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Emotion Regulation Profiles: Identification of Subgroups During Middle Childhood

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EMOTION REGULATION PROFILES: IDENTIFICATION OF SUBGROUPS

DURING MIDDLE CHILDHOOD

by

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DEDICATION

I dedicate this dissertation to my mother, Judith, for always being with me in spirit in

every aspect to get to this point and in every journey that follows.

Abstract

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This study utilizes a unique approach for examining the role of emotion-related characteristics in predicting adjustment during childhood. The first aim of this study was to examine emotion-related characteristics using a person-centered approach in order to identify subgroups of children based on emotion regulation profiles. These profiles consisted of scores on nine emotion-related variables, assessed through children's self-reports of the experience and expression of sadness and anger, as well as the strategies they used for modifying these emotions. The second aim of the study was to determine if subgroup membership was associated with self- and peer-reports of adjustment (i.e., self-reported depression, peer-reported aggression, and self- reported social competence and peer-reported sociability). In total, 150 children in grades 3 through 6 participated in the study. Using latent variable mixture modeling (LVMM), five subgroups were identified (First Aim). Analysis of Variance (ANOVA) showed that subgroup membership was differentially associated with self-report of depression and social competence but not with peer-report of aggression and sociability (Second Aim). Follow-up analyses showed that subgroup classifications did not account for significant variance in adjustment beyond that which was accounted for by the emotion-related variables that characterized the subgroups. The importance of considering multiple emotion regulation components was demonstrated in both the person- and variable-centered analyses. The results are discussed in terms of the associations between subgroup classification and adjustment as viewed from both person- and variable-centered perspectives.

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The proliferation of research on emotion regulation has led to growing consensus that emotion regulation is important for adjustment, both in terms of healthy development and psychopathology. A historical review by Eisenberg, Champion, and Ma (2004) found that publications in this area substantially increased in the 1990s but prior to this time there were few studies, and of those, many focused on emotion regulatory processes in infancy. More recently, studies of emotion regulation have been extended to the entire life span (see Diamond & Aspinwall, 2003). As of 2012, a search for peer-reviewed articles on "emotion regulation" using a single search engine produces approximately 4300 hits, and many of those are studies of youth. Growth in this area is evidenced by the inclusion of emotion regulation in numerous theoretical models of child development and psychopathology. Despite the abundance of research in this area, operational definitions of the construct differ widely across studies (see special issue of *Child Development*, March/April 2004).

Emotion regulation is viewed along a continuum (e.g., low to high emotion regulation score; dysregulation to regulation) with every person regulating emotions to some degree and in various ways. It is also generally accepted that emotion regulation is a multi-component construct. The various components of emotion regulation, such as emotion expression and inhibition, can be assessed in isolation or combined into summary or latent variables to represent general or global emotion regulatory capacities and skills (e.g., Gratz & Roemer, 2004). Individual components are often significantly intercorrlated (e.g., Buckholdt, Jobe-Shields, Schepman, Blake, & Parra, 2008; Gratz & Roemer, 2004) and they can have differential relations to other variables of interest such

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as psychopathology (e.g., Buckholdt & Parra, 2008). Studies tend to examine components of emotion regulation in isolation across individuals and thus little is known about ways in which the multiple components of emotion regulation co-occur within individuals.

These conceptual distinctions have important implications for the approach to statistical analysis. The vast majority of research on emotion regulation has utilized a variable-centered approach. This variable centered approach focuses on scores across participants. For example, results might state that a higher level of emotional inhibition relates to more adjustment problems. Less research on emotion regulation has utilized a person-centered approach. A person-centered approach focuses on scores within participants. For example, results might state that children sharing similar patterns of emotion regulation across various components (e.g., more inhibition and more negative emotionality, combined with less expression of emotions) are at higher risk for adjustment problems. A person-centered approach (see Bergman & Magnusson, 1997) provides one way to examine the constellation of multiple scores that occur within individuals. This holistic conceptualization may be beneficial for capturing the complexity of emotion regulation, recognizing the heterogeneity of emotional functioning among children, and offering the field a new way in which to characterize children who may be at risk for adjustment problems.

The first aim of this study was to identify subgroups of children based on emotion regulation profiles (i.e., scores on nine measures of emotional experience, emotional expression, and regulatory strategies). It was expected that meaningful patterns would emerge and that constellations of emotion regulation components would be differentially related to adjustment. As such, a second aim of the study was to explore the relations

between subgroup classification and adjustment (i.e., social competence, sociability, overt and relational aggression, and depression). The remainder of the introduction is organized into three sections. First, conceptual and operational definitions of emotion regulation will be discussed, including a justification for the current study's focus on emotional experience, emotional expression, and regulatory strategies. Second, the rationale for using a person-centered approach to study emotion regulation will be discussed. Lastly, existing literature on the links between emotion regulation and adjustment will be reviewed, including a rationale for studying social competence, sociability, aggression, and depression as important correlates of children's emotion regulation profiles.

Definitions of Emotion Regulation

Emotion regulation is one of the "most robust and critical constructs in child development" (Zeman, Cassano, Perry-Parrish, & Stegall, 2006, p. 156). However, the field has been unable to reach consensus on a definition (see Bridges, Denham, & Ganiban, 2004; Eisenberg et al., 2004; Eisenberg & Spinrad, 2004; Zeman et al, 2006). As shown below, researchers and theorists in the field define emotion regulation with varying degrees of specificity:

> Emotion regulation consists of the "extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features to accomplish one's goals." (Thompson, 1994, pp. 27-28)

Emotion regulation includes multiple components: "awareness of emotions, acceptance of emotions, the ability to engage in goal-directed behavior and refrain from impulsive behavior when experiencing negative emotion, and access to emotion regulation strategies perceived as effective." (Gratz & Roemer, 2004, pp. 42 - 43)

Emotion regulation is the "process by which people influence which emotions they have, when they have them, and how they experience and express them." (Gross, 1998, pp. 275)

Emotion regulation is the "process of initiating, avoiding, inhibiting, maintaining, or modulating the occurrence, form, intensity, or duration of internal feeling states, emotion-related physiological, attentional processes, motivational states, and/or the behavioral concomitants of emotion in the service of accomplishing affect-related biological or social adaptation or achieving individual goals." (Eisenberg & Spinrad, 2004, pp.338)

Emotion regulation is the "physiological, behavioral, and cognitive processes that enable individuals to modulate the experience and expression of positive and negative emotions." (Bridges et al., 2004, pp. 340)

Despite the numerous definitions some commonalities can be identified. First, emotion regulation is a **process**. This process can range from unconscious and automatic to conscious and effortful (Gross, 1998). Whereas physiological processes may be more automatic, cognitive and behavioral processes may be either automatic or conscious. Emotion regulation can occur before (e.g., situation selection), during (cognitive change), or after the emotion is elicited (e.g., modification of behavior or expression of emotions; Gross). The purpose of emotion regulation is not the elimination of "bad" emotions but rather **modification** (e.g., more, less, or the same) of these emotions in order to remain goal-directed. There are multiple strategies for modification, such as withdrawal from an emotion-eliciting situation, expression of emotion to another person, or inhibition (i.e., holding in) of emotion. As such, emotion regulation is viewed as a **multiple component** construct.

