals regarding the emotions of others in evocative situations (Gnepp, 1989). While suggestive, the above study continued in the tradition of estimating cognitive and emotional factors together in one measure.

A more appropriate approach to the specification of cognitive and affective correlates accompanying the development of externalizing problems may be derived by a separate comparison of the two factors. In the current study, it is proposed that using a measure of cognitive-developmental level will provide an index of "cold" cognition, avoiding the arousal of the child's own personal emotions that may tap the affective system (Zajonc, 1980). The study will assess children's understanding of emotion by looking at more than one aspect of such understanding. An index of cognitive-developmental level of understanding of emotion, one that captures those capacities known to emerge in a stage-like manner, will be compared to one asking children to talk about emotions in the context of their actual experiences.
Measurement of Cognitive-Developmental Level in Children with Behavior Problems

Harter (1977) noted that a delay of cognitive-developmental level is seen to occur among children with various psychological difficulties. Using case studies of children seen in therapy, she described how the cognitive-developmental limitations of children may increase their emotional pathology. She posited that these children, already at a disadvantage for integrating conflicting emotions due to their psychological problems, are at risk of a developmental lag in the capacity to conceptualize multiple emotions simultaneously. However, specific diagnoses of the children were not delineated.

Cook, Greenberg, and Kusche (1994) employed a cognitive-developmental measure for identifying the stage of children's understanding of their emotional experience in a population of children with behavior disorders. The study used a structured interview, the Kusche Affective Interview-Revised (KAI-R - Kusche, Beilke, & Greenberg, 1988) which allows the rating of a number of aspects of emotional understanding. The study measured the responses of 6 and 7 year-old children on the KAI-R and compared the sophistication of their answers to parent reports of behavior problems. The authors concluded that high behavior problem children demonstrated lower levels of emotional understanding according to a cognitive-developmental framework. Again, the type of behavior problems exhibited by children in the study was not specified.

THE DEVELOPMENT OF EMOTIONAL RESPONDING

While cognition and emotional understanding exhibit stage-like regularities as they
emerge across individuals (Carroll & Steward, 1984), the development of emotional responding may possess special characteristics which appear to preserve a direct connection to early patterns of emotional interaction as they occurred in the infant-parent dyad (Gianino & Tronick, 1988). Emotions are thought to be important contributors to enduring personality characteristics (Malatesta, 1990) and preserve a characteristic style of responding across the life-span by signaling the salience of events and providing action tendencies for negotiation of the environment (Campos, Campos, & Barrett, 1989).

This formative component of early emotional learning has been called the "attachment system" (Bowlby, 1969) and, more recently, has been conceptualized as related to the development of "emotion regulation," the internal modulation, begun in infancy, of affective responding. The achievement of emotion regulation is seen to contribute to a characteristic style of coping that may have adaptive or maladaptive consequences (Cole, Michel, & Teti, 1994). These patterns of responses have been considered an important source of individual differences (Maccoby, 1984) and also of developmental psychopathology (Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989).

Although emotion is certainly "operantly linked to situational antecedents, expressive patterns, and internal sensory feedback" (Saarni, 1988, p. 132), an operant learning model is not sufficient to explain all situations of emotional responding. For example, aversive experiences in early emotional exchanges with primary care givers do not extinguish attachment. Rather, interactional patterns with the caregiver that are marked with unpredictability, negative emotion, and low responsivity on the part of the parent actually
increase attachment behavior in children. Bowlby (1969) observed that an increase in proximity-seeking toward the parent and a decrease in environmental exploration characterize child behaviors in these types of relationships.

Furthermore, the literature in adult attachment research points to the relative stability of this "secure" or "insecure" pattern of responding to significant others over the course of the life span (Koback & Sceery, 1988; Shaver & Hazan, 1993). Of particular importance to the externalizing problems may be attachment classified as insecure-avoidant. This attachment classification has been linked to a hostile and rejecting parenting style, and shown to precede elementary school aggression (Renken et al, 1989).

Rather than focusing on the development of children's concepts as they structure the understanding of emotions (Bullock & Russell, 1989), the emotion regulation and attachment perspectives have instead emphasized the organizational quality of emotions themselves to influence the child's biological, cognitive, social, and representational systems (Richters & Cicchetti, 1993). Central to this idea is that, while emotions are important for the ongoing mediation of responses to immediate stimuli, they will also retain a characteristic patterning of response depending upon the child's early interactional history.

The capacity for emotional regulation presumably involves the coherent interrelationship between subjective feelings, physiological arousal and behavioral expression of emotion. It is this linked functioning that is seen to modulate the intensity of emotion, particularly in the service of reducing negative affect (Thompson, 1994).
Chronic exposures to stressors such as conditions surrounding insecure attachment, abuse, and family hostility reduce the capacity to regulate emotionality (Cummings, Zahn-Waxler, & Radke-Yarrow, 1981; Lyons-Ruth, Connell, Zoll, & Stahl, 1987). However, the mechanism by which these stressors mediate emotion regulation is not known. Disruptive emotional systems may be engaged when challenges occur, or inadequate cognitive strategies may fail to down-regulate unruly emotions that are natural in the face of stress. Or the paired action of both may occur.

Affective Factors in Conduct Problems

Numerous studies have found an association between instability of environmental conditions and externalizing disorders. For example, those children who exhibit a stable pattern of externalizing problems, are also seen to come from backgrounds characterized by discordant family life, even when perinatal and neurological factors are accounted for (McGee, Silva, & Williams, 1984). Alcoholism and father criminality are two of the strongest factors predicting the likelihood of the same behaviors among males (Wenar, 1994). Additionally, associative mating, the tendency for antisocial individuals to form couples, has been noted to compound the pathological interactions that may occur between the child and both parents (Robins, 1991).

Werner (1993), in her summary of a longitudinal study conducted on a cohort of children born in 1955 on Kauai, found that the factors in common among those children who evidenced a positive outcome later in life were essentially affective in nature.
Intrasubject differences of affectionate display, motivation, sense of mastery and positive self-concept were associated with the presence of emotional support both within and outside the family and provided an affective basis for later coping. Other studies examining emotionally-mediated factors contributing to externalizing behaviors have identified aversive and mutually-reinforcing family interactions as covarying with early forms of antisocial behavior (Patterson, DeBaryshe, & Ramsey, 1989). Such associative learning involves emotions that are powerfully reinforcing, but does not require that family members have a conscious understanding of the meaning of events in order to acquire the operant responses toward each other's behavior.

Also supporting an emotional interpretation for the emergence of disruptive behavior problems is the emblematic nature of anger in such disorders. Typically characterized as involving an "explosive disorder," these behaviors are characterized by higher-than-average aggression levels (Wenar, 1994). Thus, the emotional component is a highly salient aspect of this type of adjustment problem. Aggression and high anger levels have strong positive associations with the stability of behavior problems and the likelihood of criminal outcome (Stattin & Magnusson, 1989).

Evidence that factors underlying this type of responding are those of emotion regulation is provided by the finding that changes in the autonomic nervous system show a certain signature profile in children prone to antisocial behaviors. Indices of autonomic nervous system function, such as heart and respiration rates, blood pressure, and electrodermal responding, have been traditionally linked to the internal experience of
emotion (Levenson, 1994) and have been found to mark emotionally evocative events without the necessity of cognitive awareness (Corteen & Wood, 1972; Diamond, 1996). An association between lower resting heart rate and antisocial behavior has been shown in older children, adolescents, and adults which appears to accompany a reduced fear of aversive events (Lahey, Hart, Pliska, Applegate, & McBurnett, 1993). The presence of conduct problems is also more highly associated with a “lower autonomic activity-reactivity” (p. 106), as indicated by lower levels of adrenaline secretion in emotionally-challenging situations, than that of children without conduct problems (Magnusson & Bergman, 1990).

Although temperament may be a factor in such autonomic patterning, the relatively consistent presence of interactional risk factors such as authoritarian parenting, domestic violence and child neglect or abuse, suggests a strong role played by adverse environmental factors with information processing at the level of the affective system. The picture portrayed by the autonomic data of the externalizing child is that of an organism whose arousal-response in social situations is to both minimize fear-provoking events and maximize events that might be provocative of anger. Thus, perspectives that examine only the negative “approach” emotions such as anger, contempt, and disgust may not be adequate to fully explain how externalizing behavior is organized.

Incidences of disruptive child psychopathologies, such as conduct disorder, are also commonly linked with emotional dysfunction more characteristic of internalizing problems, such as depression and anxiety (Caron & Rutter, 1991). The complexity of the
interrelationship between multiple emotional factors has been demonstrated by Raine, Venebles, & Williams (1995) who found that delinquent boys exhibiting higher rates of anxiety at 15 years old were less likely to engage in criminal activity at age 29 than were boys who exhibited less physiological arousability.

Not only do internalizing and externalizing problems frequently co-exist in antisocial individuals, but depression among children has been found to predict later delinquency in adolescence (Loeber, Stouthamer-Loeber, van Kammen, & Farrington, 1991). However, the potential independence or interaction between the two dimensions is poorly understood. Interaction of the two factors is suggested by the fact that externalizing behavior problems in preschool predict, at a rate substantially better than chance, the later exhibition of both externalizing and internalizing problems (Fisher, Rolf, Hasazic, & Cummings, 1984). On the other hand, in the case of some developmental trajectories, internalizing and externalizing tendencies are seen to act in an independent rather than an interactive fashion. For example, internalizing problems, such as anxiety and withdrawal, have been hypothesized to lead to “risk-reduction,” mitigating against the expression of acting-out behaviors, such as illegal substance abuse, versus legal abuse, among adolescent males (Steele, Forehand, Armistad, & Brody, 1995).

The commorbidity of externalizing and internalizing problems is acknowledged in those empirically-based CBCL profiles that have identified syndromes of behavior most commonly associated with externalizing scores of girls and boys. The Depressed-Social Withdrawal-Aggressive pattern among boys has been associated with greatly increased
rates of aggressive behavior over the more common Delinquent profile among boys aged 6-11, which shows an elevation of scales only in delinquent behaviors. The significant components of the more aggressive pattern seem to be depression and social withdrawal. Among 6-11 year-old girls, a similar pattern exists. The Aggressive-Cruel profile is distinguished from the simple Delinquent profile by the addition of greater depression and immaturity, making this a more serious condition marked by greater levels of aggression and cruelty (Achenbach & Edelbrock, 1983).

Although relatively unexplored, other factors link externalizing and internalizing than rates of commorbidity. The characteristic of aggressive children to attribute a hostile intent to peers in an ambiguous situation has also been found among depressed children (Quiggle, Garber, Panak, & Dodge, 1992). Interestingly, this research found that depressed children show the depressogenic attributional style of attributing the source of problems to themselves, a pattern not shown by purely aggressive children. While a strictly cognitive explanation may be made for this finding, the contribution of the discrete emotions is also a possible contributor. The experience of particular emotions, such as the internalizing emotions, while putting children at risk for outcomes like depression, may also act as protecting socializing factors, reducing the expression of aggression toward others.

Children's self-reports of feeling worry, shame, and sadness have been linked to elevated levels of negative affect (Grych & Fincham, 1993; Haines, Metalsky, Cardamone, & Joiner, 1999), but few studies have examined how communicative displays of negative
affect may or may not accurately reflect the existence of relatively enduring emotional states.

Measurement of Affective Expression in Children with Behavior Problems

It has been found that discrete facial expressions of emotion are closely related to both the subjective experience of specific emotions (Ekman, Friesen, & Ancoli, 1980) and to autonomic differences (i.e., heart rate, skin conductance, finger temperature, and activity level) measured during the voluntary production of the specific facial expressions of fear and anger (Levenson, Ekman, & Friesen, 1990). Thus measurement of emotion via facial expressions allows a direct evaluation of the occurrence of a specific emotion. It also avoids potential subject reactivity or retrospective inaccuracy associated with self-report measures (Keltner, Moffitt, & Stouthamer-Loeber, 1995).

Keltner, Moffitt, and Stouthamer-Loeber (1995) theorized that a direct relationship would be seen between heightened levels of facial emotional responding and behavioral psychopathology. The authors found that a sample of 12- and 13-year-old boys who were reported as having externalizing problems via the Teacher’s Report Form of the Child Behavior Checklist (Achenbach & Edelbrock, 1983) exhibited higher levels of anger than other children as measured by the EMFACS, a facial expression coding system designed to identify fundamental emotions (Ekman & Friesen, 1976). Among these externalizing children, those who were “pure” externalizers, and thus were not rated as also having internalizing problems such as fear and sadness, showed three times more expressions of negative affect than the other children measured.
The authors also found that children showing evidence of emotions presumed to be associated with internalizing, such as sadness or repression of emotion, were not rated as being high in externalizing behaviors. This finding is linked to the observation that emotions regarded as “self-conscious,” such as shame, guilt, and pride, indicate the occurrence of self-awareness as well as the recognition that one’s emotions exist in relationship to social conventions (Keltner, 1994).

Studies of children’s facial expressions have not related these displays to internalizing behaviors. However, at least one study conducted with a clinical sample of adults found that major depressives showed more sadness than other clinical groups (Ekman, Matsumoto, & Friesen, 1994). It may therefore be reasonable to speculate that children exhibiting internalizing symptoms such as depression and anxiety may also show more sadness or fear on the face.

THE INTERRELATIONSHIP OF AFFECT AND COGNITION IN CHILDREN WITH CONDUCT PROBLEMS

Normative development is epitomized by increases in cognitive skills. The onset of perspective-taking and flexibility of responding both evidence advances in levels of abstract thinking. Similarly, the ability to modulate the expressive behavior associated with the physiological and intrapsychic experience of emotion is the foundation of all social bonds, including appropriate and moral conduct.
While cognitive and affective controls over behavior are often treated synonymously (Frijda, 1994; Lazarus, 1991) important differences can be seen in their parameters. Although some developmental models of regulatory function include the idea that cognitive controls over behavior can “regress” to previous levels of functioning (Santostefano & Rieder, 1984), it has been demonstrated that hypnotized subjects do not “lose” cognitive-developmental levels when the hypnotic suggestion is given to assume the thinking of a younger developmental age. For example, adult subjects hypnotized to believe and act as if they are cognitively preoperational, do not fail to conserve liquid successfully (Silverman & Retzlaff, 1986). Very differently, children and adults under stress are observed to employ emotion regulation strategies that are characteristic of developmentally earlier means of coping.

The above finding raises the question of functionally separate emotional and cognitive systems and their interrelationship. Of particular interest to the current project is the possibility of dissociations of emotional control from a cognitive understanding of emotion and the occurrence of this possibility in certain subgroups of children with emotional problems.

Children with conduct problems, while exhibiting a fundamental lack of emotional control, also appear proficient at prevarication, a skill necessitating many of the abilities of emotional competence (Saarni, 1990). This includes the ability to (a) discern another’s emotion, both expressed or anticipated given the particular situation, (b) use the expression of emotion common to one’s culture given the situation (i.e. an awareness of
cultural display rules), (c) understand that an external emotional expression need not match an internal emotional state, (d) take into account unique personal information in anticipating another's emotional response and how one's self-presentation should accommodate such differences, including the social closeness of this other (i.e. the school psychologist versus mommy). Most intriguing, is the capacity of these children to represent themselves as feeling, thinking, and acting the way others would expect or want them to in a given situation.

It is important to reiterate that, in general, the separation of affect and cognition into disparate intrapsychic factors influencing behavior, is a highly artificial endeavor. The discrimination of percepts, traditionally regarded as a purely cognitive activity, also involves value-laden motivational responding. Likewise, the intensity of experience, often regarded as a purely emotional dimension, necessitates that the cognitive distinction be made between one evoking stimulus and another. Thus, it is difficult to assign one factor causal precedence over the other in a full description of complex behaviors (Sroufe, 1996).

The linked processing of the cognitive and emotional systems has been characterized as involving a logical consistency between behavioral responses and the cognitions or beliefs that are held about emotion. Mayer & Salovey (1995) give the example of "a person who believes anger is bad in a particular situation and who repeatedly behaves angrily in spite of such beliefs" (p.197) as that of an individual who demonstrates a lack of "emotional intelligence." However, it is unclear to what extent emotional control is
synonymous with (i.e. follows from) conscious behavioral choice.

A relevant study allowed children to identify their feelings by choosing drawings depicting six different facial expressions (i.e., very happy, happy, neutral, sad, very sad, and angry). While normal and maladjusted boys did not differ in choosing the emotion they would expect to feel (i.e., when kicked on the playground by a younger boy), they did differ significantly in their control strategy ("I'd walk away" or "I'd just laugh") that they would use in response to this provocation. Maladjusted boys (diagnosis undefined) differed significantly in their ability to generate a control strategy, even after experimental prompts (Taylor & Harris, 1984).