Similar to the lack of consensus on a definition of emotion regulation, the field has also not clearly stated what the components of emotion regulation are and are not. As noted by Cole, Martin, and Dennis (2004), there are a large number of studies on emotion regulation with a broad range of operational and conceptual definitions. Individual researchers investigate different components, sometimes collapsing multiple components into a global emotion regulation score and other times drawing conclusions about distinct components. For example, multiple components may be assessed and then used to create a summary or latent variable. Also, conclusions may be made about "emotion regulation" based on measuring one component such as impulsivity or effortful control of emotions. On the other hand, conclusions about specific components such as impulsivity and effortful control may be made without generalizing to emotion regulation.

As shown in the above definitions, emotion regulation includes numerous strategies for the regulation of emotional expression and emotional experience. More specifically, emotion regulation includes the over-regulation of emotion (i.e., inhibition), the under-regulation of emotion (i.e., dysregulated expression), and strategies for coping with emotional experience (i.e., emotion regulation coping; Zeman, Shipman, & Penza-Clyve, 2001). Beyond this there are additional strategies for coping with emotional experience such as talking with parents or friends about emotions (i.e., expressing or avoiding talking about emotions), thinking differently about the situation (i.e., cognitive reappraisal), and finding solutions to the problem that elicited the emotions (problem-focused coping). The literature has provided a number of components to consider and still there remains a gap in our understanding of how these components function together to regulate emotional expression and experience.

In addition to better understanding the strategies children use to modify their emotions, it is important to take into consideration the intensity of children's emotional experiences and their expression of emotions as these are the targets of modification identified in a number of definitions. Variation in the intensity and frequency of emotional experience across individuals is an important contextual factor to consider when assessing the modification of emotions. In addition to being an outcome of efforts to modify emotions, emotional expression can be a strategy for regulating emotion. According to facial feedback theory, expressions (e.g., a smile or frown) can contribute to processing of emotions (e.g., interpretation of emotional experience; Ekman, Levensen, & Friesen, 1983). From the commonalities in the definitions a minimal list of important aspects to consider when studying emotion regulation would include a) strategies for

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modifying emotions (cognitive or behavioral), b) emotional expression (as a way to modify emotions but also as an outcome of modification), and c) emotional experience (the emotional input and output in terms of intensity, frequency, or duration). These components have rarely been examined using a person-centered approach although each person has some level of each of these characteristics, likely operating in conjunction with one another during the emotion regulation process

Rationale for a Person-Centered Approach to the Study of Emotion Regulation

In general, studies that examine individual components of emotion regulation tend to find associations in the same direction as global measures of emotion regulation (i.e., difficulties in one component area of emotion regulation and in a composite measure are both associated with more adjustment difficulties). One likely reason for these findings is that whereas components of emotion regulation are viewed as distinct they are also typically highly correlated. For example, the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) was designed to be a comprehensive measure of multiple components of emotion regulation. Six subscales were identified (see definition above) in a sample of adults. These subscales were associated with each other and to other measures of emotion regulation (e.g., experiential avoidance). On the other hand, there were also differential relations found between subscales and measures of emotional expressivity, self-harm behaviors, and intimate partner violence. In another study of adolescents, emotion regulation strategies were related to both deliberate self-harm and disordered eating behaviors, but clarity about emotions, emotional intensity, and inhibition of emotions were differentially related to these outcomes (Buckholdt & Parra, 2008). Using the same dataset, multiple components of emotion regulation were grouped

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into the three components of emotion regulation identified in Thompson's (1994) definition and the results indicated that evaluation and modification of emotions (two of the three components) but not monitoring of emotions was related to deliberate self-harm (Buckholdt, Parra, & Jobe-Shields, 2009). These studies suggest that components of emotion regulation may be related to one another and in similar ways to outcomes, but that they also may have specificity that is useful to understand and that can be uncovered when looking at various components within the same study. Looking at multiple components within the same individuals is another step forward.

Across the literature and across various age ranges, emotion regulation has been associated with many forms of psychopathology (e.g., internalizing and externalizing behaviors) and multiple aspects of healthy normative functioning (e.g., social competence, positive peer relationships) and thus it is viewed as a common target for psychological treatment (e.g., Aldao, Nolen-Hoeksema, & Schweizer, 2010; Berking, Wupperman, et al., 2008; Campbell-Sills, Barlow, Brown, & Hofmann, 2006; Gross, 1998). During childhood, the range of outcomes examined is quite large and includes depression, aggression, and peer relationships. It may be that a single treatment can address emotion regulation problems across individuals given that emotion regulation difficulties may be involved in a number of disorders. On the other hand, if certain subgroups of individuals can be identified that have particular types of emotion related deficits and particular adjustment problems, then it would follow that something may be gained by tailoring treatments to these subgroups. First subgroups must be identified and additionally it mist be determined if there are differential associations to adjustment..

Suggestions for future research have been offered which include the need to investigate the types of emotion regulation strategies rather than just the amount of emotion regulation strategies that are used in general (Bridges et al., 2004). The suggestion made by Bridges and colleagues reflects the possibility that meaningful differences may exist that can be captured by conceptualizing emotion regulation in a new way. For example, it may be that some individuals utilize multiple types of strategies and others may rely on a single strategy. Further, high levels of use of multiple strategies could be over-regulation whereas having a high level of one strategy may be insufficient.

It has been suggested that different and more complex analytic techniques should be utilized in order to better understand emotion regulation processes (Eisenberg et al., 2004). Typically, analytic approaches are variable centered – the attention is on how scores differ outside of the individual. The variable of interest is discussed in terms of a higher or lower score, such as on a measure of emotion regulation or a component of emotion regulation, and how that continuous score relates to another continuous outcome score. By focusing at the level of the variable, the results may not really describe many of the participants who were studied (Von Eye & Bergman, 2003). A person-centered approach examines how people differ due to the constellation of multiple scores within the participants who are studied and thus within the context of the variables co-existing. Person- and variable-centered approaches are not in opposition but rather each provides a different perspective (Laursen & Hoff, 2006). A person-centered approach can be applied when a) there is reason to believe that heterogeneous subgroups exist or b) multiple developmental pathways may exist to psychopathology and adjustment. A person-centered approach accounts for the fact that characteristics do not occur in isolation but

rather are part of a larger interactive system within each person. Separating these characteristics looses information about how they work together. In terms of analysis, scores on multiple measures are used to create a profile for an individual that simultaneously takes into account numerous scores. Similar subgroups of individuals are characterized by a combination of factors, such as emotion regulation components (e.g., multiple strategies for regulation in the context of high emotionality and low expressivity). Rather than describing how regulated a child is according to a single score, a person-centered approach can identify the child's overall pattern of regulation (e.g., frequently feels sad and talks to parents but not friends). Membership in a subgroup (of children with similar profiles) can then be examined to determine how subgroups differ in terms of adjustment.

Although much of the research to date has utilized a variable centered approach, there has been a recent exception. A recent study by Laible, Carlo, Panfile, Eye, and Parker (2010) examined two emotion-related variables: emotion regulation (the same regulation coping variable used in the current study) and negative emotionality (a measure of emotional experience) using a person-centered approach (cluster analysis). They found four profiles of adolescents and these subgroups had differential relations to positive and negative social behavior. Their findings will be further discussed as a comparison to the results of the current study.

<center>Emotion Regulation and Adjustment</center>

Multiple components of emotion regulation have been associated with psychopathology (e.g., Aldao et al., 2010; Herts, McLaughlin, & Hatzenbuehler, 2012) and social competence (Spinrad et al., 2006). Eisenberg, Cumberland, and

Spinrad's (1998) heuristic model of emotion-related developmental processes identifies social competence and problematic behavior as outcomes of multiple emotion-related processes. Social competence includes the ability to engage in socially appropriate behaviors, and may be associated with forms of psychopathology such as depression (Bell-Dolan, Reaven, & Peterson, 1993). As social competence can be assessed by the perception of others (e.g., peer relationships, popularity), children who display aggressive or depressive behaviors may be perceived by others as socially inappropriate (e.g., showing low sociability). Emotion regulation skills and deficits are associated with depression, aggression, social competence, and other aspects of adjustment.

Social Competence

The ability to regulate emotions has been associated with social competence (Bridges, Grolnick, & Connell, 1997; Grolnick, Bridges, & Connell, 1996). For example, children who are taught emotion regulation skills have reductions in problems at school (e.g., teacher rated behavior problems, disciplinary referrals, peer social skills; Wyman et al., 2010). Inhibition of emotional expression may also be important for peer relations. For example, suppressing emotions is associated with less responsiveness and more distraction during interpersonal communication and reductions in others' motivation to form a friendship with individuals who suppress their emotional expressions (Butler et al., 2003). Also, children's regulatory physiology (i.e., vagal tone; respiration and heart rate) is related to children's need for external regulation by parents, and both of these components are related to social competence (i.e., peer relations; Gottman, Katz, & Hooven, 1996). While these findings support a variable-centered approach, moderation

studies provide initial evidence for the importance of considering combinations of emotion-related factors. For example, the association between peer competence and constructive coping was found to be stronger for children with high negative emotionality (Contreras, Kerns, Weimer, Gentzler, & Tomich, 2000). This combination of factors points to the potential utility of using a person-centered approach.

Internalizing and Externalizing

Globally speaking, emotion regulation skills are associated with lower levels of youth internalizing and externalizing problems (Eisenberg et al., 2003). Likewise, emotion dysregulation is associated with more internalizing and externalizing problems in childhood and adolescence (McLaughlin, Hatzenbueler, & Hilt, 2009; Morris, Silk, Steinberg, Terranova, & Kithakye, 2010; Neumann, van Lier, Gratz, & Koot, 2010). In terms of the direction of these associations, conceptual models commonly suggest that emotion regulation predicts adjustment and this has been supported by empirical findings (Berking, Orth, Wupperman, Meier, Casper, 2008). Similar findings have been found in studies examining specific emotion-related variables. In a study that examined parent-reported emotionality, higher levels of emotionality related to more internalizing and externalizing problems in children (Rydell, Berlin, & Gunilla, 2003). Similarly, high negative affectivity has been associated with anxiety (Tortella-Feliu, Balle, & Albert, 2010), and effortful control (conscious regulation of emotions) has been associated with externalizing behaviors in children (Valiente, Lemery-Chalfant, & Reiser, 2007). Emotion dysregulation has been implicated in the development of aggressive behavior (Herts et al., 2012) and as a risk factor problematic peer relations (Kim & Cicchetti, 2010).

Although these findings support a variable-centered approach, there is also initial evidence for the importance of considering combinations of emotion-related factors. For example, using subscales of an emotion management measure, anger regulation was associated with negative emotionality--an association between emotion-related variables. However, only anger regulation showed a trend towards association with childhood depression - a differential finding for related components of emotion regulation (Feng et al., 2009). In another study, children high on measures of externalizing behaviors were high in impulsivity and low in effortful regulation. On the other hand, children high in internalizing behaviors were low in impulsivity and not low in effortful control (Eisenberg et al., 2005). In a single study, components of emotion regulation (i.e., inhibition, regulation coping, dysregulation expression) had differential associations with depression, social problems, and aggression (Zeman et al., 2001). In conclusion, social competence, sociability, depression, and aggression are ideal outcomes to investigate using a person-centered approach given that a) these appear to have important associations to emotion regulation and b) moderation studies and differential findings have demonstrated some rationale for considering combinations of components. Variable-centered analyses find these associations whereas person-centered can help explain who develops problems and who does not based on different combinations of emotion regulation skills.

<center>Present Study</center>

This study was designed to use a person-centered approach to examine emotion regulation during middle childhood. During middle childhood a number of challenges may be faced at home and school that require the modification of emotional expression

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and behavior. During this stage of development there are also multiple socialization influences (e.g., parents and peers) and regulation competencies are still developing. Children's emotion regulation skills may impact the way in which they are viewed by peers and thus affect the quality of their relationships. Likewise, children's perceptions of their ability to regulate emotions could impact how socially competent they feel and how well they function socially and psychologically.

The first aim of this study was to identify subgroups based on children's perceptions of their experience of sadness and anger, as well as, their utilization of eight strategies for regulating and expressing these emotions. Consistent with a global approach, responses about regulation of sadness and anger were combined. Thus, in total nine emotion-related variables were examined that combine regulation of more than one emotion (i.e., sadness and anger) into a global regulation component. The components of emotion regulation that were assessed in the present study include: *withdrawal, distraction, expression, expression to a parent, expression to a friend, emotional inhibition, regulation coping,* and *dysregulated expression* (see Figure 1). Whereas emotional inhibition, regulation coping, and dysregulated expression have been found to be associated with child adjustment (i.e., depression, aggression, social problems; Zeman, et al., 2001), empirical study has been limited on the other components. The inclusion of these additional subscales helps assess the strategies identified in the definitions of emotion regulation more comprehensively and allows for a wider variety of strategies to be evaluated.

Emotion Regulation Components		Adjustment
• **Intensity**		• **Self-Report Depression**
• **Withdrawal**		• **Self-Report Social Competence**
• **Distraction**	⟶	• **Peer-Report Sociability**
• **Expression**		• **Peer-Report Overt Aggression**
• **Expression to Parent**		• **Peer-Report Relational Aggression**
• **Expression to Friend**		
• **Inhibition**		
• **Regulation Coping**		
• **Dysregulated Expression**		
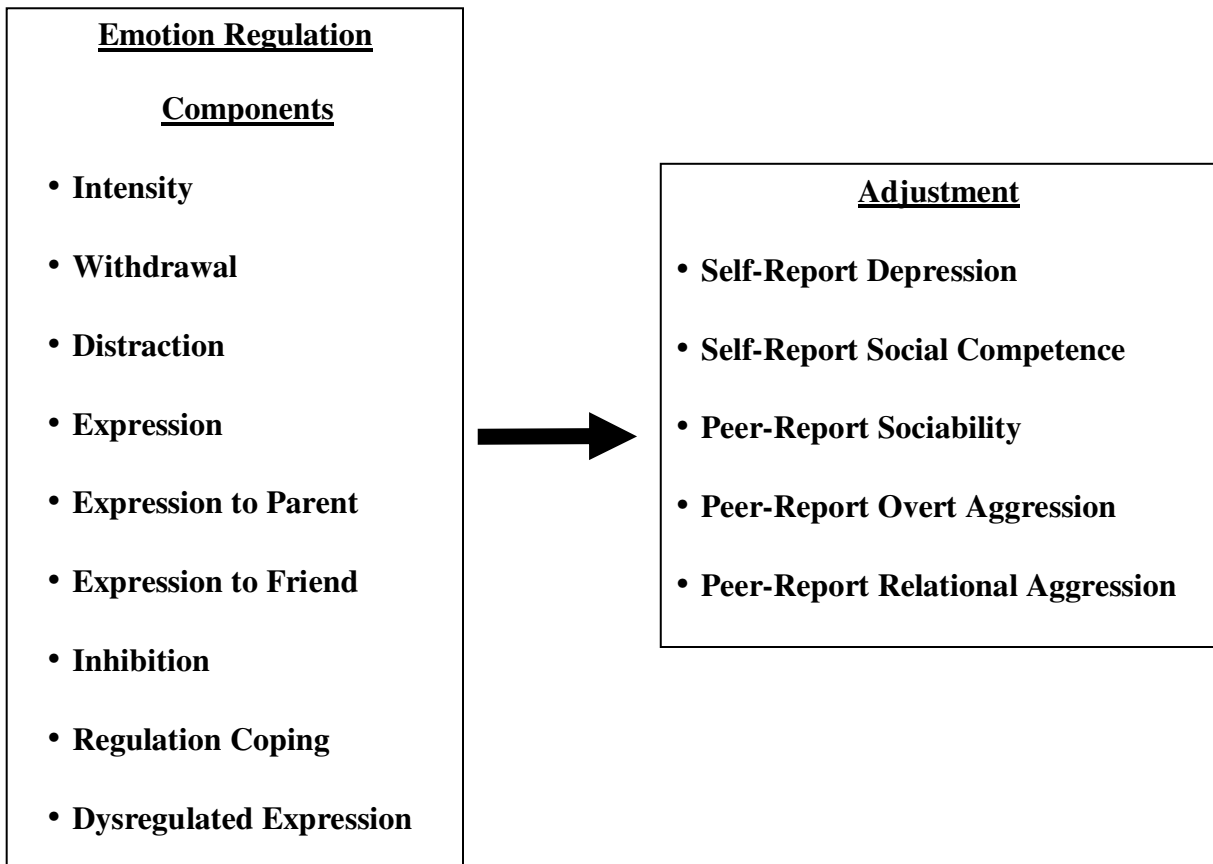
Figure 1. Components of emotional functioning that will be used to identify subgroups, which in turn will be used to examine potentially differential relations to adjustment