While it is possible that children with externalizing disorders may lack insight into their own behavior, diminishing their emotional regulation, it may be that they do not suffer from a deficiency of cognitive evaluations of emotions, per se.

THE PRESENT STUDY

The current study examined a sample of children drawn from an environment distinguished demographically by the presence of multiple risk factors for children. The children were rated on a number of behavioral measures of externalizing and internalizing, both by teachers and by self report. Subsequently both their sophistication of emotional understanding and their actual emotional responding during a stressful task were recorded.

The current study replicated components two previous studies, one that assessed the cognitive-developmental understanding of children using the KAI-R, and another
measuring the index of minute-to-minute emotion regulation under stressful circumstances using the FACS. No comparison of these measures has been previously conducted. Both measures have been used to differentiate the functioning of children with behavior disorders, although only the FACS has distinguished children with externalizing problems. The previous findings provide a valuable standard by which to compare the current results.

However, the present study departed in a number of ways from the original works it was intended to replicate. Departures and their rationales are addressed in the following sections.

**Measurement of Child Behavior**

Unselected samples of children from the general population have been found to demonstrate relatively high levels of problem behaviors (Connors, 1970). However, epidemiological approaches have focused on the accuracy of formal diagnostic classification systems in order to predict inclusion into clinical samples, thus leaving low-grade occurrences of these problems relatively unexplored. While checklists like the CBCL are extremely useful in identifying children with serious problems, item-based inventories have also been shown to lack discriminant validity for all diagnosed cases of disruptive behaviors in a given sample (Burns, Walsh, Patterson, Holte, Summers-Flanagan, & Parker, 1987). Findings such as these have led researchers to advocate dimensional rather than categorical approaches to symptom validity (Achenbach, 1995).

The broad-band constructs of internalizing and externalizing have been most successful in predicting children's problems in a categorical manner. However, they also
lend themselves to a more dimensional approach to psychopathology. Dimensional approaches depend upon quantitative, rather than categorical descriptions of behavior and thus allow for a continuum along which individuals manifest high or low scores across a set of criterion variables. From this “polythetic” viewpoint, combinations of measures are seen as more accurate in obtaining indices of functioning, envisioned to exist along a spectrum (Achenbach, 1993). The use of multiple measures is particularly advantageous for detection of internalizing conditions, for which both parent and teacher reliability is considerably lower than for externalizing behaviors (Loeber, Russo, Stouthamer-Loeber, and Lahey, 1994). On the other hand, children and parents may underreport problematic behaviors that will be more accurately rated by close yet relatively objective observers, such as teachers.

Moreover, conceptualizing psychopathology as a dimensional construct which is captured by multiple measures of internalizing (e.g., fearful, inhibited, over controlled behavior) and externalizing (e.g. aggressive, antisocial, and undercontrolled behavior) eases the difficulty of describing the conjoint occurrence of internalizing and externalizing. Describing behavior clusters as separate categories is a more unwieldy notion than that of dual, but sometimes overlapping, dimensions of behaviors. Because research has shown that multiple-informant, multiple-measure approaches yield more reliable assessments of children’s mental health (Achenbach, McConaughy, & Howell, 1987; Loeber, Green, Lahey, & Stouthamer-Loeber, 1989) it was decided to base the rating of child-adjustment in the current study on a number of different measures.
The child measures used for the current project were those administered as part of a larger, longitudinal study examining prevention efficacy of an intervention project for middle school students. The study presented here retained only those measures, total scores or subscales, judged to assess the presence of externalizing and internalizing. Due to the issue of comorbidity between externalizing and internalizing, both a categorical approach and a dimensional approach were taken by the study.

Application of the Kusche Affective Interview - Revised (KAI-R)

It has been found that children ten years or older become increasingly aware of the inner components of emotion. They also can verbally identify the possible conflicts that arise when one emotion is internally felt while another must be displayed externally according to appropriate social norms (Harris, Olthof, & Tergwogt, 1981). The attainment of emotional ambivalence, the ability to experience and identify the internal conflict engendered when emotions of differing valence are felt toward the same target, is considered to be a hallmark achievement of emotional development.

The KAI-R (see Appendix A) looks at just such a range of the components of emotional understanding. The measure is composed of 5 sections. Section A tests children’s accuracy at identifying photos of emotional expressions. Section B addresses a number of aspects of emotional functioning. Children are asked about (a) Feelings Vocabulary (i.e., “Name all of the feelings you can think of.”) (b) Defining Emotions (i.e., “What does ______ mean?”), which are then rated on three levels of sophistication, and (c) Discussion of Emotions. In the latter, children are asked to relate personal experiences
of emotion (i.e., “Tell me about a time you felt very______”), requiring that children rely on their memory to produce emotional exemplars of both the basic emotions of happy, sad, mad, scared, and love and also of complex feelings, such as nervousness, guilt, loneliness, pride, and jealousy. Responses are rated on the basis of appropriateness and complexity and are then summed across examples. Additionally, this section includes a rating of the Target and Content of the situation example. The latter are categorical variables describing important people and situational features surrounding the experience of emotions (e.g., Target of Mad might be a “peer or siblings” while the Content of Mad might be “destruction of personal possessions”).

Section C asks about children’s Emotional Knowledge of Self (i.e. “How do you know when you are feeling ________?”) and Emotional Knowledge of Others (i.e., “How do you know when other people are feeling ________?”). Responses are rated on the basis of appropriateness and complexity. Responses may range from ideosyncratic and concrete at the lower end, to multiply-cued and referring to inner states at the upper end. Section D, Understanding Conflicting Feelings, asks about the co-occurrence of emotions. Four pairs of potentially contradictory feelings are probed as children are asked: “Can someone feel _______ and ________ at the very same time” (sad/mad, happy/sad, calm/nervous, and love/anger). If children say yes, then they are asked to provide a personal example of a time when they experienced these simultaneous feelings which is rated to verify that the example described simultaneous emotions toward the same target. If children say no, they are asked to describe why not and this response is also rated.
Finally, Section E asks about the possibility of hiding feelings.

Two published studies have examined children's performance on the KAI-R in relationship to their behavioral adjustment. Cook, Greenberg, and Kushe (1994) relied on children's Discussion of Emotions (in regard to happy, sad, mad, scared, love, proud, guilty, jealous, nervous, and lonely) and on Emotional Knowledge of Self and Emotional Knowledge of Others. Their results showed that children's inclusion in a behavior-problem classification of low (63% of sample), moderate (19%), and high (18%) levels as measured by parents reports on the CBCL, were predictive of their scores on the KAI-R. Children high in behavior problems gave fewer appropriate responses, although not in a manner that was uniform across all feelings. A limitation of the study was that children's specific problems were not identified.

A second study evaluated a preventative intervention to 2nd and 3rd grade children using a curriculum called the Promoting Alternative Thinking Strategies (PATHS) that focused on increasing the regulation and understanding of emotional expression. To gauge the success of the intervention, portions each of the 5 sections of the KAI-R were used to measure children in the 7 areas: Feelings Vocabulary, Defining Emotions, Discussion of Emotions, Cues used to Recognize Emotion, Understanding Conflicting Feelings, Display Rules for Emotion, and Changing Feelings. Children were measured initially to assess their baseline responding and then interviewed again at 6 months. The study found that different areas showed different effects for Intervention (i.e., the effects of the PATHS curriculum) and Time (i.e., the effect due to time elapsing between pretest and posttest).
Interaction effects were also found in certain areas reflecting differential effects of Intervention and Time. For example, Feelings Vocabulary was found to show a significant Time X Intervention Status interaction for children receiving the curriculum, while children in the control group showed effects for Time only. Understanding Conflicting Feelings, on the other hand, did not show effects of the intervention. Instead, on the Conflicting Feelings measure, both the intervention group and the control group showed similar advances due to the passage of Time with no effects shown for the Intervention curriculum. These findings may indicate that certain areas of understanding of emotion are more closely linked to experience, while others may depend primarily on maturational factors.

Based on the PATHS findings, the current study utilized 3 complete scales of the KAI-R. The 3 scales used here by the current study were those judged best to address the current research questions and are described below.

Section B was administered in its entirety, although the three components were regarded as potentially tapping conceptually different areas of understanding. For example, the responses to Feelings Vocabulary were coded for type of word proffered (e.g., standard emotion, positive, negative, neutral, somatic, cognitive, odd responses, etc.). It was thought unlikely that type of emotion words generated would correspond to intrapsychic factors. However, the sheer number of words generated was considered to tap an aspect of verbal intelligence. This portion of the KAI-R was seen to resemble other tests of verbal fluency that ask subjects to say as many words as they can think of, usually
beginning with a certain letter. Verbal fluency is not identical to verbal intelligence (i.e., Verbal IQ); but is strongly dependent on factors that contribute to IQ. For example, just as bright patients with brain damage tend to perform better on Verbal IQ than normal controls with low IQs, so do these bright individuals with brain injury show better verbal fluency. Verbal fluency is thought to reflect the frontal brain function that organizes and relates verbal responses in a meaningful way (Lezak, 1995).

This score may strongly reflect the effects of experience. Not only did this portion show the effects of intervention curriculum in the PATHS study, but children in the current study were known to refer to discussions about emotions conducted in class or lists of feelings posted in the school counselor's office during the Feelings Vocabulary portion of the interview.

In the remainder of Section B, children's verbal representations of emotional material were rated for appropriateness and complexity. Children discussed their own emotional experiences in regard to 5 basic feelings (happy, sad, mad, scared, love) and defined and discussed 5 complex feelings (guilty, jealous, nervous, and lonely). The PATHS study found that children's appropriateness of emotions showed an interaction effect for Time X Intervention, indicating that both maturational and experiential factors may play a role in this aspect of emotional understanding. This portion asks children to relive their personal emotional memories, and may thus retrospectively access components of emotional regulation. For these reasons, Section B was considered a measure of social cognition, one that blends emotional responding ("hot" cognitions) with more abstract elements of
comprehending emotions.

The coding of Target and Content presented a problem. Because it is difficult to ascribe cognitive developmental meaning to these data, (e.g., guilty toward the Target of "mother" and Content of guilty rated as "thoughts or wishes") these indices were not considered by the current study to indicate cognitive sophistication, since an individual might process such topical features in either a very primitive or very complex manner. Although this coding was performed, it was not retained in the analyses.

To summarize the coding of Section B, data reduction was performed to reflect three subscores: 1) fluency of cognitive processing as reflected by the Feelings Vocabulary score, and 2) Defining Emotions, and 3) Discussing Emotions, represented by the complexity and appropriateness scores of children's own emotional memories. The score of primary interest was the Discussing Emotion score. This was the score considered to capture those components of social cognition, an area of functioning where cognitive and emotional factors overlap.

Section C provides a framework for comparing two important sources of emotional knowledge. Knowledge of Self is information that presumably is used to contribute to successful emotion regulation, particularly if adequate regulation has a pronounced cognitive component. Knowledge of Others involves the recognition of others' feeling states and the affective perspective-taking that is learned as an explicit part of socialization. Children's appraisal of emotion experienced by others is of special interest, since inaccurate inferences about the affective cues of others has been seen to distinguish
children with externalizing problems (Dodge, 1980) while other studies have shown that children with internalizing problems perform even more poorly than those with externalizing tendencies (Walker & Leister, 1994). This section was administered to children in its entirety.

Section D, Understanding Conflicting Feelings, may most accurately reflect cognitive-developmental level of emotional understanding. The ability to express simultaneously contradictory and ambivalent feelings has been described as tapping the highest level of logical operations in the understanding of emotions (Harter & Buddin, 1987). In the PATHS study, Understanding Conflicting Feelings showed a significant main effect only for Time across both the intervention group and the controls indicating that it may be measuring the effects of development occurring in a stage-like, time-linked fashion. This section was also completely administered to children in the sample.

Application of the Facial Action Coding System (FACS)

Facial expressions have been shown to be indicators of human emotion that occur in a specie-specific manner (Ekman, Sorenson, & Friesen, 1969) and depend on brain pathways separately governing voluntary and involuntary displays of emotion (Rinn, 1989). Despite the cultural display rules that dictate the appropriate place, time, and intensity of a given expression, the face may still betray the internal experience of emotion. Microexpressions, or extremely brief (i.e., tenths of a second) involuntary displays, give evidence of underlying emotion, belying the communication of the intended macroexpression (Ekman & Friesen, 1969).
Similarly, negative expressions may appear at relatively long durations, but because they are incorporated into displays of positive expression, they become effectively masked. Ekman, Friesen, & O’Sullivan (1988) found that these “blended” smiles (i.e., those including action units associated with negative expressions such as sadness, fear, anger, or disgust) were associated with subject’s reports of negative internal emotion.

While children continue to gain mastery over their use of social display rules in conjunction with the development of their social-cognitive skills over the course of childhood (Saarni, 1984) displays of negative affect are inhibited in social situations as early as 3 years of age (Cole, 1986). Yet for some children, the regulation of emotion, including affectively-linked behavioral displays, presents great difficulty.

As noted above, children with problems of behavioral control seem to demonstrate greater negative facial affectivity associated with anger, contempt, and disgust. However, the role of other negative emotions in the development of psychopathology remains largely undiscovered. While Keltner et al (1995) found that more “purely” angry expressions (those without signs of social embarrassment) exemplified a more externalizing boy, the contribution of the social emotions are unclear. Specifically, the emotions conceptually related to internalizing (i.e., fear, sadness, and self-consciousness) have not been empirically related to behavioral adjustment.

Keltner, Moffit, and Stouthamer-Loeber (1995) employed the concept of “pure externalizers” in their research that FACS-coded the faces of boys with behavior problems. These are children with both high amounts of anger on the face and few
expressions referencing self-conscious emotions. The authors used children’s expressions of embarrassment (coded as smiles with "look-aways" such as looking down), as their ‘subtractive’ value in order to retain anger-only boys in their analyses.

Differently, the current study restricted itself to using only action units to indicate the presence of emotion. The reasons for this are dual. First, in a subsequent study Keltner (1994) empirically showed behavior associated with the internal experience of embarrassment to be defined by multiple behavioral elements. He found embarrassment to be epitomized by gaze activity down and to the side. However, in this way, embarrassment resembled the expression of amusement; differing from amusement by latency, duration and number of gaze shifts, onset of blended smiles, direction of head movement (embarrassed looks going more frequently to the left than the right) and presence of face touches. However, Keltner did not report temporal and frequency parameters by which embarrassment coding could be specifically replicated.

Secondly, and more germane to the current study, the purpose here was to examine known facial indicators of emotion as they may reflect externalizing and internalizing behaviors. Because this is an exploratory examination of the hypothetical construct of emotion regulation, only known indicators of emotion associated with internal experience, and not gross motor movements, were included in the analysis.

It may be that the negative emotions, in general, reveal themselves on the face if their internal occurrence is poorly regulated. The current study coded the emotional expressions videotaped during the children’s verbal performance on the Vocabulary
subscale of the Wechsler Intelligence Scale for Children (WISC-III), following Keltner et al (1995), who found that administration of the Information subscale (WISC-III) provoked an increase in children's facial expression. Thus, the coding of facial indicators of emotion during this task was presumed to indicate how well children regulate their negative emotions.

In the present study, the Vocabulary subscale was substituted for the Information subscale as the stressful stimulus evoking the facial emotion. The scores yielded by the two tests are closely correlated (Leazak, 1995) and therefore presumably well-matched in difficulty. Additionally, the Vocabulary subscale has the added value of acting as a covariate of children's understanding of emotion. A comparison of children on this measure to their cognitive-developmental level of emotional understanding allowed a comparison of the covariation of emotional and verbal sophistication.

The current study analyzed the occurrence of facial expressions proposed to contribute to psychopathology in two ways: At the level of the action unit and at the level of the facial expression.

**Measurement of Action Units**

The Facial Action Coding System (FACS; Eckman & Friesen, 1976) allows the objective measurement of facial behavior by attending only to the "action units" of the face. The 44 action units of the FACS are the smallest anatomical units that can be visually distinguished for coding. The scorer codes an action unit (AU) based on facial muscle movements rather than identifying an emotional state, such as sadness or anger.
As such, the FACS is an objective coding method that focuses on the presence or absence of discrete muscular movements in the face and not on the observer’s response to a global emotion on the face. This discrimination has been critical in accurate facial recording because the social norms and affective responses brought to bear by observers yield a decoding accuracy at only chance levels (Hess, 1994). Moreover, the FACS assesses multiple dimensions of expressivity: the relative strength of an encoding (intensity), its temporal dimension (duration), as well as giving a measure of amount of a produced expression (frequency).