Children were also asked how often they experience feelings of sadness and anger. This was added to the eight components of emotion regulation, making nine total components in the profile. Although a high level of negative affectivity has been associated with more emotion regulation difficulties (Tortella-Feliu et al., 2010), it has also been suggested that emotion regulation capabilities increase over time and emotional negativity decreases over time (Blandon, Calkins, Keane, O'Brien, 2008). It is possible

that during middle childhood subgroups could differ depending on where children fall in terms of this transition. For example, some children may report frequent feelings of sadness and anger and endorse low rates of utilization of emotion regulation strategies. Other children may have had decreases in frequency of feelings of sadness and anger and have developed numerous strategies for managing emotions. Still other children may have developed numerous strategies but continue to also have frequent feelings of sadness and anger. These could be meaningful subgroups of children to consider in relation to adjustment.

This study was largely exploratory given that utilizing a person-centered approach was a relatively novel way to examine emotion regulation. Still two main possibilities were thought to exist with regard to potential patterns of scores that might cluster together. These two possibilities are a) an overall tendency to have scores at relatively similar levels and b) scores are varying levels across the various components. First, subgroups could have emerged that simply represented high, medium, and low levels of emotion regulation across all measured variables (e.g., a class with high expression, high regulation, and high intensity). If this occurred it would support the idea that a single general measure of emotion regulation/dysregulation or any individual component measure would all be associated with risk for adjustment problems and be expected to co-occur within individuals at comparable levels. Second, subgroups could have been identified that represent a mixture of high, medium, and low scores on components of emotion regulation (e.g., high intensity, low regulation, and moderate expression). If this occurred it would support the idea that a single general measure of emotion regulation/dysregulation would be insufficient for describing individuals. If the later was

found it would justify exploring the subgroups to determine if something about their overall latent profile is particularly relevant for understanding risk for adjustment problems. Exploration of the relations between subgroup classification and adjustment (i.e., social competence, sociability, aggressive behavior, and depression) was a Second Aim of the present study.

<div align="center">Method</div>

Participants

One-hundred-fifty students (56% female) in grades 3 through 6 from a university–affiliated elementary school participated in the study. With regard to racial characteristics, 65% of participants were identified as Caucasian, 25% African American, and 10% from other racial groups. The participants were primarily from middle class socioeconomic backgrounds, as evidenced by less than 20% of the children qualifying for reduced lunch costs. There were nine classes total with 41 students in third grade, 39 students in fourth grade, 41 students in fifth grade and 29 students in sixth grade. Children's ages ranged from 8 to 12 years.

Procedure

The University of Memphis Institutional Review Board approved this study. After the study was approved by the director of the school, teachers were contacted to schedule a time for their class to participate in the study. A letter was sent to parents and teachers describing the study, outlining compensation for participation, and allowing parents to opt themselves and/or their children out of the study (see Appendix A). Parents and teachers who did not opt out of the study were sent an informed consent agreement (see Appendix A) along with questionnaires to complete (not included in the present study).

Children whose parents requested that they not participate were given a different activity. The researchers described the children's rights and were available to answer questions related to the study. Verbal instructions were given at the start of each questionnaire, and participants were encouraged to ask questions if they were unclear about any of the items. Children completed measures behind small privacy screens on their desks and were supervised by trained graduate students. After the measures were completed, the researchers briefly reviewed the measures to see if there were any problems, such as unintentionally skipped items. Participant identification numbers were used to link to outcome data (i.e., self report of social competence, peer-report of sociability, and peer-report of overt and relational aggression) from another study that was conducted with these participants during the same school year. Of note, procedures employed by the other research group are nearly identical to those already mentioned. Only the 150 participants that had complete data for both emotion and adjustment measures were included in the analyses.

<div align="center">*Measures*</div>

Participant Characteristics

     Demographics. Information about grade, race and sex was provided by the school for each child. A demographic questionnaire was also sent home with children for his/her primary caregiver to complete (see Appendix B). Comparisons between the race and sex reported by the school and the parent of the child yielded 3 cases in which race differed by reporter. In these cases the race reported by the school was used because this race variable was also used by the research group mentioned previously, that collected the peer data.

Emotion Regulation

The Emotions as a Child Scales – Version II, Emotion Regulation (EAC-II ER; C O'Neal, personal communication, November 17, 2008; Appendix C) was used to assess emotion regulation. The EAC-II ER yields five subscale scores: *withdraw, distract, express, express to parent,* and *express to friend*. Directions were printed on the questionnaire and read aloud: "When you felt sad or down over the past month, how often would you respond in these ways." Each item began with the stem "When I was sad." Sample items include: "I would read or watch TV," "I would go to my mother or caregiver," and "I would tell a friend about the problem." Participant responses to 16 items about sadness and 16 items about anger were used in the current study. Participants responded on a 5-point scale (1 = never, 5 = very often). In addition to items specific to the emotion regulation version of the EAC-II, items to assess the intensity of emotional experience were also included (also shown in Appendix C). Participants responded on the same 5-point scale, how frequently they experienced sadness, anger, and shame. Items pertaining to sadness and anger were included in the study. Consistent with a global approach, responses about regaultion of sadnbess and anger were combined. The current study found good internal consistency for withdraw (α = .82), expression (α = .81), expression to a parent (α = .89), and expression to a friend (α = .80). Moderate internal consistency was found for the distraction subscale (α = .65).

The *Children's Emotion Management Scales* (CEMS; Zeman et al., 2001; Appendix D) was used to assess emotion regulation. The CEMS yields three subscale scores: *inhibition, emotion regulation coping,* and *dysregulated expressio*n. Directions were printed on the questionnaire and read aloud: "Please circle the number that tells how

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often you express sadness in the following ways." The stem "Over the past month, when I am feeling sad" was also read aloud prior to the first item. Sample items include: "I try to deal calmly with what is making me sad," "I get sad inside but don't show it," and "I cry and carry on when I am sad." Participant responses to 12 items about sadness and 12 items about anger were used in the current study. Participants responded on a 3-point scale (1 = hardly ever; 2 = sometimes; 3 = often). Zeman and colleagues' (2001) found good to moderate internal consistency and test-retest reliability for the all three subscales: inhibition (α = .77; r = .80; p < .01), emotion regulation coping (α = .62; r = .63; p < .01), and dysregulated expression (α = .60; r = .63; p < .01) when they examined items related to management of sadness. When they examined items related to management of anger they found similar results: inhibition (α = .69; r = .61; p <.01), emotion regulation coping (α = .73; r = .73; p < .01), and dysregulated expression (α = .68; r = .62; p < .01). Consistent with a global approach, responses about regulation of sadness and anger were combined. The current study found good internal consistency for inhibition (α = .81), emotion regulation coping (α = .80), and dysregulated expression (α = .74).

Adjustment

The *Center for Epidemiological Studies Depression Scale for Children* (CES-DC; Faulstich, Carey, Ruggiero, Enyart, & Gresham, 1986; Weissman, Orvaschel, & Padian, 1980; Appendix E) was used as a self-report of depression. Children indicated the frequency of 20 feelings and behaviors on a 4-point scale (1 = not at all; 2 = a little; 3 = some; 4 = a lot). It has been suggested that scores above 15 (using a 0-3 point scale) may indicate significant levels of depression (Weissman et al., 1980).When the CES_DC was evaluated by Faulstich, the measure was shown to have good internal consistency (a =

.84), good test-retest reliability (r = .51; p <.01), and good concurrent validity with another measure of childhood depression (CDI; r = .44; p <.01). The CES-DC had high internal consistency in the current study (α = .91). Scores above 15 (using a 0-3 point scale) on the CES-DC, a measure of depression, may indicate significant levels of depression (Weissman et al.). Of participants in the current study, 32 % of the children (n = 47) had scores above 15 when re-calculated into a three point scale.

The *Self-Perceived Competence Scale for Children* (Harter 1982; Appendix F) was used to assess children's self-report of social competence. Children a) chose one of two conflicting statements and b) indicated the degree to which they agreed (really true or sort of true) with the statement. Six items that contributed to the social competence scale were used for the current study. The internal consistency reported for a sample of children in grades 3 to 6 for the social competence scale was .78. The test-retest reliability was .80 (3-months; Colorado; 208 students) and .75 (nine-months; New York, 810 students). No significant sex differences were found in the initial validation study for the social competence scale.

The Revised Class Play Procedure (Masten, Morison, & Pellegrini, 1985; Appendix G) is widely used to assess children's social behaviors in the classroom. This procedure was used to assess peer perceptions of sociability and aggression (overt and relational) in the classroom setting. Children imagined that they were directing a play and determined which peer(s) would be best suited to play each role (e.g., "a person who makes new friends easily"). Children circled an unlimited number of names of classmates who best fit each behavior described. The number of nominations received by the child

from his/her peers were summed to create scores for sociability, overt aggression, and relational aggression and standardized to take into account class size.

<center>Analytic Procedures</center>

Aim 1: Identification of Subgroups

The First Aim of the study was to identify subgroups of children based on emotion regulation profiles. Latent variable mixture modeling (LVMM) was used to identify subgroups of youth based on multiple components of emotion regulation. LVMM is a person-centered method that allows for identification of classes based on profiles of scores across a set of variables. Categorical latent variables (i.e., subgroups or "classes") were created from the measured manifest variables (i.e., scores on measures of emotion regulation components). For the present study, nine continuous subscale scores from two measures of emotion regulation (i.e., EAC-II ER and CEMS) were used: *intensity, withdraw, distraction, expression, expression to a parent, expression to a friend, emotional inhibition, regulation coping,* and *dysregulated expression*. LVMM was conducted using the statistical package Mplus Version 3.1 (Muthen & Muthen, 1998-2004). A series of models with different numbers of classes was conducted. The final number of classes identified was determined by examining how well several models fit the data by increasing the number of classes until either a) the number of individuals within each class was too small (e.g., less than 10 people in any class) or b) until the analyses no longer converged on a proper solution (e.g., no fit indices were produced). To determine the number of classes that best fit the data, Akaike information criteria (AIC), Bayesian information criteria (BIC), sample-size adjusted BIC (SABIC), and the Lo-

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Mendell-Rubin likelihood ratio test (LMR LRT; Lo, Mendell, & Rubin, 2001) were reviewed.

Aim 2: Relations between Subgroup Membership and Adjustment

The Second Aim of the study was to examine the relations of subgroup membership to a) peer-perceptions of sociability and self-perceptions of social competence, b) self-report of depression, and c) peer perceptions of aggressive behaviors. One-way ANOVAs were used to determine if there were differences in the levels of depression, aggression (overt and relational), sociability, and social competence depending on subgroup membership. Five ANOVAs were conducted to examine if there were group differences and then post hoc analyses were examined to determine where group differences occurred.

Additional Analyses: Is Subgroup Membership Associated with Adjustment Beyond the Effects of the Emotion Regulation Components?

Although not originally part of the aims of the study, regression analyses were conducted to determine if subgroup classification related to adjustment beyond the contribution of the component emotion-related variables. This allowed for both variable-centered and person-centered approaches to be used. Also, this allowed us to test the possibility that there was something unique about the latent class membership that extended beyond the profile scores. Subgroup classification was dummy coded using the largest group (Group 2) as the referent. Race was also dummy coded using the largest group (Caucasian) as the referent. There was a 3-step process for each of the outcome variables. First, grade, sex, and race were entered in Step 1, emotion-related variables

were entered in Step 2 and then dummy coded variables for classifications were entered in Step 3.

<div align="center">Results</div>

Descriptive and Correlational Analyses

 Descriptive Statistics. Descriptive statistics (means, standard deviations, and ranges) and zero-order correlations among study variables are presented in Table 1. As shown, there were not clear patterns of association among variables. This indicates that (a) problems in one area of emotion regulation were not always associated with problems in another area and (b) emotion-related variables were differentially related to outcomes. Point-biserial correlations indicated that sex was related to three of the nine emotion-related variables and two of the five outcome variables. Girls reported higher levels of withdrawal, expression to friends, and expression to parents. Consistent with previous findings (Zeman et al., 2001), no significant sex differences were found for inhibition, regulation coping, or dysregulation expression. Girls were perceived by peers to be more sociable and less overtly aggressive. Grade was not related to any study variables.

 ANOVAs were conducted to determine if race was related to any of the study variables. There were no significant group differences for any of the emotion-related variables. The only significant group differences for outcome variables were in differences in peer-nominations of overt (F (2, 147) = 3.19, $p < .05$) and relational (F (2, 147) = 5.43, $p < .01$) aggression. Based on the perceptions of peers, African American children had significantly higher levels of both overt and relational aggression than Caucasian children. In addition, African American children were perceived to have higher levels of relational aggression compared to children of other races (i.e., neither

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African-American nor Caucasian). See Clemens (2011) for a discussion of gender/race biases in peer nominations of aggression.

Information about sex, race, and grade is presented primarily for descriptive purposes; however, after the subgroups were identified it was considered whether to control for these variables when examining the associations between subgroup classification and adjustment (i.e., the second aim).