The frequency of expression is not as well correlated with posers’s reports of internal experience as are intensity and duration (Ekman et al, 1980). Instead, frequency of expression has been found to be related both to gender and to characteristic styles of responding. For example, females have been found to smile more frequently than males (Weitz, 1976), including smiling as a social display in response to unpleasant stimuli (Soussignan & Schaal, 1996).

The choice of action units coded in the current study were those that have been determined to be fundamental to the expression of emotion (see Table 1).

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Insert Table 1

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But because action units typically appear in combination and also because the presence of
one action unit tends to augment or modify the meaning of another, the coded AUs were
reduced into characteristic types of expressions.

Data Reduction of Action Units into Expressions. It has been a theoretical tenet in the
area of facial expressions that a preponderance of certain types of expressions indicates an
underlying style of emotional responding. Conversely, the argument may be made that
faces exhibit a characteristic 'set' that owes more to physiognomy or to the facial imitation
of important social partners than to the poser's internal experience. Yet characteristic
facial patterns may reflect a habitual setting of the face associated with expectancies for
interaction reflecting early social learning (Ekman & Friesen, 1969).

Two issues faced the current study in regard to characteristic patterns of facial
expressions. First, the presence of pronounced facial features might cause errors in the
coding. This consideration is particularly important since the decision was made to code
all evidence of facial indicators of emotion, regardless of speaking condition. When facial
expressions are coded during speech, there is a risk of mistaking artifacts of speech for
expressive action units. This possibility necessitated that every effort be taken to
determine characteristic facial responding both while the subject's face was in a neutral
pose and during a segment of speaking before the actual coding began. Second, data
reduction of the AUs into meaningful categories is somewhat exploratory. However, it
was judged reasonable to characterize each of the facial expressions as one of four types
of expressions: Positive, Negative, Neutral, and Blended.

Negative Expressions. Displays containing an AU associated with an unpleasant
internal experience were the primary expressions of interest. The externalizing behaviors are considered nearly isomorphic to the negative emotion of anger while internalizing is characteristically defined by feelings of fear, sadness, or personal distress. The negative expressions (i.e., action units associated with unpleasant internal experience and occurring without a smile) were recorded in two ways: collapsed into a category of total Negative Expression and also coded as one of the following types of negative expression:

**Anger:** All instances of the AUs 7, 9, or 10 contributed to the proportion of anger reported.

**Fear.** Instances of Fear were recorded due to the appearance of AU20.

**Sadness.** An expression was counted as Sadness if it contained an AU15.

**Self-consciousness.** Because lip-pressure has been associated with the suppression of emotion (Smith, 1989), an internal state indicating conflict, all AUs involving this action (AUs 23, 24, 18) were collapsed into one category.

**Neutral Expressions.** The action units AU1, AU2, AU5, AU6, AU14, and AU17 were considered as neutral more or less by default since, occurring by themselves, they are not clear indicators of emotion. Moreover, these action units may interact with other AUs that are definitive of a single emotion.

A number of AUs are associated with appraisal, specifically the upper face movements, which have also been noted to be under greater voluntary control than the movements of the lower face (Rinn, 1984). AUs 1, 2, and 5 are the action units of surprise, which is regarded by a number of researchers as having a status separate from the other emotions.
because it can be negatively or positively valenced. These were coded as neutral.

Because upper face action units may be closely associated with cognitive appraisal, effort or emphasis of verbal behavior, these were incorporated into the data reduction in a conservative manner. Thus, while the presence of AU4 is often associated with worry or anger, it is also associated with cognitive effort (Smith, 1989). Given the above considerations, if AU4 occurred alone, it was coded as neutral. Paired with other neutral action units, AU4 retained its neutral status except with the otherwise neutral AU1, with which AU4 makes the classic “distress” configuration. If occurring with a smile, AU4 indicated the presence of a Blended expression.

The role of AU17 may be even more dependent upon other action units to define its purpose. The raising of the lower chin in a relaxed face may have a positive, greeting quality. However, its occurrence with a smile acts to attenuate the perception of the sender’s pleasure and AU17 is also a common component of negative expressions such as anger (Ekman & Friesen, 1975). Since the meaning of AU17 is not well understood, the current study coded its appearance alone as neutral. If it occurred with a smile, it indicated a Blended expression.

AU17 often occurred with AU14, the tightening of the lip corners. Similar to AU17, AU14 is not well understood, in and of itself. However, the appearance of AU14 together with AU17, is that of restlessness or nervousness. Thus, separately and together (unless they occurred with a more positive or negative action unit), they were coded as neutral.

If neutral action units were paired with other AUs, either negative or positive, the
expression was given the designation of the more clearly emotional action units. All neutral AUs contributed to a Negative expression if accompanied by AUs 7, 9, 10, 15, 20, or 24. If AU1, AU2, AU5, or AU6, were paired with AU12, they were seen as part of the Positive expression. If neutral action units occurred with both negative and positive indicators, then they were considered to be another component of a Blended expression.

*Positive Expressions.* Ekman, Friesen, & Wallace (1988) showed that 'felt,' or genuine, smiles are indicated by the co-occurrence of AU12 with the contraction of one group of eye muscles, the orbicularis occuli (AU6). However, this study did not directly address the occurrence of positive expression. Genuinely positive expressions could indicate greater social receptivity expected among normal and internalizing subjects or, alternatively, a lack of social nervousness thought to be more characteristic of externalizing disorders. Thus, positive expressions as a group, irrespective of genuineness, were considered as a proportion of the entire repertoire displayed by an individual for purposes of comparison with the incidence of negative emotion. For coding, any expression containing a smile (AU12) and the otherwise neutral action units of AU1, AU2, AU5, and AU6 were coded as a Positive expression.

*Blended Expressions.* In contrast to expressions coded as positive, blended smiles were considered to contain evidence of negative emotion. These are smiles (AU 12) that are displayed with accompanying AUs of negative affect. Blended smiles are indicators that, while the intended communication to a social partner is affectively positive, concurrent negative emotions may be experienced at the same time. Any combinations of
action units composed of a smile (AU12) with either a negative action unit or a neutral unit that attenuates the impression of AU12 (such as AU17, AU14, or AU4) were coded as Blended.

Magnitude Scores of Emotions

In order to replicate Keltner et al (1995), an overall expression magnitude score was derived for each of the negative facial emotions. Magnitude scores for anger, fear, sadness, and self-consciousness were created by summing the z scores of the mean proportion, mean intensity, and mean duration of each.

HYPOTHESES AND POSSIBLE OUTCOMES

Hypotheses generated by the current study may be seen to fall into 4 areas: Hypotheses regarding the child behavior data, hypotheses concerning cognitive-developmental level of emotional understanding, hypotheses about children's facial expressions, and hypothesized relations between children's emotional cognition and emotional regulation.

Hypotheses: Child Behavior Data

It was predicted that scales measuring internalizing behaviors would all be associated positively. Similarly, CBCL subscales measuring externalizing behavior were both expected to correlate positively with each other and to negatively correlate with measures identifying known protective factors against antisocial behavior.

Some overlap between externalizing and internalizing measures was predicted since it was anticipated that children with elevations of both types of scores would be represented
in the sample. In this event, it was planned that children would be assigned to one of four behavior groups. These were designated Normal in behavior range, Externalizing, Internalizing, and Internalizing-Externalizing in range.

Numerous studies indicate gender differences for externalizing and internalizing behaviors. At the age of children in the study, boys have been rated higher on both behavior dimensions. It was expected that these results would be duplicated in the current study.

Because C.S. Porter Middle School and its comparison location, Polson Middle School, had been chosen to study due to their similarly elevated risk factors, it was not predicted that the mean behavior problems would differ between the two schools.

Hypotheses: Children's Understanding of Emotion

Validation of the KAI-R. The first hypothesis generated for outcomes on the KAI-R was that children's scores would differ on each of the KAI-R sections. Scores for the following sections, Feelings Vocabulary, Defining Emotion, Discussing Emotions, Emotional Knowledge of Self, Emotional Knowledge of Others, and Understanding Conflicting Emotions were hypothesized to exhibit low or moderate correlations. Toward the goal of determining whether the subscales of the KAI-R measure different components, the present study determined the internal-consistency reliability of the subscales used in the study. To test the hypothesis that the construct of understanding of emotion may be a multidimensional entity, the current study compared the alpha coefficients of the individual subscales, reasoning that if subscale scores were highly
correlated, then the scales should be seen to be measuring the same hypothetical variable. In the event that these scores demonstrated moderate or low correlations, then the scores would be treated as different indices throughout the study.

Gender. No gender differences were hypothesized on scores measuring understanding of emotion. Similarly, no overall differences were hypothesized on KAI-R scores between the Porter and Polson children.

Emotional Cognition and Behavior. A second set of hypotheses were constructed about the relationship between the understanding of emotion and behavioral adjustment. It was of interest whether emotional understanding, in and of itself, would predict behavior problems. Children in the normal problem range were hypothesized to be higher on most of the understanding scores. However, it was hypothesized that Discussing Emotions, reflecting social cognition, would be lower among children with behavior problems (since it draws upon children’s actual situational responding) than the Understanding of Conflicting Emotions score, posited to be more time-linked, maturationally-driven aspect of emotional understanding.

Hypotheses: Children’s Facial Expressions

Overall, social display rules governing the facial expressions of emotion were expected to be used quite successfully by children in the sample. However, because of the evaluative nature of the vocabulary measure, it was hypothesized that children, no matter what their behavior status, would display AUs indicating negative emotion. Just how stressful the vocabulary test would be for children was open to question, particularly since every effort
was made to make the child subjects feel comfortable prior to the start of the procedure. However, most children were anticipated to display low levels of the facial expressions posited by the study to be most closely associated with the incidence of psychopathology (i.e., anger, sadness, fear, and self-consciousness) during the challenging vocabulary test. Because of the greater social sanction against anger, its levels were hypothesized to be lower than displays of internalizing emotions (sadness, fear, and self-consciousness).

Females have been posited to be more expressive than males (Manstead, 1992). It was therefore hypothesized that girls in the study would have significantly greater numbers of facial expressions. Similarly, because females have been found to smile in unpleasant social situations more than boys (Soussignan & Schaal, 1996) it was anticipated that this would be the case in the current study.

Males have been reported to visibly display more facial anger than females (Manstead, 1992). However, because the current study did not separate emotion contained in microexpressions from emotion ascertainable in macroexpressions (but rather looked at absolute levels of action units) it was not possible to separate visible displays from more covert emotional indicators. Rather, the current study was concerned with children’s interior emotional events and thus their absolute levels of action units. Because it is not reasonable to conjecture that boys experience the internal event of anger more frequently than girls (and anger, unlike the smile, is not used as a social display) it was hypothesized that girls and boys would not differ in this regard. However, it was hypothesized that anger magnitude scores for boys would be greater than for girls, since the magnitude score
captures all three dimensions of frequency, intensity, and duration.

The four types of facial expressions (positive, negative, neutral, and blended) were not hypothesized to be significantly associated with indices of behavior problems. Positive and Neutral expressions, in particular, may reflect either the successful use of social display rules in response to internal negativity or may, conversely, reflect the lack of internal negative experiences. It was therefore not presumed that these measures would reveal the presence of internalizing or externalizing.

Behavior Groups. It was hypothesized that Blended expressions may be more common among children with internalizing concerns (i.e., internalizers and internalizer-externalizers), since they are motivated to mask their negative affect with positive displays, but may fail to do so. It was further hypothesized that Negative expressions as a group will not be related to internalizing or externalizing, but would differentiate as to type (anger to externalizing and the self-conscious emotions of emotional suppression, fear, sadness and distress to internalizing).

At least one previous study has looked at children’s ability to inhibit, mask, and simulate positive as well as negative expressions (Halberstadt, Grotjohn, Johnson, Furth, & Greig, 1992). Because no main effects were found for gender in the above study, similar results were hypothesized here. Other than differences in positive expressions discussed above, gender differences were not hypothesized to be found for the four types of facial expressions coded.

As noted above, the affective nature of the externalizing and internalizing behaviors
should be reflected in higher levels of anger being associated with externalizing behaviors while internalizing should be positively associated with levels of AUs reflecting emotions focused on the self, such as sadness, self-consciousness, and fear.

Hypotheses: Emotional Cognition and Emotion Regulation

The hypothesized reasons why children with externalizing disorders are less accurately able to assess their own emotional experiences have been numerous. Impulsivity, a frequently cited contributing factor, has been defined as the tendency to “act without thinking” (p. 206, Cook, Greenberg, & Kusche, 1994). As such, impulsivity may represent either a shallow, incomplete cognitive processing of normal levels of emotion, greatly intensified levels of emotion that are difficult to control by normal capacities for reasoning, lowered competencies of both emotional and cognitive processing or, finally, an insufficiency of “cross talk” between cognitive and emotional processes, where each is performing unimpaired, but without the crucial component of mutual modulation.

Furthermore, given that a childhood marked by disruptive behavior problems is a possible outcome of many different developmental trajectories (Sroufe, 1990), more than one dysfunctional link between cognition and emotion may occur.

The current study was designed to examine the hypothetical relationship between emotional and cognitive functioning. The governing research question asked whether a primary deficiency accompanying externalizing behavior problems is cognitive in nature. Should children with high levels of disruptive behaviors perform similarly to their non-disruptive peers on a cognitive measure of emotion, then it will be difficult to
conceptualize their problem as purely cognitive in origin.

While disruptive children may reflect less on their emotional experiences, and thus neglect to cognitively use this information to guide future actions, a finding of normal cognition here would mean that, theoretically, they could accomplish such reflection if all else were equal. If the outcome of the current study finds that externalizing children demonstrate normal cognitive-developmental levels of understanding of emotion, then other factors, such as motivation, levels of emotional arousal, or responses learned through a particular type of socialization, would become better candidates for significant contributors to the etiology of these behavioral patterns.

Thus, it is possible that a social cognition accurately enough attuned to predict the behavior and expectations of others may coexist with an inability to behave in accord with social norms and standards. In this case, the study hypothesized that a group of children who have achieved a full understanding of emotion relative to their peers may also demonstrate a display of anger that is higher-than-average. However, it was not hypothesized that children high on 'anger-only' expressions would also be relatively delayed on all scores of understanding emotion.

Anger-only children were hypothesized to not be differentiated by their scores on Understanding of Conflicting Emotions. However, it was thought likely that these children would be differentiated on their Discussing Emotion scores (social cognition) and Emotional Knowledge of Self and Other. Because the internalizing emotions are theoretically less distinct, no clear hypotheses can be generated about their relationship to
emotional understanding.

The hypothesized findings for the relationship between children's emotional understanding and children's expression of negative emotion are that these may be wholey independent variables. Thus, high expressivity of negative emotions may co-occur with normal understanding of emotion.

Children high on expression of emotion have already been established as a group that is likely to experience increased levels of behavioral problems. It was hypothesized that this outcome would be reconfirmed.
CHAPTER 2: METHODS

SUBJECTS

Following Institutional Review Board approval in 1997, the study evaluated students given permission to participate in the sixth-grade class of C.S. Porter Middle School of Missoula, Montana and also the sixth grade class of Polson Middle School in Polson, Montana. These students were part of a three year longitudinal prevention project, the C.S. Porter Flagship Project (N=203), which had the goals of reducing risks and enhancing resilience in the domains of community, school, family, and children at C.S. Porter (Montana Interagency Coordinating Council, 1996). Polson Middle School acted as a control school for the prevention project. A total of 48 sixth grade students (24 boys and 24 girls) attending C.S. Porter (N= 24) and Polson (N=24) Middle Schools participated in the present study.

C.S. Porter Middle School was chosen for the Flagship project because it is characterized by many of the risk factors predictive of maladaptive outcomes, such as violence and delinquency. The catchment area is more racially diverse than most others in Missoula. According to a recent demographic survey, the percentage of households experiencing single-parenting (122 single-parent families send children to contribute to the student body of 375) and poverty (experienced by 24% of neighborhood children) are higher than elsewhere in Missoula. These families also occupied a high percentage of rental units (approximately half of the housing units in the neighborhood), a factor which
may have contributed to the 65% turnover rate for the 1995-1996 school year, had the highest percentage of students (46%) who qualified for the free or reduced lunch program of any middle school in the Missoula Public School District. Violence was high, with more than half of the incidences of physical/verbal abuse across all middle schools for the 1995-1996 school year, and parental involvement was low, with only 3 parents active members of the PTA (Montana Interagency Coordinating Grant, 1996). However, a previous analysis conducted to determine risk factors for children enrolled in the Polson Middle School found no significant differences between the Polson and C.S. Porter samples (Simon-Thomas, 1999).

Exclusionary criteria for the study were defined as (a) diagnosis of a learning or developmental disability, (b) the presence of a physical disability that would impair cognitive functioning (e.g., seizure disorder, cerebral palsy, head trauma), (c) a score putting a child greater than 1 standard deviation below the mean of a normative sample on the WISC-III vocabulary subscale. No children in the sample met these criteria.

A pilot study was conducted prior to the data gathering. Permission was obtained from 15 children and their parents to run the protocol for the study. Because no revisions were made to the protocol after the piloting, these students were included in the study sample.

MATERIALS

Permission forms (see Appendix A) were submitted to the parents of each subject both for participation in the procedure and for permission to videotape. Parents and children
were assured confidentiality unless the child reported harm occurring to him/her or s/he reported an intention to harm another person. Parents and children were informed that they may terminate participation at any time without adverse consequences.

Parents and children returned a signed permission slip in the addressed envelope provided to them and were then contacted by phone. A detailed phone protocol was used for the contact by the primary investigator, another graduate student, or a trained undergraduate research assistant. An information sheet was also supplied to parents listing the investigator’s faculty advisor at the University of Montana as well as professional contacts should any adverse reactions result from the procedure.

A video camera was used to tape the subjects seated at a table across from the experimenter in quiet rooms at C.S. Porter and Polson Middle Schools. Although the camera was in full view and children were aware in advance that they would be videotaped, their permission was obtained before the procedure was begun. No children objected. Care was taken that noise and interruptions did not influence the measurement.

Child Behavior Data

All measures were administered as part of gathering baseline data for the C.S. Porter Flagship Project. This included measuring children in Polson Middle School, the control school for the Flagship Project.

Child Behavior Checklist. The Teachers’s Report Form of the Child Behavior Checklist (Achenbach & Edelbrock, 1983) (CBCL) is a well-validated and reliable behavior item inventory that significantly discriminates between clinically referred and
nonreferred children. This measure is completed about a child by a teacher who has known him/her for at least two months. The eight scales of the Teacher Report Form (TRF) parallel the syndrome subscales of the CBCL and are also defined as making up an Externalizing scale and an Internalizing scale. The Externalizing score of the TRF is the sum of the two contributing subscales, Delinquent behavior and Aggressive behavior. The Internalizing score is the sum of its three subscales, Withdrawn, Somatic Complaints, and Anxious/Depressed.

The primary scores used for the current analysis were the instrument's Total Externalizing Score and Total Internalizing Score. Validation studies have reported that children sampled out of the general population whose reports of these behavior problems fell at or above the 80th percentile were likely to have severe enough problems to warrant referral for treatment (Achenbach, Howell, Quay, & Conners, 1991).

The TRF has been validated on both clinical and nonreferred samples, with referred subjects scoring significantly higher than did the nonreferred sample. Significant correlations were found between the TRF and the Conners Revised Teacher Rating Scale (i.e., \( r = .67 \) between Aggressive behaviors and the Connors and \( r = .63 \) between the Externalizing scale and the Connors) as well as to observational ratings of classroom behavior. Test-retest reliability for the Externalizing and Internalizing scores ranged between \( .77 \) and \( .60 \) at intervals spanning 2 to 4 months (Achenbach, 1991).

*Revised Children's Manifest Anxiety Scale.* The Revised-Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978) is a measure to assess anxiety in children in
children and adolescents from ages 9 to 19 years. The RCMAS is a self-report instrument containing 37 items. During administration of the RCMAS, children circle 'yes' or 'no' to a series of statements, 27 loading on an anxiety scale and 7 contributing to a lie scale, designed to be understandable at the third grade reading level.

The RCMAS has been standardized and both the convergent and divergent validity of have been investigated, with the conclusion that the instrument demonstrates both. The RCMAS contains 3 subscales based on factor analyses with varimax rotation, Physiological Anxiety (an index of typical physical manifestations of anxiety), Worry/Oversensitivity (assessing fear, nervousness or oversensitivity to sources of stress in the environment), and Social Concerns/Concentration (looking at distractions posed by thought about self or other worries). Due to the brevity of the subscales, reliability has only been established for the Total Anxiety Scale and the Lie scale.

Alpha coefficients range from .42 to .87 for the Total Anxiety Scale and test-retest reliability has been estimated to be .98 for the Total Anxiety Scale and .94 for the Lie scale (Reynolds & Richmond, 1985). Because concurrently elevated scores on the Total Anxiety and Lie scales (i.e., Lie scale>13 and Total Anxiety T-score>60) indicate the potential for an inflated report of anxiety, as well as do extremely low Total Anxiety scores (Reynolds & Richmond, 1985), the data were inspected for these features in order to discard questionable scores from the overall assessment of anxiety. No subject's data necessitated this exclusionary criteria.

Social Skills Rating Scale. The student form of the Social Skills Rating Scale (SSRS),
designed for students in grades 7–12, yields a Total Anxiety Score composed of 5 subscales indexing Cooperation, Assertion, Empathy, Self-control, and Responsibility. Children rate the frequency (0 = Never; 1 = Sometimes; 2 = Very Often) of statements describing their social behavior (e.g., “I say nice things to others when they have done something well”).

Reliability was established using a nationally representative sample and found that, for the Total score, median coefficient alpha reliability was .90 and test-retest reliability yielded a coefficient of .68 (Gresham & Elliot, 1990). Two studies investigating the validity of the measure found relationships in predicted directions between between scores on the SSRS and scores on the CBCL-Youth Self Report Form and the Piers-Harris Children’s Self-Concept Scale (Gresham & Elliot, 1990).

Two scales of the SSRC were utilized, the Empathy subscale and the Self-Control subscale. Empathy is conceptually related to prosocial behavior and moral reasoning. Adolescent delinquents have been found to score lower on a measure of empathy than nondelinquents (Ellis, 1982). Similarly, a lack of self-control is associated with behavior evidencing conduct problems (Fowles & Furseth, 1994).

*Piers-Harris Self-Concept Scale*. The Piers-Harris Children’s Self-Concept Scale (CSCS - Piers, 1984) is comprised of 80 first-person statements (e.g., “I can be trusted”) about which children in Grades 4-12 indicate that, “yes” the statement describes them, or “no” it is not a good description of how they view themselves. Six subscales address the following aspects of children’s self-esteem: Behavior, Academic Achievement, Physical
Appearance, Anxiety, Popularity, and Happiness.

The internal consistency reliability of the measure has been reported as .90 for both boys and girls and test-retest reliabilities range from .42 to .96. For the subscales, alpha coefficients are in the area of .73 to .81. Validity studies reveal that correlations between the CSCS and other self-concept measures range from .32 to .85. Correlations between the CSCS and behavioral ratings made by teachers and peers are less impressive, spanning a range from nonsignificant to .64 (Piers, 1984); however, it should be noted that the CSCS is a widely used instrument in clinical assessment and research as well as a classroom screening measure (Chui, 1988).

The Anxiety subscale was used in the study as an adjunct to the other measures of internalizing implemented by the study. This subscale is composed of such statements as "I am nervous" and "I sleep well at night."

Cognitive Measures

Kusche Affective Interview-Revised. The KAI-R (Kusche, Beilke, & Greenberg, 1988) is a semi-structured interview used as a measure of children's cognitive-developmental level regarding their understanding of emotion. The scales described above were used by the current study to assess multiple aspects of emotional understanding.

The coders were the principle investigator and one undergraduate research assistant who trained in the use of the detailed coding manual developed for this interview (Beilke, Kusche, & Greenberg, 1989). Subsequently, five versions of a coding manual were developed by the principle investigator specifically for this study. The final version (see
Appendix A) was used to code all of the interviews with the children. Interrater reliability for coders yielded a kappa of .92 based on the coding of a random 25% of the KAI-R interviews. The coding of all cases by the principle investigator were those used in the analyses.

*WISC-III Vocabulary Subscale*. Delinquency has been shown to be associated with deficits in language ability (Moffit, 1993). Because of this fact, the question may be raised whether a finding of delayed understanding of emotion among behaviorally disordered children is due to an actual cognitive deficit or, rather, to an inability to verbally express what they are thinking. Thus the study employed the Vocabulary subscale of the Wechsler Intelligence Scale for Children-III (WISC-III) as a covariate in analyzing verbal ability.

The Vocabulary subscale also functioned as the emotionally provocative stimulus during the rating of emotion regulation.

**Emotional Measure**

Replication of Keltner, Moffit, and Stouthamer-Loeber (1995) required the facial coding of children as they participated in a challenging and relatively stressful mental task.

*Reliability of Measurement*. Facial coding of all subjects was performed by the principle investigator, who is certified in the FACS method of facial coding and was blind to the corresponding scores of the subjects on all other measures. A second facial coder, who had successfully completed FACS certification testing, coded a randomly selected 25% of the subject tapes. Interrater reliability of the facial coding was established using Cohen’s kappa, the most conservative measure of rater agreement. Kappa’s were conducted on
each expression visible in a randomly selected 3 minute segment of tape for 12 subjects. All of the action units (AUs) were identified, as well as the intensity of each expression and the expression's duration for each segment of tape. The resultant kappa was .84 for the AUs, and .79 for intensity of expressions. Because these were continuous data, interrater reliability of duration of the facial expressions was determined using a Pearson's product-moment correlation, and yielded an association of .94.

**FACS Coding.** Frequency of AUs, intensity, and duration of emotions were coded for the last 3 minutes of each child's Vocabulary subscale session. Frequency of AUs was represented by a proportion, the number of a particular AUs divided by the total number of AUs generated by the subject. Frequency of the expressions (positive, neutral, blended and the 4 types of negative expressions) was also represented as a proportion, with the number of each type of expression divided by the total number of expressions coded in three minutes time. Intensity and duration were reported as means.

The AUs coded have been experimentally verified as components of a particular emotion. Studies have confirmed that the human expressions of anger (AU 7), contempt (AU 10), disgust (AU 9), enjoyment (AUs 12 and 6), fear (AU 20), sadness (AU 15), surprise (AU 5), emotional suppression (lip pressure), and worry (a triangulated eyebrow -- AUs 1 and 4) co-occur with subjective internal sensations of these same emotions (Ekman & Friesen, 1975).

Because the prototypical nose wrinkle indicating disgust (AU9) occurred so infrequently and also because disgust of an interpersonal or ideational nature is more
strongly associated with the upper lip raise (AU10), quintessential of anger (Rosin, Lowry, & Ebert, 1994) all instances of AU9 were collapsed during data reduction into both the Negative expression type and the category of Anger.

Intensity of facial movements were scored on a 3-point scale (1 = minimum intensity; 2 = medium intensity; and 3 = extreme intensity). Duration of facial expression was derived noting expression onset and offset via the electronic video time-stamp that tracked the time of each videotape in hours, minutes, seconds and frames-per-second (30 fps). These data were computed to seconds or proportions of a second.

The frequency of negative emotions were calculated by dividing the total number of each of the negative facial emotions (anger, sadness, fear, and self-consciousness) by the total number of facial expressions displayed by the child during the coded segment of tape. The ratio scores estimated the proportion that one type of negative emotion represents over the entire distribution of the child’s expression of emotion.

PROCEDURES

All measures used to determine child behavior were administered as part of a larger, longitudinal study, implemented in the Missoula public schools known as The Flagship Project. Children’s signed consent was obtained along with parent’s signatures for participation in the Flagship study (see Appendix B). Teachers completed the CBCL for children in their homeroom after knowing them for at least two months. Measures completed by children (i.e., RCMAS, SSRS, and the Piers-Harris Children’s Self-Concept
Scale) were group administered in children’s home rooms during times usually allotted for class instruction.

Graduate students and/or undergraduate research assistants affiliated with the Flagship Project conducted the testing sessions. The meanings and guarantee of confidentiality and consent to participate were reviewed in age-appropriate language before the measures were distributed (see Appendix C). An experimenter read the instructions aloud to the class after children received a particular measure. No uniform order of measure presentation was observed over the three-hour sessions that comprised a testing period. Testing periods were divided approximately in half by a snack break of 15 – 20 minutes. The snack (i.e., chips and sodas) was provided by the research team. Testing sessions were held on two different days not more than one week apart in time. The total time allotted to testing was approximately six hours.

Measures to determine emotional functioning were exclusively a part of the current study. Separate consent forms (see Appendix D) described the study and obtained a separate parental and child consent. Children were introduced to the experimenter at the C.S. Porter information desk and walked to the testing area, where an age appropriate explanation of the procedures followed.

Hi______. What we’d like to do here today is to ask you some questions about your opinions and thoughts that you might have in various situations. After that, I’d like to ask you some questions about words or facts that you are familiar with while the camera is running. Is that O.K. with you?
If at any time you think that the questions are upsetting or weird and you don’t want to continue just say so and we’ll stop immediately.

The order of the presentation of measures was as follows: First, the WISC-III Vocabulary subscale with videotaping, and then the KAI-R structured interview with audiotaping. The order of presentation of the measures was identical for all children, as was the order of presentation of questions on the KAI-R subscales. The gender of the interviewer was the same across the two measures (female) to control for effects of the sex of the interviewer.

Total time of the procedure took approximately 45 minutes to one hour, depending upon the amount of information the child wished to share. In general, children took the opportunity to talk at length about their emotional experiences and no child took the opportunity given during the explanation of the study, or during the interview itself, to withdraw.

Afterward, the children were debriefed about their participation and thanked for their contribution toward helping the experimenter better understand how kids experience their emotions. The child was then offered a "Thank You" gift to pick out of a clear plastic jug (e.g., highlighter pens, glow in the dark stars, sports paraphernalia, etc.). Subjects were then walked back to their classrooms, or, if they preferred, simply dismissed.
CHAPTER 3: RESULTS

Representativeness of Subjects Retained in the Current Study

Results indicate that children in the current study appeared to differ from children in the general population for levels of internalizing and externalizing as compared to norms reported for the TRF (Achenbach, 1991). Children sampled out of the general population between the ages of 6 and 11 years have been rated with TRF scores exceeding a T-score of 60 in the following proportions: An average of 18% of the sample showed an externalizing profile and 17% manifested internalizing behaviors in the clinical range. Of this 35% of the normal sample, 6% can be expected to have both internalizing and externalizing scores in the clinical range (Achenbach, 1991).

The current sample yielded 5 externalizers, 3 internalizers, and 3 children with both externalizing and internalizing scores at-or-above the borderline range. Given the current sample size, the predicted numbers of children would be 9 children with externalizing problems, 8 children with internalizing behaviors, and 3 children with a dual internalizing-externalizing profile.

Children in the present sample may have been better adjusted than a more representative sample. However, when children’s self-report measures were taken into account in the creation of behavior groups (see below), the numbers of children in each of the behavior-problem categories increases.
Behavior Data

In order to compare the behavioral adjustment of children on the various measures, T-scores were used. Children's T-scores for all CBCL scores and the RCMAS Total score have been normed according to national samples. The remaining indices used to determine externalizing and internalizing were subscales and thus do not reliably lend themselves to normalization. However, in order to utilize all the available child data that may have potentially described the behaviors of interest, these were normed on the C.S. Porter sample and converted to T-scores. The scores expected to describe externalizing were the Empathy Subscale of the SSRS; Self-Control Subscale of the SSRS; and the CBCL subscales of Total Externalizing, Aggression, and Delinquency. Scores anticipated to measure internalizing were the Anxiety Subscale of the Piers-Harris Children's Self-Concept Scale; Physiological Anxiety Subscale of the RCMAS; Worry/Oversensitivity Subscale of the RCMAS; Social Concerns/Concentration Subscale of the RCMAS, and the CBCL subscales of Total Internalizing, Anxiety/Depression, Somatizing, and Withdrawal. The first two listed (Empathy and Self-Control subscales) were expected to reflect externalizing tendencies by way of low scores, while the remaining subscales were anticipated to measure behavior problems by high scores.

Correlations were then performed across all measures. Resulting correlations can be viewed in Table 2.
Results indicate that the significant correlations do not group into two clusters, one externalizing and the other internalizing. As found by Achenbach and Edelbrock (1983), overlap occurs between externalizing and internalizing CBCL measures. However, some divisions between scores were not anticipated. For example, the RCMAS Total score is positively associated to a significant degree with all of the CBCL indicators of externalizing (i.e., Total Externalizing, Aggression, and Delinquency) but none of the subscores for internalizing (i.e., Total Internalizing, Anxiety/Depression, Withdrawal, and Somatizing). Similarly contrary to expectations, the Self-control subscale of the SSRC, which from a conceptual standpoint should associate negatively with externalizing and positively with internalizing, associates negatively with both externalizing and internalizing.