<center>*Analyses to Examine the Study Aims*</center>

Aim 1: Identification of Subgroups

Preliminary step: Principal Component Analyses. Principal component analyses were conducted to determine if the nine emotion-related variables could be reduced to a smaller number of factors for use in determining subgroup classifications. Initially, three factors were identified based on eigenvalues greater than one being retained. However, the difference in eigenvalues were small (i.e., no substantial drop in eigenvalues) and variables did not load clearly on a single factor (i.e., variables were associated with more than one factor). The procedure was directed to repeat for two and four factors; however, the results were similar to the three factor model. Although there were statistically significant correlations between some of these nine variables, there was not a reasonable solution for variable reduction and thus it was determined that all nine emotion-related variables should be retained.

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Table 1
Correlations among Variables in the Study.

Measure	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Background								
1) Grade								
2) Sex	.08							
Emotion-Related Variables								
3) Intensity	-.05	-.04						
4) Withdraw	.29	.17*	.44***					
5) Distraction	-.05	.16	-.03	.29***				
6) Expression	-.02	.14	.39***	.45***	.04			
7) Express Parent	-.02	.22**	-.11	.14	.29***	.24**		
8) Express Friend	.04	.24**	-.17*	.16	.39***	.13	.36***	
9) Inhibition	-.06	.11	-.09	.14	.10	-.16	.08	.11
10) Regulation Coping	.05	.09	-.27**	-.02	.15	-.30***	.36***	.15
11) Dysregulated Expression	.05	-.10	.31***	.20*	.06	.34***	-.25**	-.05
Outcome Variables								
12) SR Social Competence	.07	-.03	-.37***	-.18*	.10	-.08	.19*	.27**
13) PR Sociability	-.05	.26**	-.06	.13	.03	.02	.25**	.12
14) PR Overt	.01	-.24**	.06	-.09	.02	-.07	-.27**	.01
15) PR Relational	-.01	.09	.08	-.02	.11	.02	-.12	.16
16) SR Depression	-.04	.02	.64***	.40***	-.03	.26**	-.20*	-.10
N	150	150	150	150	150	150	150	150
Mean	4.39	.56	2.29	2.41	2.55	1.83	2.44	2.11
SD	1.09	.50	.90	.86	.70	.67	1.16	1.05
Range	3 – 6	0 - 1	1 - 5	1 – 5	1 – 4.8	1 – 4.5	1 – 5	1 – 4.7

(table continues)

Table 1 (Continued)
Correlations among Variables in the Study

Measure	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Background								
1) Grade								
2) Sex								
Emotion-Related Variables								
3) Intensity								
4) Withdraw								
5) Distraction								
6) Expression								
7) Express Parent								
8) Express Friend								
9) Inhibition								
10) Regulated Coping	.61***							
11) Dysregulated Expression	-.21*	-.37***						
Outcome Variables								
12) SR Social Competence	.15	.28**	-.14					
13) PR Sociability	.08	.24**	-.15	.10				
14) PR Overt	-.06	-.11	.22**	.08	-.40***			
15) PR Relational	-.01	-.06	.16	.14	-.25**	.77***		
16) SR Depression	.26	-.23**	.27**	-.34***	-.12	.13	.15	
N	150	150	150	148	150	150	150	150
Mean	1.78	2.16	1.48	2.84	.10	-.10	-.05	32.98
SD	.55	.58	.57	.60	1.02	.87	.97	11.98
Range	1 – 3	1 – 3	1 – 3	1.3 – 4	-2.1 – 3.2	-1.2 – 4.1	-1.4 – 4.1	5 - 73

Note. ***$p<.001$. **$p<.01$. *$p<.05$. SR = Self-report. PR = Peer-report. . 0 = Male, 1 = Female.
Race is not included in the table because it is categorical –see text.

Table 2

Fit Indices and Entropies for Latent Variable Mixture Modeling Analyses

Number of Classes	Smallest Group N (%)	AIC	BIC	SABIC	LMR LRT	Entropy
1 Class	150 (100%)	3103.29	3157.48	3100.51	-	-
2 Classes	34 (23%)	3003.40	3087.70	2999.08	117.54	0.82
3 Classes	27 (18%)	2946.99	3061.39	2941.13	74.41	0.77
4 Classes	17 (11%)	2922.17	3066.68	2914.77	43.94	0.80
5 Classes	10 (7%)	2876.64	3051.25	2867.69	64.25	0.88
6 Classes	7 (5%)	2850.16	3054.89	2839.68	51.30	0.86
7 Classes	5 (3%)	2810.94	3045.77	2798.91	57.06	0.80
8 Classes	0	--	--	--	--	--
9 Classes	--	--	--	--	--	--

Note. $N = 150$. AIC = Akaike information criterion; BIC = Baysian information criterion; SABIC = sample-size adjusted Baysian information criterion; LMR LRT = Lo-Mendell-Rubin likelihood ratio test. None of the LMR LRT values were significant indicating that the null hypothesis (that a solution with a given number of classes provides the same fit to the data as a solution with one less class) could not be rejected.

Latent Variable Mixture Modeling (LVMM). Latent Variable Mixture Modeling separates an overall heterogeneous sample into subgroups or classes of people who respond in similar ways, and thus are somewhat homogenous within class (Sawatzky, Ratner, Kopec, & Zumbo, 2011). The nine variables in the current study are all continuous, thus more flexible than binary or categorical variables. To determine the final number of classes, (a) fit indices for each solution, (b) the number of individuals in each class, and (c) the plots of each group of classes were examined. As shown in Table 2,

models were examined ranging from a one class solution (a single group representing the average of all participants) to a seven class solution, the final point at which analyses would converge on a solution.

According to Lubke and Muthen (2005) a lower value is preferable for the Akaike information criteria (AIC), Bayesian information criteria (BIC), and sample-size adjusted BIC (SABIC). Each subsequent class had progressively lower values until the point at which a proper solution could not be found. Thus, a seven-class solution had the lowest values. The Lo-Mendell-Rubin likelihood ratio test (LMR LRT) indicates whether a model is worse with one less class and better with an increase of one class (Lo et al., 2001). Using the LMR LRT test, a significant p value suggests that one less class is a worse fit (Lo et al., 2001). However, the LMR LRT values were nonsignificant for all solutions indicating that each solution may have provided the same fit to the data as a solution with one less class. For the six- and seven-class solutions, the number of participants within the smallest class was considered too small (i.e., class n < 10) to evaluate subsequent analyses comparing the latent classes. To be sure, attempts were made to evaluate eight- and nine-class solutions. As anticipated, interpretation was not possible as the subgroup size dropped to zero in one of the eight classes. The entropy value indicates the probability of individuals fitting to a class where closer to one is ideal (Sawatzky et al., 2011). The entropy for the five-class solution was the highest value and indicated excellent fit of participants to their classes. Specifically, an entropy value of .80 corresponds to accuracy in classification of at least 90% (Sawatzky et al.). Examination of the graphs showing the sample means for each solution indicated that each subsequent analysis from a one-class to five-class solution appeared to add a new subgroup and

maintain those identified in previous analyses. However, at the point of the six-class

solution, subgroups changed such that Group 2 no longer existed and two smaller groups

of less than 10 participants were identified. This splitting of pre-existing classes that

previously had appeared stable has been used as one part of the decision making process

for determining the number of classes (Lubke & Muthen, 2005). Taking each of these

factors into consideration, a five-class solution (see Figure 2) was considered the most