A portion of this overlap was judged due to the comorbidity of the two behavior dimensions in some children. In order to accommodate this possibility, children were categorized on the basis of levels of externalizing and internalizing as described below. Because the Anxiety subscale of the SSRC had a highly significant negative correlation with the RCMAS Total score ($r = -.54, p < .01$), this anxiety subscale was dropped from further analysis.

A visual inspection of the means of behavior scores for girls and boys did not justify
searching for significance between the two groups: The potential for a significant finding was offset by the risk of incurring familywise error and low practical significance. A similar observation was made for means of the behavior scores between the C.S. Porter and Polson locations.

Creation of Behavior Problem Groups

Since no data are available suggesting appropriate cutoff scores, delimiting elevated behavior problems other than for the CBCL, the 80\textsuperscript{th} percentile cut, often used in research with this measure, was extended to all measures. On this basis, children having all behavior scores below this cut were designated as being in the Normal range (N= 19). Children having only internalizing T-scores elevated to 60 or above were regarded to fall in the Internalizer range (N= 11). Children with externalizing scores (but not internalizing) at or above a T-score of 60 were regarded as belonging in the Externalizer range (N= 9). Finally, the Internalizer-Externalizer range (N= 9) grouped children with both externalizing and internalizing scores falling above the cutoff.

Cognitive Understanding of Emotion

Alpha coefficients were computed to determine the degree of relatedness of the individual items of the three KAI-R subscales, that is, to determine the internal-consistency reliability of the subscales themselves. The extent to which the subscales measured the same content area (e.g., cognitive-developmental level of the understanding of emotion) was reflected by Chronbach’s alpha conducted across all of the subscales ($\alpha = .34$).
Coefficients of two scales suggested the appropriateness of collapsing them into more unitary indicators. Understanding of Self ($\alpha = .69$) and Understanding of Other ($\alpha = .51$) gained reliability when the two scales were combined ($\alpha = .74$). Therefore, all further analyses were conducted with the subscales collapsed and designated as Understanding of Self/Other.

Similarly, the scale Discussing Emotion, with alpha coefficients calculated for Complexity, ($\alpha = .69$) and for Appropriateness ($\alpha = .66$) demonstrated considerably higher reliability when the low-reliability variable, Defining Emotions ($\alpha = .59$) was added. The new scale retained the name "Discussing Emotion" ($\alpha = .86$) since it describes the quality of children's verbalizing about emotion, now both formally and informally.

Feelings Vocabulary demonstrated the lowest internal consistency reliability ($\alpha = .37$) and was thus dropped from further analysis.

Bivariate correlations among KAI-R scores across all subjects were then performed. The intercorrelations of the various cognitive domains, including the WISC, are presented in Table 3.

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Insert Table 3

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Correlations between the subscales indicated that Understanding of Self/Other was most sensitive to the remaining cognitive indices, being positively associated with each to a
significant degree. Discussing Emotion together with Understanding Self/Other showed the strongest positive association between the KAI-R subscales; however correlations were moderate enough to support the notion of retaining the separation of the subscales.

No significant differences were found between girls and boys on the subscales of the KAI-R. This finding supported the hypothesis that gender is not a relevant factor for cognitive indices of emotion. Additionally, no differences on the cognitive understanding of emotion were found between children at the two middle schools.

In regard to the relationship between understanding of emotion and behavioral adjustment, scores on the KAI-R did not distinguish the behavioral groups of Normal, Externalizing, Internalizing, or Internalizing-Externalizing. As a final check on this finding, a second univariate ANOVA was conducted by entering KAI-R subscores as independent variables with WISC scores entered as a covariate. No difference was found on the dependent variables of the behavior groups.

Facial Data

Types of Expressions. The means of type of expression revealed that Negative expressions were highest ($M = 39.8$), with Neutral ($M = 26.7$), Positive ($M = 22.4$), and Blended ($M = 11.9$) following. Thus, approximately half of the facial expressions posed contained a negative component (i.e., Negative plus Blended). Accordingly, the hypothesis regarding low levels of negative expression was not supported. Instead, children responded to the stressful experience with high overall indications of negative internal experience.
Gender. Girls were significantly more expressive than boys in terms of number of expressions \((t = 3.49, df = 46, p = .001)\). However, girls did not differ from boys in the number of action units that they displayed in three minutes. Although this analysis was not specifically done, it is likely that boys’ expressions contained greater numbers of AUs, while girl’s expressions were more varied but contained fewer overall action units. Duration and intensities of total expressions were not found to be significantly different across gender.

While girls did not display greater numbers of Positive expressions, when the coding for Positive and Blended expressions was collapsed, they did display significantly more expressions including smiling \((t = 2.09, p < .05)\).

Negative Expressions. Among negative expressions, displays indicating Self-Consciousness (i.e., containing lip pressure) were highest \((M = 22.3)\), followed by Anger \((M = 15.8)\), Sadness \((M = 9.5)\), and Fear \((M = 5.9)\). These results did not indicate that displays of anger are used as if they are more socially prohibited than the less aggressive negative displays of sadness or fear. Because Self-Consciousness was displayed most frequently, it suggested the possibility that its role may be that of modulating more specific negative emotions, and therefore may be more socially acceptable (Smith, 1989).

Behavior Groups. In order to determine whether types of expression varied significantly among the behavior groups, means were compared by a one-way ANOVA. No significant differences were found for the use of Positive, Negative, Neutral, or Blended expression. Thus, the hypothesis was not supported that Blended expressions distinguished children
socially masking emotion.

In order to determine whether high levels of a specific negative emotion are found to co-occur with externalizing and internalizing dimension, means were compared for proportion, intensity, and duration of each negative emotion, by group. Only the difference between the frequency of Anger expressed by Externalizers and Internalizers was found to be significant \((t = -2.21, p<.05)\), with Externalizers having a greater proportion of their expressions dedicated to anger than Internalizers. No differences were found for intensity and duration of type of negative expression among any of the behavior groups.

The magnitude scores constructed to reflect the frequency, intensity and duration of each of the negative emotions of anger, sadness, fear, and self-consciousness did not reveal any differences by behavior groups. Correlations between the magnitude scores and the behavioral measures can be viewed in Table 2.

The magnitude scores of Fear and Self-Consciousness did show significant correlations with a number of the behavior scales. Fear was negatively associated with CBCL Anxiety/Depression \((r = -.37, p<.05)\) and Withdrawal \((r = -.35, p<.05)\). Fear was positively associated with RCMAS Physical Symptoms \((r = .39, p<.01)\). Self-consciousness was negatively associated with the CBCL subscales of Aggression \((r = -.38, p<.05)\), Total Internalizing \((r = -.35, p<.05)\), Anxiety/Depression \((r = -.36, p<.05)\), Somatizing \((r = -.38, p<.05)\), and Withdrawal \((r = -.38, p<.05)\). Additionally, Self-consciousness was positively associated with the SSRC subscale of Self-control \((r =
However, as between the behavior scales themselves, no clear conceptual groupings occurred. For example, although Magnitude of Fear was positively associated with the RCMAS subscale measuring physical symptoms of anxiety, it was negatively correlated with the CBCL measures of both Anxiety/Depression and Withdrawal. Similarly, Magnitude of Self-Consciousness was negatively associated with both Aggression and multiple internalizing scores on the CBCL.

**Emotional Cognition and Regulation**

Hierarchical regression analyses were conducted to determine the extent to which emotional understanding and evidence of emotion on the face predict child behavior problems. All dependent variables of externalizing and internalizing behavior measures (i.e., those from the CBCL, RCMAS, and SSRS) were regressed on the independent variables of emotional understanding and facial responding to determine what proportion of variability each contributed to the variance of each behavior measure.

A series of 144 hierarchical regression analyses were conducted on all possible combinations of each type of emotional understanding (Discussing Emotion, Understanding Self/Other, and Understanding of Conflicting Emotions) and each type of negative emotion (Anger, Sadness, Fear, and Self-Consciousness) for each of the 12 behavior scales. First, the independent variables of children’s cognitive and emotional responding were forced into the regression equation. Secondly, the interaction term between the independent variables of emotional cognition and emotional expression was
The F-ratio for change, which tests the significance of the change in r as a function of the interactions, was used to assess the significance of the interaction term. Significant change in F can also indicate main effects when only the first model tested by the regression equation including the two independent variables is retained. Due to the large number of regressions, only those changes in F significant below a probability level of .01 were retained as meaningful. Given a significance level of .01, only 4 significant findings could be expected to occur by chance. However, the study resulted in 12 significant findings, three interactions and nine main effects, lending support for the meaningfulness of the results, despite the risk of familywise error produced by the large numbers of regressions conducted.

Regression analyses produced a number of significant interactions and main effects. Surprisingly, the emotion that emerged as significantly contributing to the externalizing measures of the CBCL subscales of Total Externalizing and Aggression was Sadness. Here, Sadness interacted with Discussing Emotion, the cognitive understanding measure presumed to tap social cognition, to predict Total Externalizing (F = 4.38, df = 38, p = .002). In regard to the cognitive and expressive variables, the highest levels of externalizing behaviors were associated with both lower levels of Discussing Emotion and higher levels of Sadness (see Figure 1).
Thus, as sophistication of Discussing Emotion increased, levels of Sadness were seen to decrease. Lessened understanding surrounding verbal identifications of emotion may be more important in the interaction ($\beta = -.48, \ p = .01$) than sadness ($\beta = .18, \ p = .23$).

A second significant interaction was revealed for the CBCL subscale of Aggression. Sadness and Discussing Emotion interacted to predict Aggression ($F = 3.7, \ df = 34, \ p = .007$). Children having the highest levels of these behaviors exhibited lowered ability to verbalize about emotions along with slightly elevated levels of Sadness. Again, as understanding increased around Discussing Emotion, so did sadness, although to a less pronounced degree than for Total Externalizing (see Figure 2).

The greater relative strength of the cognitive variable of articulating about emotions ($\beta = -.56, \ p = .005$) suggests that this variable drives the interaction more so than the variable of Sadness ($\beta = .01, \ p = .96$). No significant findings occurred for the Delinquency component of externalizing.

In regard to internalizing measures, Fear emerged as significantly interacting with Understanding Self/Other to predict Physical Symptoms of Anxiety ($F = 6.96, \ df = 39,$
For children high on this subscale describing common physiological manifestations of anxiety such as fatigue, nausea, and difficulties in sleeping, elevated levels of fear occurred along with a lowered ability to identify specific emotions (see Figure 3).

In describing the relative contributions of the cognitive and emotionally expressive components of this interaction, Fear ($\beta = .32, p = .01$) may be regarded as a stronger element than the Understanding of Self and Other ($\beta = -.28, p = .03$).

In contrast, an examination of the main effects of the regression analysis show that for children high on the CBCL subscale for Anxiety/Depression, Understanding of Self/Other is low along with expressions of Fear ($F = 8.04, df = 34, p = .001$). In regard to Anxiety/Depression, when levels of Understanding Self/Other were low, levels of Fear were low as well (see Figure 4).

Again, low understanding of emotion evidenced a stronger slope ($\beta = -.45, p = .002$) than that of fear ($\beta = -.27, p = .06$).

The remainder of the significant main effects all involved the expression of Self-
Consciousness, except one. The exception was the finding that, for the RCMAS subscale of Social Anxiety and Distractibility, as Understanding Self/Other decreased, Anger increased \( (F = 5.3, df = 39, p = .009) \). Thus, increased understanding of one’s own emotion and the emotions of others was associated with decreased Anger (see Figure 5).

Insert Figure 5

Again, the slope for Understanding Self/Other \( (\beta = -.48, p = .002) \) indicates that it is a stronger predictor for social anxiety than is Anger \( (\beta = -.25, p = .14) \).

The remaining significant effects show that Understanding Self/Other and facial indicators of Self-Consciousness are significantly interrelated. All of the seven main effects describe a similar pattern: As various behavior problems increase, both Understanding Self/Other and Self-Consciousness decrease. This pattern was found for Total Internalizing \( (F = 6.13, df = 38, p = .005; \text{see Figure } 6) \), Anxiety/Depression \( (F = 9.03, df = 34, p = .001; \text{see Figure } 7) \), Somatizing \( (F = 7.1, df = 34, p = .003; \text{see Figure } 8) \), Total Externalizing \( (F = 5.54, df = 38, p = .008; \text{see Figure } 9) \), and Aggression \( (F = 6.8, df = 34, p = .003; \text{see Figure } 10) \).

Insert Figures

Significant effects were found in the reverse direction for the Self-Control subscale of
the SSRS: Discussing Emotion and Self-consciousness predicted Self-Control ($F = 5.74, \ df = 38, \ p = .007$) and Understanding Self/Other and Self-Consciousness predicted Self-Control ($F = 6.42, \ df = 37, \ p = .004$). These results indicated that Self-Consciousness increased parallel to the emotion understanding variables of Understanding Self/Other (see Figure 11) and Discussing Emotion (see Figure 12), predicting higher Self-Control.

Insert Figures
CHAPTER 4: DISCUSSION

This investigation was based on the premise that emotions emblematic of certain psychopathologies would be highly represented in populations exhibiting those same problems by other- or self-report. It was not entirely clear how cognitive variables involving the understanding of emotion would impact externalizing problem behaviors since both social sophistication and delays of socioemotional understanding have been reportedly associated with these behaviors. However, the current study was prepared to find a clear distinction between emotion and cognition in regard to externalizing behaviors.

While the need to divide affect and cognition into separate theoretical frameworks has been questioned by some authors (Gibbs, 1991; Hoffman, 1991), a number of developmental phenomena point to the need for clarification in regard to the possibility of their separate functioning. Increasingly, human capacities have been found to function in a domain-like manner, each exhibiting some variability in the timing of developmental emergence (Fischer et al, 1990).

Furthermore, emotional factors are known to influence a child’s patterns of behavior in a very decisive manner long before that child can perform cognitive operations on events stored in long-term memory. For example, intense emotional experiences, such as a trauma or an extended history of chronic stressors, are influences that do not require the mediation of symbolic representation or cognitive elaboration. While their effects are certainly subserved by brain functioning, these early processes may differ from later
information-processing in a number of ways, including the ratio of subcortical to cortical processing (Goodman & Haith, 1987). Thus, a central concern of the study was the potential for correspondence shown by the measure of affective regulation and the cognitive measure of emotional understanding used in this study.

Limited support was shown for the study's hypotheses. The finding for higher frequency of angry expressions among externalizing children compared to internalizing children, in part, replicates Keltner, Moffit, and Stouthamer-Loeber (1995). However, the lack of other findings produced by comparisons between the behavior groups diminishes the significance of anger as explanatory in regard to joint action with cognition to predict externalizing behaviors.

The finding for higher frequency of anger expression must be balanced against previous determinations, described above, that mitigate against an interpretation of expression frequency as descriptive of internal emotional experience. A temperate interpretation of any significant finding for frequency of emotional displays must invoke "stylistic" rather than experiential explanations. This is especially true since no regression analyses found Anger to be an important variable among children high on any of the externalizing measures. The generally high levels of anger shown on the face of children in the sample may have "washed out" the anger on the faces of children who express angry displays, and feel anger, in situations where low-anger children regulate their negative affect differently.

Another possible interpretation of these results is that anger is an expressive style among externalizing children. There is some evidence that adult males who engage in
domestic violence "funnel" their emotional responses through anger, even when their actual feelings are shame or fear (Retzinger, 1991). A comparison of the levels of family conflict between the Externalizing and Internalizing children would have been valuable toward determining if the role of anger is perhaps that of a learned coping mechanism. Given the prevalence of antisocial interactive styles in the families of such children, this is a possible contributing variable.

Alternatively, angry behavior has been described as a form of "social incompetence" (Dodge, Pettit, McClasky, & Brown, 1986). It is possible that high levels of anger would be evident in behavior but not discernable in emotional measures. Anger and aggression have been shown to act in an independent manner. In reviewing research on criminality, Torestad (1990) concluded that in more than half of the reviewed cases, nonaggressive behaviors follow arousal due to anger and that most of the aggressive behavior is nonphysical.

Additionally, positive expressions often have more communicative value than they have as indicators of internal state. In this study, anger was seen as a more frequent social display than other negative emotions. The significant finding in the current study describing anger as a significant variable for children experiencing high levels of social anxiety may allude to an inability to moderate the communication of anger in social situations, particularly when the emotional communication of others is not well understood.

More difficult to interpret is the finding that expressions of Sadness emerged as a
behavior associated with externalizing. In the context of children's lowered ability for
Describing Emotions, higher levels of Sadness occurred to predict both overall
externalizing and aggression. Seemingly, children who experience sadness without
adequate understanding to cope with the negative elements contained in emotional
appraisals engage in higher levels of disruptive behaviors.

It is not clear why certain emotions become a dominant emotional style and how these
are linked to a pattern of behavior problems, particularly when many of the developmental
precursors for conditions, such as depressive and disruptive disorders, are the same
(Metalsky et al, 1999). That feelings of loss are a rudimentary condition underlying
externalizing behaviors may need to be explored given the interactional features of
maternal rejection and hostility that have been found associated with avoidant attachment,
a risk factor for aggressive behavior (Renken et al, 1989).

The above finding does not support the idea that emotions identified with internalizing,
such as sadness, mitigate against the impulsive behaviors characteristic of the externalizing
complex. While studies have found that negative emotion, in general, supports deeper
cognitive processing that biases information-processing in its direction (Ito, Larsen, Smith,
& Cacioppo, 1998) and sadness, specifically, may predispose individuals to introspection
and acceptance, emotions may interact with cognition and behavioral responses in a
complex manner over the course of development. The concept of "heterotypic continuity"
describes changes in manifest behavior that continue to express the same underlying
process (Sroufe, 1983). This concept is used to explain how restlessness and irritability
may be a symptom of depression among children while it is not characteristic of the depressive syndrome among adults. Further research is needed to examine emotions involved in the social presentation of problem behaviors, compared to emotional precipitators of those same conditions.

On the other hand, fear showed effects only for internalizing behaviors and only in relationship to Understanding Self/Other. The effect of Fear depended upon the behavior problem that the two variables predicted. High levels of Fear were associated with low levels of Understanding Self/Other when predicting physical symptoms of anxiety, while low levels of both Fear and Understanding Self/Other predicted anxiety and depression.

In regard to the former finding, high levels of fear may require a coping style that is more avoidant in nature, whereby negative emotion is distanced from conscious experience through the medium of the body. While only suggestive (due to a probability level only below .05), the Somatizing subscale of the CBCL also showed interactions for Fear and Understanding Self/Other as well as for Fear and Discussing Emotion.

The inverse finding for low Fear, acting with Understanding Self/Other to predict Anxiety and Depression on the CBCL, may be due to the overall lack of expression shown by children scoring high on the only subscale in the study measuring depression. Again only suggestive, the study's children who were high on depression also were appreciably lower on Sadness, Fear and Self-consciousness in the context of Discussing Emotion as well as low on Anger, Sadness, and Self-consciousness (in addition to the significant interaction reported) in the context of Understanding Self/Other. This pattern of results
echoes other reports of low expressivity, both facially and gesturally, among people with depression (Segrin, 1998).

The final significant findings centered on children's expressions of Self-consciousness in relationship to their Understanding Self/Other. In general, the findings were that children have better behavioral adjustment when they exhibit insight into their own emotions as well as perspective-taking regarding the emotional behavior of others in tandem with a high monitoring of their emotions on the face (i.e., repression of potentially negative emotion). Perhaps children who have the wherewithall to monitor their facial expressions of internal emotions also have cognitive resources available to take factors surrounding the expression of emotion into account.

These findings may be the most compelling since they provide converging evidence that an interactional style of emotion regulation functions both, given its presence, as a positive indicator of self-control and, in its absence, as a predictor of behavior problems across the two broad-band groupings. Thus, children high on Self-consciousness tended not to exhibit behavior problems, while children high on externalizing and internalizing measures tended to be low on facial expressions of emotional suppression.

The facial measure of Self-consciousness, that is lip pressure or tightening, may mask the display of more revelatory negative displays. Self-consciousness may have acted in a manner synonymous with the Keltner et al (1995) measure of embarrassment. High Self-consciousness was associated with high Self-control when high emotional cognition was an attendant factor. Conversely, low Self-consciousness, given low emotional cognition,
predicted behavior problems. This finding may expand on the Keltner et al (1995) results which found that children high on the socially-conscious feeling of embarrassment were not high on externalizing behaviors, even if they had high facial anger.

On the other hand, low Self-consciousness was found to predict behavior problems of both an externalizing variety (CBCL Total Externalizing) and of an internalizing kind (CBCL Total Internalizing, Somatizing, and Anxiety/Depression). This may indicate that children of both broad-band groupings have a lowered ability to monitor their interaction with social others during a stressful situation. Additionally, these same children tended to exhibit lowered emotional understanding, in all cases, understanding of self and others.

Particularly because much of the current research has focused solely on the two broad-band clusters of behavior disorders, investigation of the contribution of more narrow-band elements contributing to those clusters may be important. The broad-band groupings of externalizing and internalizing were not found by the current study to capture the joint action of momentary emotion regulation and emotional cognition. Instead, the effects described in this study were specific to the behavioral features measured in the subscales. Thus, the division between externalizing and internalizing may not be representative of a similar split at the level of discreet emotions and type of emotional cognition.

However, multiple considerations offset a vigorous defense of the current findings. In addition to the small sample size of the study, which incurs a vulnerability to sampling error and substantially decreases its internal validity, the validity of the subscales used to identify facets of internalizing and externalizing is open to question.
Additionally, the meaning of many of the emotion indicators coded by the FACS have not been subjected to rigorous empirical analysis. In particular, the action units AU4, AU14, and AU17, which are often associated with negative internal experiences, were coded here as primarily neutral. It is possible that the masking of emotion involves the display of ambiguous elements, those that are alternatively used as displays of both cognitive punctuation and as negative emotional referents. Including these action units in the category of Negative instead of Neutral expression might have correctly reduced or enhanced the significance reported in the study. However, until further basic research is conducted on these facial elements, no such determination can reasonably be made.

Another qualification of the current findings arises from the nonclinical status of the sample. The use of a primarily normal group of children may explain the failure to entirely replicate Keltner, Moffit and Stouthamer-Loeber (1995) and also a failure to find gender differences in internalizing and externalizing. Another possible factor is that internalizing features are more prevalent among children in normal populations, and thus the study's greater number of significant findings for Sadness, Fear, and Self-consciousness. Children with externalizing conditions severe enough to surpass the "ceiling effects" produced by the Vocabulary test may not have been numerous enough in the sample to produce significant results.

Another cause for concern is posed by the study's methods. Subjects were aware that they were being videotaped, and this knowledge may have altered spontaneous expressions. However, given the preponderance of negative expressions in the study, it is
unlikely that social display rules confounded children's displays of emotion.

Finally, a source of methodological concern surrounding the interpretation was the fact that, in order to determine levels of Externalizing, Internalizing, and Internalizing-Externalizing, children were coded categorically; while the analyses resulting in significant findings for the subscales were correlations conducted on the sheer amounts of Externalizing and Internalizing. These correlations were calculated irrespective of overlap between the behavior conditions and this, no doubt, lent power to the correlational analysis. However, future examinations of the relationship between externalizing and internalizing must allow for the possibility that the commorbidity of the two factors creates a qualitatively different condition of child functioning. Children with more pronounced behavior disorders may present a different configuration of psychophysiological mechanisms that fit poorly along a continuum model of developmental psychopathology. However it is the perspective of the current study that attempts be made to link normative processes with those which underlay maladaptive responding.

The study's findings support the notion that emotional understanding is composed of multiple facets. As predicted on theoretical grounds, Understanding Conflicting Emotion, the aspect of emotional understanding associated with maturational elements, appears to be less interactive with high levels of negative emotion than are the other types of emotional understanding examined by this study. The latter, Discussing Emotion and Understanding Self/Other have been seen as contexts that lend themselves to measuring
the effects of emotion in the presence of behavior problems. Perhaps Discussing Emotion, reflecting verbal mediation of affective experience, and Understanding Self/Other, tapping self-awareness and perspective-taking, both depend upon and influence the accumulation of experience within the context of actual emotional situations.

The study did not support the notion that externalizing problems should be conceived as a single deficit, one of emotional regulation versus one of delayed understanding. Instead, emotional behavior appears to depend upon the linking of cognition to surrounding affective events throughout development. The findings indicate an intimate reciprocity between cognition and emotional outcome. The primary finding of the study was that the facial-affective measure and the cognitive measures covaried with respect to child behavior problems, but not in a simple fashion.

In all analyses, the lowered ability to cognitively represent information regarding emotion was a significant contributor to the incidence of behavior problems, of both externalizing and internalizing varieties. A question remains in regard to children who evidence severe behavior problems, yet seem to have a high degree of sophistication regarding the emotions of others.

Questions also remain regarding the interaction of specific emotions with emotional-cognitive indicators. While elaborated cognition surrounding emotions can be seen as a "blanket" protective factor, specific emotions seem to show greater power to predict particular behavior problems in the context of the momentary regulation of negative emotion.
The contribution of many factors will be, no doubt, found important in understanding affect-cognition links and have been omitted by this study. Future studies examining the relationship between state and trait emotionality, mood, and social displays of emotion will help to chart the dynamical background for the cognitive appraisal of emotionally-evocative events. Longitudinal studies of temperament and its relationship to dyadic emotional regulation early in development are vital for understanding how biology and environment mutually guide these two components of human functioning.

A complete explanation of the variables affecting the developmental trajectory of the disruptive behavior disorders will necessarily be quite complex. And although such an analysis will require a more detailed account of the structure and function of both cognitive and affective contributions than is possible here, the intent of the study was to raise and examine a number of the questions that must be asked about the course of externalizing child psychopathology.
References


responses to expressions of anger and affection by others in the family. Child Development, 52, 1274-1282.


PsychoIogy, 32(2), 367-379.


Table 1

Action units (AU) coded in the study indicative of the internal experience of emotion.

<table>
<thead>
<tr>
<th>ACTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU1 Inner brow raise</td>
<td>Inner corner of eyebrow pulled giving eyebrows a circular shape.</td>
</tr>
<tr>
<td>AU2 Outer brow raise</td>
<td>Outer corner of eyelid pulled up, stretching eyelid.</td>
</tr>
<tr>
<td>AU4 Brow Lowerer</td>
<td>Eyebrows are lowered and pushed together, producing a worried look.</td>
</tr>
<tr>
<td>AU5 Lid raiser</td>
<td>Eyes widen as in surprise.</td>
</tr>
<tr>
<td>AU6 Cheek raiser</td>
<td>Skin around temples and cheeks drawn toward eyes narrowing eye opening; similar to a squint.</td>
</tr>
<tr>
<td>AU7 Lower lid tightener</td>
<td>Lower lid raises, narrowing the eye as in an angry or suspicious expression.</td>
</tr>
<tr>
<td>AU9 Nose wriniker</td>
<td>Upper nose is wrinkled; characteristic of disgust.</td>
</tr>
<tr>
<td>AU10 Upper lip raise</td>
<td>Upper lip is drawn up, with central portion higher than lower portion. Characteristic of contempt.</td>
</tr>
<tr>
<td>AU12 Lip corner pull</td>
<td>Lip corners pulled back and upwards: the smile.</td>
</tr>
<tr>
<td>AU14 Lip corner tightener</td>
<td>Lip corners tighten, pursing lips.</td>
</tr>
<tr>
<td>AU15 Lip pull-down</td>
<td>Lip corners bow lips down: the frown.</td>
</tr>
<tr>
<td>AU17 Chin raise</td>
<td>Chin and lower lip are pushed up, causing central area of chin to wrinkle.</td>
</tr>
<tr>
<td>AU20 Lip stretch</td>
<td>Lip corners pull straight back, elongating mouth.</td>
</tr>
<tr>
<td>AU24 Lip press</td>
<td>Lips are thinned by top and bottom portions being pressed together.</td>
</tr>
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</table>
Table 2

Correlations between Behavior Measures.

<table>
<thead>
<tr>
<th></th>
<th>Total Externalizing</th>
<th>Aggression</th>
<th>Delinquency</th>
<th>Total Internalizing</th>
<th>Anxiety Depression</th>
<th>Somatizing</th>
<th>Withdrawal</th>
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<td>.79**</td>
<td>.38*</td>
<td>.43**</td>
<td>.49**</td>
<td>.45**</td>
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<td>.78**</td>
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<td>.51**</td>
<td>.57**</td>
<td>.54**</td>
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<td>.41**</td>
<td>.33*</td>
<td>.37*</td>
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<td>.37*</td>
<td>1.00</td>
<td>.86**</td>
<td>.67**</td>
<td>.72**</td>
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<td>.41**</td>
<td>.86**</td>
<td>1.00</td>
<td>.67**</td>
<td>.81**</td>
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<tr>
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<td>.72**</td>
<td>1.00</td>
<td>.58**</td>
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<tr>
<td><strong>Withdrawal</strong></td>
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<td>.54**</td>
<td>.41**</td>
<td>.87**</td>
<td>.81**</td>
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<td>.37*</td>
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<td>.39*</td>
<td>.45**</td>
<td>.52</td>
<td>.53**</td>
<td>.41*</td>
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<td>-.17</td>
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<td>-.48**</td>
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<td><strong>Emotion Magnitude Scores</strong></td>
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<td>-.35*</td>
<td>-.36*</td>
<td>-.38*</td>
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</tbody>
</table>

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

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

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<table>
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<tr>
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<th>Physical Symptoms</th>
<th>Oversensitivity</th>
<th>Social Anxiety</th>
<th>Empathy</th>
<th>Self-control</th>
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<th>Sadness</th>
<th>Fear</th>
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<td>.22</td>
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<td>.12</td>
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* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)
Table 3

Correlations between Cognitive Subscales

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*. Correlation is significant at the 0.05 level (2-tailed)
**. Correlation is significant at the 0.01 level (2-tailed)
Figure 1: Sadness and Discussing

Emotion predicting Externalizing

Sadness and Discussing Emotion

Figure 2: Interaction of Sadness & Discussing

Emotion predicting Aggression

Sadness & Discussing Emotion
Figure 3: Fear and Understanding Self/Other
predicting Physical Symptoms of Anxiety

Figure 4: Fear and Understanding Self/Other
predicting Anxiety/Depression
Figure 5: Anger and Understanding Self/Other predicting Social Anxiety

Figure 6: Self-consciousness and Understanding S/O predicting Internalizing
Figure 7: Self-consciousness & Understanding
Self/Other predicting Anxiety/Depression

Figure 8: Self-consciousness & Understanding
Self/Other predicting Somatizing
Figure 9: Self-consciousness and Understanding Self/Other predicting Externalizing.

Figure 10: Self-consciousness and Understanding Self/Other predicting Aggression
Figure 11: Self-Consciousness and Understanding

Self/Other predicting Self-control

Figure 12: Self-consciousness and Discussing

Emotion predicting Self-control
SECTION B of the KUSCHE AFFECTIVE INTERVIEW:

I. QUESTION 1
Code the following variables for the question: Name all of the different feelings you can think of.

1. Count number of Standard Emotions:
   - happy
   - sad/unhappy
   - mad/angry
   - scared/afraid
   - love
   - proud
   - guilty
   - jealous
   - nervous/anxious
   - lonely
   - upset
   - mean/aggressive
   - ashamed
   - hurt

2. Count total number of Other Feelings (Include only words qualifying as feeling words)

3. Count total number of responses or items.
   Count all responses offered. Do not count same feeling words twice; but count synonyms e.g. “angry” and “mad” would count as 2 items.

4. Count total number of Neutral Feelings (Not standard feelings) (e.g. “OK”, “private”, “in-between”)

5. Count total number of Positive Feeling Words (All responses) (e.g. “Silly”, “daring”, “thoughtful”). Include positive affect adjectives that describe states of being.

6. Count total number of Negative Feeling Words (All responses) (E.g. “Sorry”, “shocked”, “shy”, “different”, “misunderstood”, “weird”, “crazy”, bad, not good). Include negative affect adjectives that describe states of being such as “weirdly”, etc. Do not include somatic words such as “cold’ or “hyper”.
7. Count number of Somatic Words
   (E.g. "Sick stomach", "dizzy", "hurts", "well", "tired", "not feeling well", "hungry", "hyper" or "cold").

8. Count number of Cognitive Words.
   (E.g. "Thinking", "wondering", "curious").

9. Count number of (a) Behavioral References
   (E.g. "Like you like to fight", you like to play, ride your bike or scooter, baseball with friends, just obey, clenched fists, begging, crying, smiling, sleeping)
   (b) Inferred Feelings
   Inferred Positive Affect: Regular as people are normal, like he has friend. Inferred Negative Affect: No one to play with, crying feelings, hurt people's feelings, he doesn't have any friends, feels like you don't have to listen.
   (c) Inappropriate Responses
   Answer unrelated to question or bizarre response. If inappropriate response contains negative connotations (e.g. content related to violence, death, etc.), then score BOTH here and as Other Negative Feelings.