parsimonious and meaningful solution and was used in analyses to address the Second
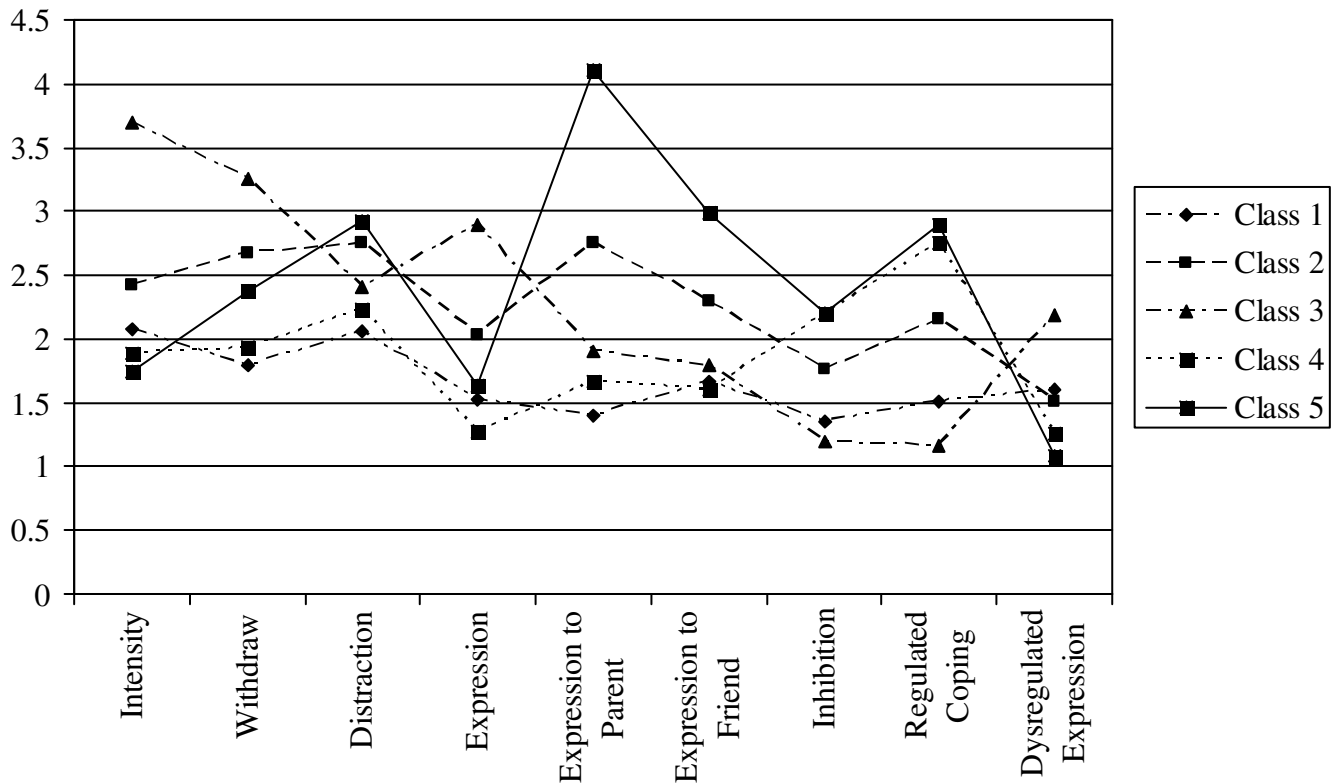
Aim of the study.

Figure 2. Graph of 5-class solution: Means on emotion-related variables

For ease of description of the five classes, z-scores were created (see Figure 3 through 7 for individual subgroup profiles and Figure 8 for all five subgroups relative to one another) and value terms were created where more than one standard deviation above the mean is considered relatively "high" and more than one standard deviation below the mean is considered relatively "low" compared to the average level of each emotion-related variable reported in the sample. Class 1 ($n = 26$; 13%; Figure 3) reported low levels of regulated coping skills. This class had a relatively flat profile with scores across skills falling primarily in the low-average range. Thus Class 1 may be described as having poor self-efficacy about their ability to cope, which may be somewhat appropriate given the typically low-average scores on emotion-related skills. Low-Average Coping will be the label for this group. Class 2 ($n = 74$; 37%; Figure 4) was the largest subgroup and had no scores that would be described as either high or low. This class also had a relatively flat profile with scores across skills falling primarily in the average range with no score lower than average and no score higher than a half standard deviation. Notably, it is the only class in which regulated coping fell in the average range. Average Coping will be the label for this group. Class 3 ($n = 10$; 5%; Figure 5) was the smallest group and had the most extreme profile. Specifically, this was the only class with high levels of emotional intensity, withdraw, expression, and dysregulated expression. In addition, this class had low levels of inhibition and regulated expression. High Intensity/Expression will be the label for this group. Class 4 ($n = 23$; 12%; Figure 6) reported high levels of regulated coping skills. Similar to Class 1, Class 4 had relatively low-average levels of seven of the nine skills. On the two remaining skills, Class 1 had low levels of regulated coping and low-average levels of inhibition and Class 4 had high levels of regulated