10. Count number of words that are not an emotion:
   a. references to the actions of other people
      i.e., "misunderstood", "hurtful"
   b. states of being
      i.e. "poor"

II. QUESTION 2
Code the following variables for the question: What does Proud mean?

11. Rate the quality of the definition along the following criteria:
0 = I don't know
1 = obvious wrong answer, nonsense, or not at all descriptive: "You like really have some pride", "Like I enjoy this or enjoy that."
2 = response which is not incorrect but shows poverty of content. You cannot determine the specific target word from the child's example alone: you must infer the target feeling. The use of the target word clarifies the feeling and helps to identify it. Uses "opposite" (i.e. guilty is opposite of innocent).
3 = demonstrates a reasonable knowledge of the target feeling, or reference is made to the target feeling as an emotion. You should be able to determine the specific target word from the child's example. "What you did...accomplished," or reference to state of being "You're proud of who you are."
III. QUESTION 3
Code the following variables for the question: Tell me about a time you felt Proud?

12. Rate the appropriateness of the example:
   0 = I don’t know
   1 = I never felt that
   2 = Inappropriate response: Example is tangential or unrelated to the target feeling. Or example wouldn’t be expected to elicit the target feeling.
   3 = Appropriate response: Example could reasonably elicit the target feeling.

13. Rate the target (the person who the feeling is directed toward or the person who elicits the feeling) of example. If more than one target is mentioned, rate the highest target (e.g. 1 = self) possible.
   00 - none specifically mentioned or a vague somebody
   01 - negatively-perceived other (strangers, monsters, boogeymen)
   02 – things or possessions
   03 – others (nonthreatening or positive), authority figures (teacher, police, etc) or situation or event as target.
   04 - self
   05 - family members or pet
   06 - boyfriend/girlfriend; friends/peers; or a “we” response indicating the child & others
   07 - dreams or thoughts

NOTE: Different feelings pull for different targets. Pride and guilty pull for self; jealous pulls for other/situation; nervous pulls for situation; and lonely pulls for situation/other.

14. Rate the complexity of the example:
   0 - low in appropriateness (see item 12)
   1 - Answer refers to another emotion or just restates “proud” without explanation: “I was happy and proud when my parents came back... I was happy because somebody did something nice for me...I was proud of myself.”
   2 - A response that names a specific situation (without elaboration) which could elicit pride and without reference to the idea that proud is an emotion: “When I won an award for writing... When I passed my multiplication... I felt proud when I got a bike... When I got a baby kitten... When you do something right... When I have a lot of friends”
3 - A response that demonstrates delight or satisfaction or knowledge that proud refers to an emotion or feeling that one has regarding one's own or another person's achievements, possessions, associations: "I was pleased with myself because I accomplished something...I was happy that my friend won an award...when you're done with your work, you feel great that you did a great job...You feel good about yourself if you save someone's life"

NOTE: These responses give a greater explanation of the causal processes involved in feeling proud.

15. Rate the content of the response:
01 - Getting something
02 - Owning something, showing off something that you like
03 - Group membership
04 - Achievement of an honor or mastering a skill
05 - Doing something (cleaning room)
06 - Overcoming a psychological obstacle or fear
07 - Solving something by themselves

IV. QUESTION 4
Code the following variable for the question: What does Guilty mean?

16. Rate the quality of the definition along the following criteria:
0 = I don't know
1 = obvious wrong answer or nonsense (i.e. mentions an action, not an emotion: "I don't like guilty...It means you don't feel right sometimes...something bad...When somebody says you did something and you didn't."
2 = You cannot determine the specific target word from the child's example alone: you must infer the target feeling. The response names a specific situation (without elaboration), or a general idea without reference to self-reproach: "You did something wrong...When a court says you're guilty...When you're stealing things...The judge says "You're guilty, get in there"...When you don't share...When I cheat at a game"
3 = demonstrates understanding of internal self-reproach or remorse from a belief that one did something wrong, or the idea that guilt is a feeling one has in conjunction with a general sense of wrong-doing. You should be able to determine the specific target word from the child's example. The use of the target word supports, but is not necessary for identification of the feeling: "When you deserve punishment for something you did...You do something you're not supposed to do and you feel sorry for it...You are to blame for something you did...You don't like yourself
because you did something wrong"

V. TURN TO TYPED CODING, SECTION GUILTY
Code the following variables for the question: Think about one particular time you felt very guilty...?

17. Rate the appropriateness of the example:
   0 = I don't know
   1 = I never felt that
   2 = Inappropriate response: Example is tangential or unrelated to the target feeling. Or example wouldn't be expected to elicit the target feeling.
   3 = Appropriate response: Example could reasonably elicit the target feeling.

18. Rate the target (the person who the feeling is directed toward or the person who elicits the feeling) of example. If more than one target is mentioned, rate the highest target (e.g. 6 = self-committed violation) possible.
   00 - none specifically mentioned or a vague somebody
   01 - negatively-perceived other (strangers, monsters, boogeymen)
   02 - things or possessions
   03 - others (nonthreatening or positive), authority figures (teacher, police, etc), or situation or event as target.
   04 - self
   05 - family members or pet
   06 - boyfriend/girlfriend; friends/peers; or a "we" response indicating the child & others
   07 - dreams or thoughts

19. Rate the complexity of the example:
   0 = low in appropriateness.
   1 = Answer refers to another emotion or just restates "guilty" without any logic: "I was guilty when nobody would play with me."
   2 = A response that names a specific situation (without elaboration) which could elicit pride and without reference to the idea that guilty is an emotion: "When my dad yells at me for being bad.. When I failed my multiplication..."
   3 = A response that demonstrates knowledge that guilt involves an emotion or feeling of remorse:

NOTE: These responses give a greater explanation of the causal processes involved in feeling guilty.
20. Rate the content of the example:
   00 - no clear content or denial of transgression
   01 - accused of something
   02 - thought or felt something wrong.
   03 - did something wrong (generically doing something someone is not supposed to do – “I accidentally broke one of my brother’s toys”)
   04 - admission of serious transgression
   05 - failure of achievement

VI. QUESTION 5
Code the following variables for the question: What does Jealous mean?

21. Rate the quality of the definition along the following criteria:
   0 = I don’t know
   1 = obvious wrong answer or nonsense: “It means like you’re dumb or stupid” or simple restatement of term “When you’re jealous of somebody”
   2 = response which names a specific situation (without elaboration) that could elicit jealousy but has no reference to the emotion itself: “When my mom was paying attention to my brother & not me.”
   3 = demonstrates that envy, resentment, desire/want, discontent, or the idea that jealous refers to an internal feeling in response to what another person has. You should be able to determine the specific target word from the child’s example: “When people have what you don’t have and you want it...When someone gets a toy and you don’t like it and you wished that you had that toy.”

VII. QUESTION 6
Code the following variables to the question: Tell me about a time you felt Jealous?

22. Rate the appropriateness of the example:
   0 = I don’t know
   1 = I never felt that
   2 = Inappropriate response: Example is tangential or unrelated to the target feeling. Or example wouldn’t be expected to elicit the target feeling.
   3 = Appropriate response: Example could reasonably elicit the target feeling.

23. Rate the target (the person who the feeling is directed toward or the person who elicits the feeling) of example. If more than one target is mentioned, rate the highest target (e.g. 1 = self) possible.
   00 - none specifically mentioned or a vague somebody
   01 - negatively-perceived other (strangers, monsters, boogeymen)
02 - things or possessions
03 - others (nonthreatening or positive), authority figures (teacher, police, etc.) or situation or event as target.
04 - self
05 - family members or pet
06 - boyfriend/girlfriend; friends/peers; or a “we” response indicating the child & others
07 - dreams or thoughts

24. Rate the complexity of the example:
   0 - low in appropriateness.
   1 - Answer just restates question: “I got jealous of my brother”
   2 - Response refers to a specific situation, but no mention of reason or inner state: “My brother got candy and I didn’t.”
   3 - Response shows understanding that desire is in direct relationship to the wanted possessions or resources of another person: “my brother was sitting on my grandmother’s lap and I wanted to, so I got mad...My friend had a baby sister and I wanted one.

25. Rate the content of the example:
   00 - nobody really mentioned
   01 - jealous of someone having/getting something you didn’t (or more of), or having a possession you want (people may be included here).
   02 - jealous of someone else’s personal qualities (psychological or physical including their achievements).
   03 - jealous of attention or affection (includes inequalities expressed about treatment of family members.

VIII. QUESTION 7
Code the following variables for the question: What does Nervous mean?

26. Rate the quality of the feeling along the following criteria:
   0 = I don’t know
   1 = obvious wrong answer or nonsense
   2 = response which is not incorrect but shows poverty of content. Mentions only the situation or physiological responses: “It means like when you are shaking or up in front of a lot of people.”
   3 = demonstrates a reasonable knowledge of the target feeling, or reference is made to the target feeling as an emotion: “You are shivering because you’re afraid you’re going to do something wrong.”
Code the following variables to the question: **Tell me about a time you felt Nervous?**

27. Rate the appropriateness of the example:
   - 0 = I don’t know
   - 1 = I never felt that
   - 2 = Inappropriate response: Example is tangential or unrelated to the target feeling. Or example wouldn’t be expected to elicit the target feeling.
   - 3 = Appropriate response: Example could reasonably elicit the target feeling.

28. Rate the target (the person who the feeling is directed toward or the person who elicits the feeling) of example. If more than one target is mentioned, rate the highest target (e.g. 1 = self) possible.
   - 00 - none specifically mentioned or a vague somebody
   - 01 - negatively-perceived other (strangers, monsters, boogeymen)
   - 02 – things or possessions
   - 03 – others (nonthreatening or positive), authority figures (teacher, police, etc) or situation or event as target.
   - 04 - self
   - 05 - family members or pet
   - 06 - boyfriend/girlfriend; friends/peers; or a “we” response indicating the child & others
   - 07 - dreams or thoughts

29. Rate the complexity of the example:
   - 0 = low in appropriateness
   - 1 = Answer just restates question: “I got nervous”
   - 2 = Response refers to a specific situation, but no mention of reason or inner state: “When I had to give a speech in front of a class.”
   - 3 = Response shows understanding that worry, apprehension, or eagerness are components of nervousness.

30. Rate the **content** of the example:
   - 01 - performance anxiety (being evaluated while doing something).
   - 02 - nervous due to social situation (party, date, etc)
   - 03 - eagerly wishing; can’t wait for something.
   - 04 - physical concerns (cancer;dentist, etc).
   - 05 - transgressions.
   - 06 - family relationships.
   - 07 - dreams or thoughts.
   - 08 - other
Code the following variables for the question: **What does Lonely mean?**

31. Rate the quality of the feeling along the following criteria:
   0 = I don't know
   1 = obvious wrong answer or nonsense
   2 = response which is close, but not quite correct. Uses other emotion word like “scared.” Restates the feeling word instead of describing the feeling. Or focused only on situation.
   3 = demonstrates unhappiness at being alone, longing for friends or company, feeling isolated, sense of solitude or gloom, and that it is an internal emotion, not just the physical condition of being alone.

Code the following variables for the question: **Tell me about a time you felt Lonely?**

32. Rate the appropriateness of the response:
   0 = I don't know
   1 = I never felt that
   2 = Inappropriate response: Example is tangential or unrelated to the target feeling. Or example wouldn't be expected to elicit the target feeling.
   3 = Appropriate response: Example could reasonably elicit the target feeling.

33. Rate the target (the person who the feeling is directed toward or the person who elicits the feeling) of example. If more than one target is mentioned, rate the highest target (e.g. 1 = self) possible.
   00 - none specifically mentioned or a vague somebody
   01 - negatively-perceived other (strangers, monsters, boogeymen)
   02 - things or possessions
   03 - others (nonthreatening or positive), authority figures (teacher, police, etc) or situation or event as target.
   04 - self
   05 - family members or pet
   06 - boyfriend/girlfriend; friends/peers; or a “we” response indicating the child & others
   07 - dreams or thoughts

34. Rate the complexity of the example:
   0 = low in appropriateness
   1 - Answer just restates question: “I got lonely”
   2 - Response refers to a specific situation, but no mention of reason or inner state:
3 - Response shows understanding that loneliness is in direct relationship to absence of another person or of loved ones.

35. Rate the content of the example:
   01 - no friends or left behind.
   02 - absence (someone leaving, missing someone, homesick)
   03 - rejected (include being treated unequally by family members)
   04 - no one to play/talk with
   05 - alone or novel situation
   06 - standing alone by virtue of behavior or beliefs.

Code the typed transcript question: Tell me about a time when you felt particularly happy?

36. Rate the appropriateness of the response:
   0 = I don't know
   1 = I never felt that
   2 = Inappropriate response: Example is tangential or unrelated to the target feeling. Or example wouldn't be expected to elicit the target feeling.
   3 = Appropriate response: Example could reasonably elicit the target feeling.

37. Rate the target (the person to whom the feeling is directed toward or who elicits the feeling). If more than one target is mentioned, rate the highest target possible.
   00 - none specifically mentioned or a vague somebody
   01 - negatively-perceived other (strangers, monsters, boogeymen)
   02 - things or possessions
   03 - others (nonthreatening or positive), authority figures (teacher, police, etc) or situation or event as target.
   04 - self
   05 - family members or pet
   06 - boyfriend/girlfriend; friends/peers; or a "we" response indicating the child & others
   07 - dreams or thoughts.

38. Rate the complexity of the example:
   0 = low in appropriateness
   1 = Answer just restates question: "I was really happy"
   2 - Response refers to a specific situation, but no mention of reason or inner state: "We got to go to the zoo, so I was happy"
   3 - Response shows understanding that happiness has a relationship to the meaning of close personal relationships or accomplishments - not just entertaining events or material things:
"I was happy to be there with my family.

39. Rate the content of the example:
   01 - having/getting something you want, or having a wanted possession.
   02 - happy getting attention
   03 - happy with a physical situation (having one's own room, etc)
   04 - happy with an achievement
   05 - happy due to feelings in a relationship (being in a close relationship)

Code from the typed transcript: Tell me about a time when you felt particularly sad?

40. Rate the appropriateness of the response:
   0 = I don't know
   1 = I never felt that
   2 = Inappropriate response: Example is tangential or unrelated to the target feeling. Or example wouldn't be expected to elicit the target feeling.
   3 = Appropriate response: Example could reasonably elicit the feeling.

41. Rate the target (the person to whom the feeling is directed toward) who elicits the feeling of example. If more than one target is mentioned, rate the highest target (e.g. 1 = self) possible.
   00 - none specifically mentioned or a vague somebody
   01 - negatively-perceived other (strangers, monsters, boogeymen)
   02 - things or possessions
   03 - others (nonthreatening or positive), authority figures (teacher, police, etc), or situation or event as target.
   04 - self
   05 - family members or pet
   06 - boyfriend/girlfriend; friends/peers; or a "we" response indicating the child & others

42. Rate the complexity of the example:
   0 = low in appropriateness or responsiveness
   1 - Answer just restates question: "I got really sad"
   2 - Response refers to a specific situation, but no mention of reason or inner state: "My grandmother died"
   3 - Response shows recognition of accompanying inner state or situation that can intensify sorrow: "My grandmother died and it was just after she had given me a blanket that she made by hand."
43. Rate the content of the example:
   01 - somebody having/getting something you didn't (or more of something), or having a wanted possession.
   02 - loss of attention
   03 - death of a loved one or pet
   04 - loss of achievement or status
   05 - loss or lack of relationships

Code the typed transcript: Tell me about a time when you felt particularly mad?

44. Rate the appropriateness of the response:
   0 = I don't know
   1 = I never felt that
   2 = Inappropriate response: Example is tangential or unrelated to the target feeling. Or example wouldn't be expected to elicit the target feeling. Or a specific situation isn't described.
   3 = Appropriate response: Example could reasonably elicit the target feeling.

45. Rate the target (the person to whom the feeling is directed) who elicits the feeling. If more than one target is mentioned, rate the highest target (e.g. 1 = self).
   00 - none specifically mentioned or a vague somebody
   01 - negatively-perceived other (strangers, monsters, boogeymen)
   02 - things or possessions
   03 - others (nonthreatening or positive), authority figures (teacher, police, etc), or situation or event as target.
   04 - self
   05 - family members or pet
   06 - boyfriend/girlfriend; friends/peers; or a "we" response indicating the child & others
   07 - dreams or thoughts

46. Rate the complexity of the example:
   0 = low in appropriateness or responsiveness
   1 - answer just restates question.
   2 = Response refers to a specific situation, but no mention of reason or inner state.
   3 = Response demonstrates understanding of emotion as an inner state

47. Rate the content of the example:
   01 - social rejection (other kids don't like them) or social isolation (being
left behind or alone)
02 - physical or social aggression by others (including teasing, yelling, telling)
03 - denied something, thwarted desires, interferences, interuptions, being bothered, frustrations) – includes failure of achievement.
04 - punishment (include nonspecific anger at parent or guardian)
05 - illness or injury/accidents
06 - damage to one's own property or property transaction (e.g. by sibling)
04 - death
05 - loss of attachment (friend or parent)
06 - interpersonal, 2-sided conflicts.
07 - injustice, social or that done to other.

Code from the typed transcript: **Tell me about a time when you felt particularly scared?**

48. Rate the appropriateness of the response:
   0 = I don't know
   1 = I never felt that
   2 = Inappropriate response: Example is tangential or unrelated to the target feeling. Or example wouldn't be expected to elicit the target feeling.
   3 = Appropriate response: Example could reasonably elicit the target feeling.

49. Rate the target (the person to whom the feeling is directed toward or who elicits the feeling). If more than one target is mentioned, rate the highest target possible.
   00 - none specifically mentioned or a vague somebody
   01 - negatively-perceived other (strangers, monsters, boogeymen)
   02 - things or possessions
   03 - others (nonthreatening or positive), authority figures (teacher, police, etc), or situation or event as target.
   04 - self
   05 - family members or pet
   06 - boyfriend/girlfriend; friends/peers; or a "we" response indicating the child & others
   07 - dreams or thoughts (e.g. "There was a tree making rattles & I thought it was trying to get in)

50. Rate the complexity:
   0 = low inappropriateness
   1 = answer just restates question.
2 - Response refers to a specific situation, but no mention of reason or inner state.
3 - Response demonstrates understanding of emotion as an inner state or refers to conditions that make something more frightening: "My grandpa was in the hospital a long time & I was scared he was going to die in the hospital."

51. Rate the content:
   01 - left alone or being alone (including abandonment by parent)
   02 - physical or other aggression (include someone purposefully trying to scare)
   03 - realistic events (dog bites, diving board, piano recital)
   04 - intentional scares (haunted house, scary movies, etc)
   05 - nightmares or dreams
   06 - darkness, at night in bed, fear of someone breaking in, etc.
   07 - social evaluation/appraisal
   08 - unrealistic "events" (werewolves, etc)
   09 - being scared for others

Code the following variables for the question: What does Loved mean?

51a. Rate the quality of the feeling along the following criteria:
   0 = I don't know
   1 = obvious wrong answer or nonsense
   2 = response which is close, but not quite correct. Uses other emotion word like "happy." Restates the feeling word instead of describing the feeling. Or focused only on situation.
   3 = demonstrates feeling valued by friends or family, sense of security that it is an internal emotion, not just the physical event of being hugged, etc.

Code the following variables for the question: Tell me about a time you felt Loved?

51b. Rate the appropriateness of the response:
   0 = I don't know
   1 = I never felt that
   2 = Inappropriate response: Example is tangential or unrelated to the target feeling. Or example wouldn't be expected to elicit the target feeling.
   3 = Appropriate response: Example could reasonably elicit the target feeling.

51c. Rate the target (the person who the feeling is directed toward or the
person who elicits the feeling) of example. If more than one target is mentioned, rate the highest target (e.g. 1 = self) possible.

00 - none specifically mentioned or a vague somebody
01 - negatively-perceived other (strangers, monsters, boogeymen)
02 - things or possessions
03 - others (nonthreatening or positive), authority figures (teacher, police, etc), or situation or event as target.
04 - self
05 - family members or pet
06 - boyfriend/girlfriend; friends/peers; or a “we” response indicating the child & others
07 - dreams or thoughts

51d. Rate the complexity of the example:
0 = low in appropriateness
1 - Answer just restates question: “I was loved”
2 - Response refers to a specific situation, but no mention of reason or inner state.
3 - Response shows understanding that the feeling of being loved is in direct relationship to the affection of another person or of loved ones.

SECTION C

Code from typed transcript: How do you feel inside when you’re feeling happy?

52. Rate the quality of the feeling along the following criteria:
0 = I don’t know
1 = obvious wrong answer or nonsense
2 = response which is not incorrect but makes no reference to internal state. You cannot determine the feeling from the child’s example alone. Uses “opposite” (i.e “If I were upset, I wouldn’t be happy”)
3 = demonstrates a reasonable knowledge of the target feeling, or reference is made to the target feeling as an emotion. The use of the target word supports, but is not necessary for identification of the feeling.
Code from the typed transcript:

How can you tell when someone else is feeling happy?

53. Rate the quality of the feeling along the following criteria:

0 = I don't know
1 = obvious wrong answer or nonsense
2 = response which is not incorrect but shows poverty of content. Makes no reference to internal state. Uses “opposite” (i.e. “It’s when you’re not sad”).
3 = demonstrates knowledge of the internal feeling or emotion of the other person. You should be able to determine the feeling from the child’s example. The use of the target word supports, but is not necessary for identification of the feeling.

53a.
Code the typed transcript: How do you know when you’re feeling sad?

54. Rate the quality of the feeling along the following criteria:
0 = I don’t know
1 = obvious wrong answer or nonsense
2 = response focuses solely on behavior and not on internal feelings. The use of the feeling word is necessary to identify the description as “sad”. Uses “opposite” (i.e. “When I’m not feeling happy”).
3 = demonstrates a reasonable knowledge of the target feeling, or reference is made to the target feeling as an emotion. The use of the target word supports, but is not necessary for identification of the feeling.

KNOWLEDGE OF SELF: SAD

54a. Bodily events: (When I want to eat; I’m really tired)

55. Rate the quality of the feeling along the following criteria:
0 = I don’t know
1 = obvious wrong answer or nonsense
2 = response which is not incorrect but focuses only on behavior.
3 = demonstrates the knowledge that the feeling is an internal emotion, experienced by others. Response refers to motivational state of others, “If I know they are in a situation that makes them sad.” “They try to hide something, but it doesn’t work and I can tell they’re sad.”
Code the typed transcript: How do you know when you’re feeling mad?

56. Rate the quality of the feeling along the following criteria:

0 = I don’t know
1 = obvious wrong answer or nonsense
2 = response is not incorrect but is focused on external or behavior.
3 = demonstrates recognition of internal state or motivation

56a.

KNOWLEDGE OF SELF: MAD

00 = I don’t know - No reasons - Remains first response
01 = Vague/unclear, uses same word (e.g., feel sad; they’d feel unhappy; when they don’t like you)
02 = Situational - A situation the child is in or something that happens to or occurs to the child
03 = Bodily cue or body action, OTHER THAN facial cue or an event exhibited by the child (e.g., feel up, feel bad; I get angry and sometimes I start hitting; make a lot of noise and irritate people; stamp my feet)
04 = Somatic expression -MOVE unless a facial or bodily cue noted (same word okay) cause I’m feeling look at me, they kind of look like the first picture you gave me of people)
05 = Tone of voice (e.g., by their voice: they sound sad)
11 = Other feeling words used - Responses that define the feeling (e.g., feel upset; I’m not happy)
Code the typed transcript: How do you know when someone else is feeling mad?

57. Rate the quality of the feeling along the following criteria:
   0 = I don't know
   1 = obvious wrong answer or nonsense
   2 = response which is not incorrect but is totally external.
   3 = demonstrates a knowledge of the internal feeling of others; also their motivation.

57a.

Code the typed transcript: How does it feel inside when you're feeling scared?

58. Rate the quality of the feeling along the following criteria:
   0 = I don't know
   1 = obvious wrong answer or nonsense
   2 = response which is not incorrect but shows poverty of content.
   3 = demonstrates a reasonable knowledge of the target feeling, or
reference is made to the target feeling as an emotion.

Code the typed transcript: How do you know when other people are feeling scared?

59. Rate the quality of the feeling along the following criteria:

0 = I don’t know
1 = obvious wrong answer or nonsense
2 = response which is not incorrect but refers to behavior only:
   “How they acted, an action that they did; if I knew them.”
3 = demonstrates a reasonable knowledge of the target feeling, or reference is made to the target feeling as an emotion. You should be able to determine the specific target word from the child’s example. The use of the target word supports, but is not necessary for identification of the feeling.

59a.

KNOWLEDGE OF OTHER: SCARED

00 - I don’t know: No response: Barely Scratches
01 - Total knowledge: Even slight word (e.g., “they are scared”)
02 - Unknown situation: A situation they other person is in or something that happens or occurs to other person (when they’re on a scary ride, I was going through a haunted house with my friend, he’d been working on it for years, and as we went through he was saying, “please don’t scare me,” and stuff; when they are in a dark, dark room; when somebody is mean to them; when somebody’s hugging them)
04 - Somatic responses
05 - Facial expressions (by their face; detect it on their face; when they have, when their face says, looks like when they’re scared)
06 - They tell you, direct communication (they could tell me; when they say “I’m scared”)
07 - Somatic identification, events involving with other person (e.g., I know what that word feels)
08 - “They look _________” unless a facial or bodily cue noted (name word okay; when they look like they are terrified)
09 - Observational response without a clear statement about the basis of the observation or cue for observation. This includes other feeling word responses where it is unclear what cues they are using to determine the feeling (when they report, their estimate)
10 - Tone of voice (e.g., by their voice; they scream)

Code the typed transcript: How do you know when you are feeling jealous?

60. Rate the quality of the feeling along the following criteria:

0 = I don’t know
1 = obvious wrong answer or nonsense
2 = response which is not incorrect but refers to behavior only:
   “How they acted, an action that they did; if I knew them.”
3 = demonstrates a reasonable knowledge of the target feeling, or reference is made to the target feeling as an emotion. You should be able to determine the specific target word from the child’s example. The use of the target word supports, but is not necessary for identification of the feeling.
Code the typed transcript: How do you know when other people are feeling jealous?

61. Rate the quality of the feeling:
   0 = don't know
   1 = obvious wrong answer or nonsense
   2 = refer to behavior only
   3 = refers of jealousy as an internal state or emotion.
Dear Parent or Guardian,

Season Greetings! We hope you had a relaxing holiday. As you have already heard, some exciting things are going on at CS Porter this year. Many new activities are being offered to your children and the effects seem to be great. Middle school is a special time in a child's life and a very important time for children to gain confidence and independence. That's why it is so important to understand what helps middle school aged children succeed. We are graduate students at the University of Montana and we are interested in exploring how kids understand, experience and express feelings and how they use their knowledge of feelings to solve problems.

Our study will be conducted at CS Porter middle schools and we would like to ask permission for your 6th grade child to participate. Your child will be asked to do two things. First, your child will be asked to answer questions about how s/he feels when s/he experiences different feelings and what s/he does when s/he feels that way. S/he will be asked to act out, with small play figures, what s/he does when s/he feels a certain way. This procedure will be tape recorded.

The second part of testing will involve asking your child to answer a set of questions that are part of a standard IQ test which is used to measure vocabulary. Because we are interested in children's emotions when they perform a challenging task, this procedure will be videorecorded. The tapes will be used to investigate how children feel about different emotions. Both audio and video tapes will be destroyed within one year of testing and only researchers involved in this project will have access to the tapes. It is expected that the whole testing procedure will take about 30 minutes to complete. We will work with the teachers so that your child will not miss academic time for testing.

If you or your child experience any discomfort, you or your child can stop the testing at any time without question. Ms. Kamman and Ms. Simon-Thomas will be available to comfort the child if s/he experiences any discomfort.

These questions are usually fun for kids to answer and kids seem to enjoy talking about their lives. The information obtained from your child will be confidential. Your child will be given a number that indicates age and gender but no other information that could identify your child. All information obtained from this study will be kept at the University of Montana in locked file cabinets. Your child's answers will not be shared with anyone, including all school personnel, and this information will not be in your child's file. However, in the unlikely event that your child reveals evidence of abuse, confidentiality will be broken and Child Protective Services will be contacted.

The University of Montana requires that the following statement be included in the description of all research that uses a consent form: In the event that your child is injured as a result of this research you should individually seek appropriate medical treatment. If the injury is caused by the negligence of the University or any of its employees, you may be entitled to reimbursement or compensation pursuant to the Comprehensive State Insurance Plan established by the Department of Administration under the authority of M.C.A., Title 2, Chapter 9. In the event of a claim for such an injury, further information may be obtained from the University's Claims Representative or University Legal counsel.

If you agree to let your child participate in this study, please complete and sign the permission slip on the second page and return it in the enclosed envelope. In addition, please explain this project to your child (see attached letter) and have him/her sign the permission slip. If you have any questions, please feel free to call Ms. Simon-Thomas at 728-4567 or Ms. Kamman at 251-6198. In addition, either of our faculty supervisors are available: Dr. David Schuldberg at 243-4183 or Dr. Paul Silverman at 243-6349.

Thank you.

Jenny Simon-Thomas
Teresa Kamman
APPENDIX C

Administration of Instruments: Time 1

Hi my name is _________ and I'm from the University of Montana in Missoula.

- At Porter say: Remember the Flagship Project? We're here to find out what's been happening
  - what you think of the activities that are going on
  - what kind of things, in general, kids your age like to do
  - how you feel about different things, like your school or your family.

- Start here for Polson: Today we want to ask you some questions.
  - all sorts of different questions
  - divide them up and come back next week to finish
  - go pretty quickly and some of them are actually fun to fill out

- Everything you say is confidential. Can someone tell me what confidential means? (restate to the whole class what confidential means).
  - your name is not on the sheet there is just a number
  - we will not tell your teachers, your friends, or your family what you say
  - we want you to feel comfortable telling us how you really feel
  - everybody is different and everybody will be answering these questions differently.
  - there are no right or wrong answers.

- Today, we'll go through half of them and have some time at the end for a game.
- Next time we come back we'll finish up
- I'm going to start by passing out a stack of questionnaires. I'm going to read the directions for each measure one at a time. If you have any questions or you're not sure what to do, just raise your hand. It's important that you answer every question even if some of them are difficult to answer.
- Please do not put your name anywhere on the sheets, even if there is a space for your name.
- The directions are different for each questionnaire, so wait until I read the directions to start.

Testers will have a sheet with the students' name and their code. IT IS ESSENTIAL THAT THE RIGHT STUDENT GETS THE RIGHT CODE NUMBER!!! Pass out questionnaires by calling each student up to the front individually and handing them their questionnaires (we have divided the questionnaires into packets for the different testing days). When all students have their packets, begin reading the directions for the measures, one by one.

Specific instructions:
Dear Parent or Guardian,

The purpose of this study is to explore how kids understand, experience and express feelings and how they use their knowledge of feelings to solve problems. Your child will be asked to do two things. First, your child will be asked to answer questions about how s/he feels when s/he experiences different feelings and what s/he does when s/he feels that way. S/he will be asked to act out, with small play figures, what s/he does when s/he feels a certain way. This procedure will be tape recorded.

The second part of testing will involve asking your child to answer a set of questions that are part of a standard IQ test which is used to measure vocabulary. Because we are interested in children's emotions when they perform a challenging task, this procedure will be videotaped. It is expected that the whole testing procedure will take about 30 minutes to complete. The tapes will be used to investigate how children feel about different emotions. Both audio and video tapes will be destroyed within one year of testing and only researchers involved in this project will have access to the tapes.

If you or your child experience any discomfort, you or your child can stop the testing at any time without question. Both Ms. Kamman and Ms. Simon-Thomas are graduate students at the University of Montana. Ms. Kamman and Ms. Simon-Thomas will be available to comfort the child if s/he experiences any discomfort.

These questions are usually fun for kids to answer and kids seem to enjoy talking about their lives. The information obtained from your child will be confidential. Your child will be given a number that indicates age and gender but no other information that could identify your child. All information obtained from this study will be kept at the University of Montana in locked file cabinets. Your child’s answers will not be shared with anyone, including all school personnel, and this information will not be in your child’s file. However, in the unlikely event that your child reveals evidence of abuse, confidentiality will be broken and Child Protective Services will be contacted.

The University of Montana requires that the following statement be included in the description of all research that uses a consent form: In the event that your child is injured as a result of this research you should individually seek appropriate medical treatment. If the injury is caused by the negligence of the University or any of its employees, you may be entitled to reimbursement or compensation pursuant to the Comprehensive State Insurance Plan established by the Department of Administration under the authority of M.C.A., Title 2, Chapter 9. In the event of a claim for such an injury, further information may be obtained from the University's Claims Representative or University Legal counsel.

If you agree to let your child participate in this study, please complete and sign the second page and return it in the enclosed envelope. In addition, please explain this project to your child and have him/her sign the student assent form. If you have any questions, please feel free to call Ms. Simon-Thomas at 728-4567 or Ms. Kamman at 251-6198. In addition either of our faculty supervisors are available: Dr. David Schulberg at 243-4183 or Dr. Paul Silverman at 243-6349.

Thank you,

Jenny Simon-Thomas  Teresa Kamman