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coping and high-average levels of inhibition. High-Efficacy will be the label for this group given the comparability to Class 1 (Low-Average Coping). Class 5 ($n = 17$; 9%; Figure 7) also had an extreme profile with the majority of emotion-related skills falling between high-average to low-average. This was the only class with high levels of expression to parents and high-average levels of expression to friends. Regulated coping was also high and inhibition was high-average, similar to Class 4. High Support Seeking will be the label for this group. Interestingly, this subgroup had the lowest score for emotional intensity coupled with high levels of regulatory strategies.
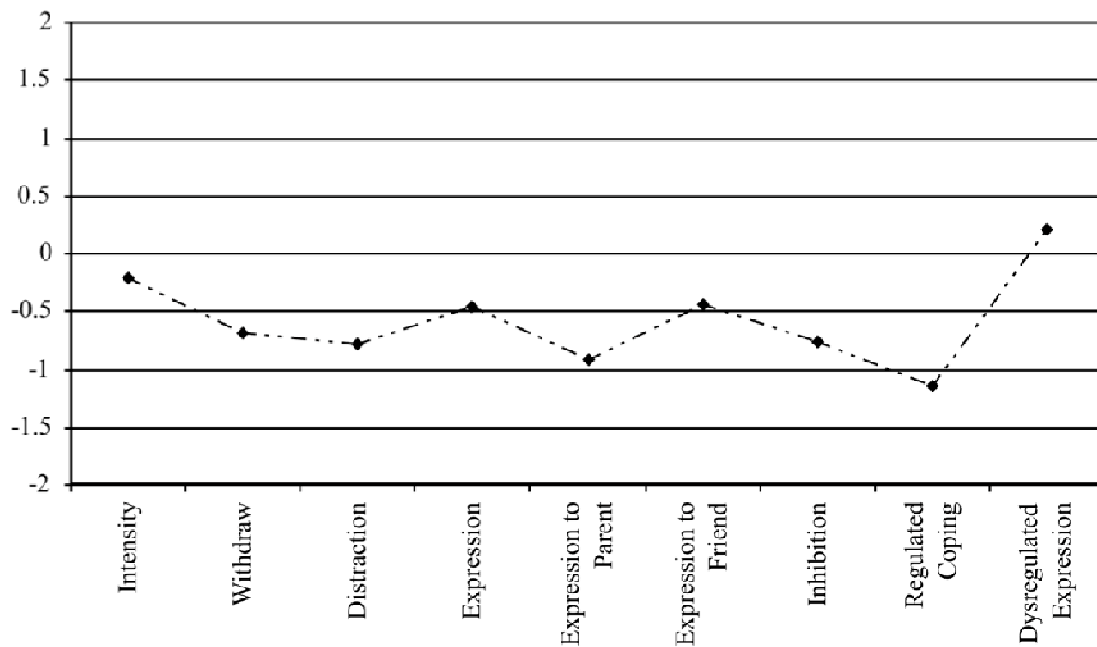
Figure 3. Graph of Z-scores on emotion-related variables for Class 1 / Average Coping.
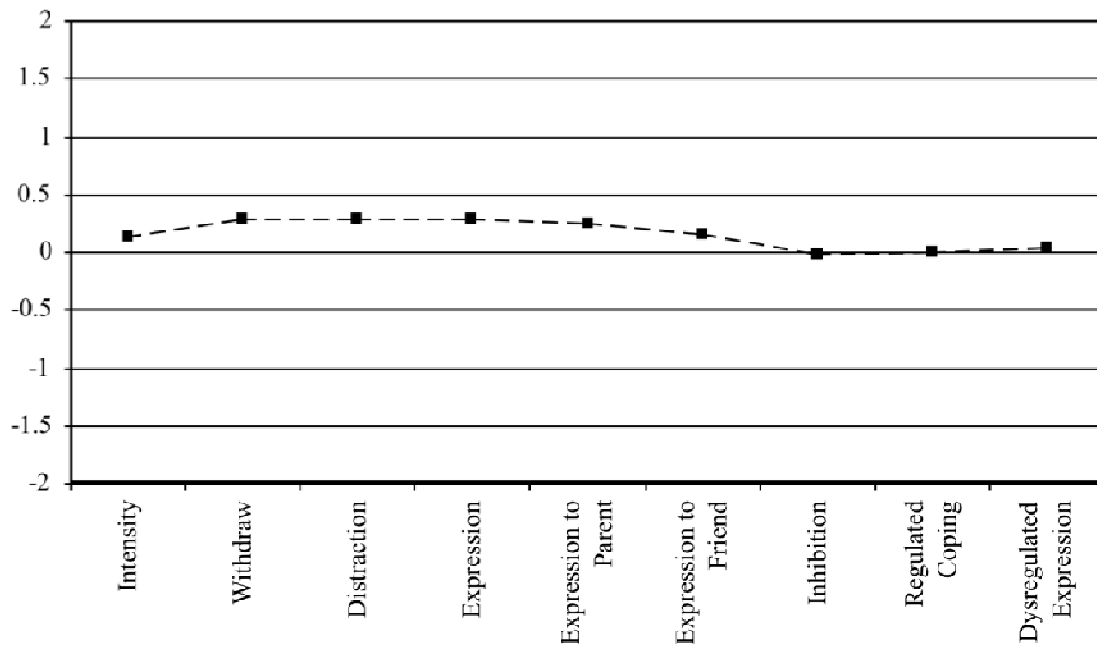
Figure 4. Graph of Z-scores on emotion-related variables for Class 2 / Low-Average Coping.
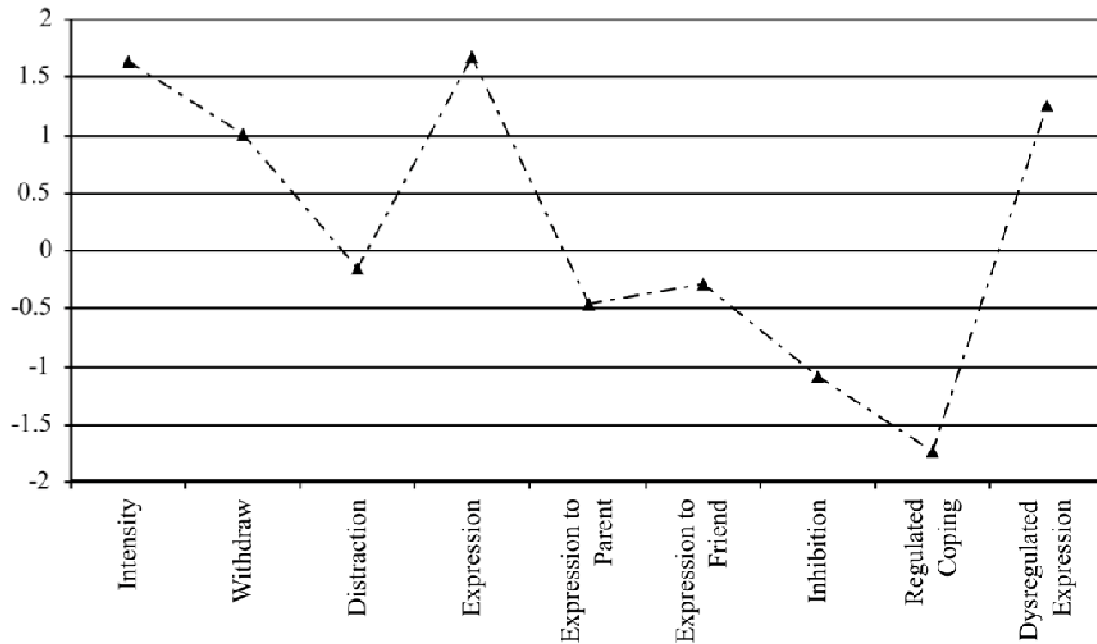
Figure 5. Graph of Z-scores on emotion-related variables for Class 3 / High

Intensity/Expression.
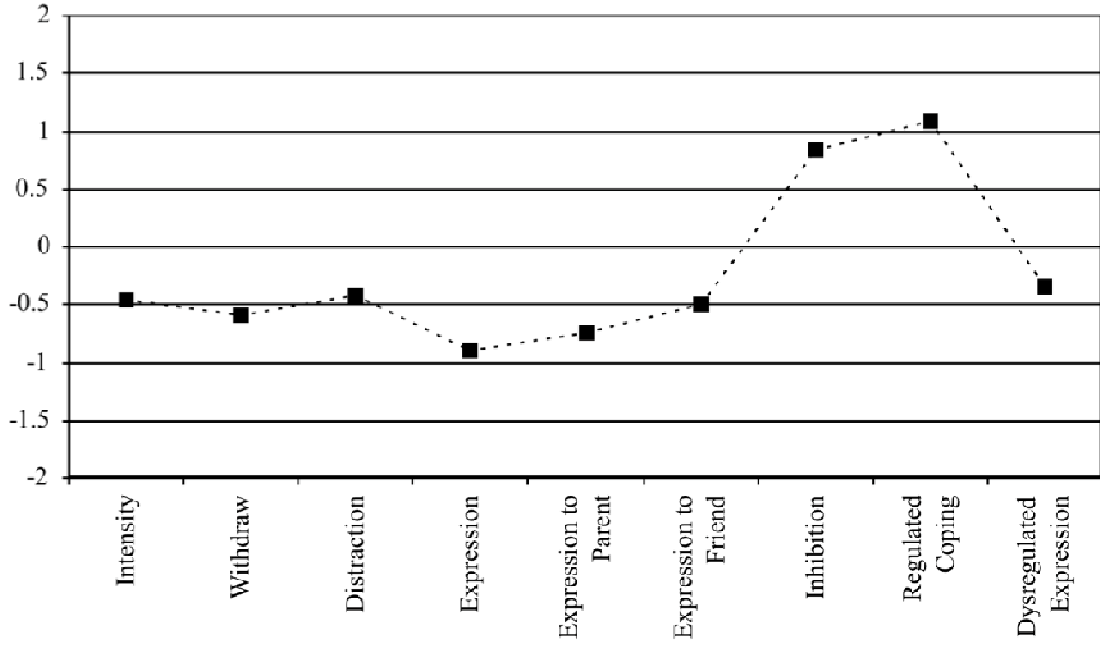
Figure 6. Graph of Z-scores on emotion-related variables for Class 4 / High-Efficacy.

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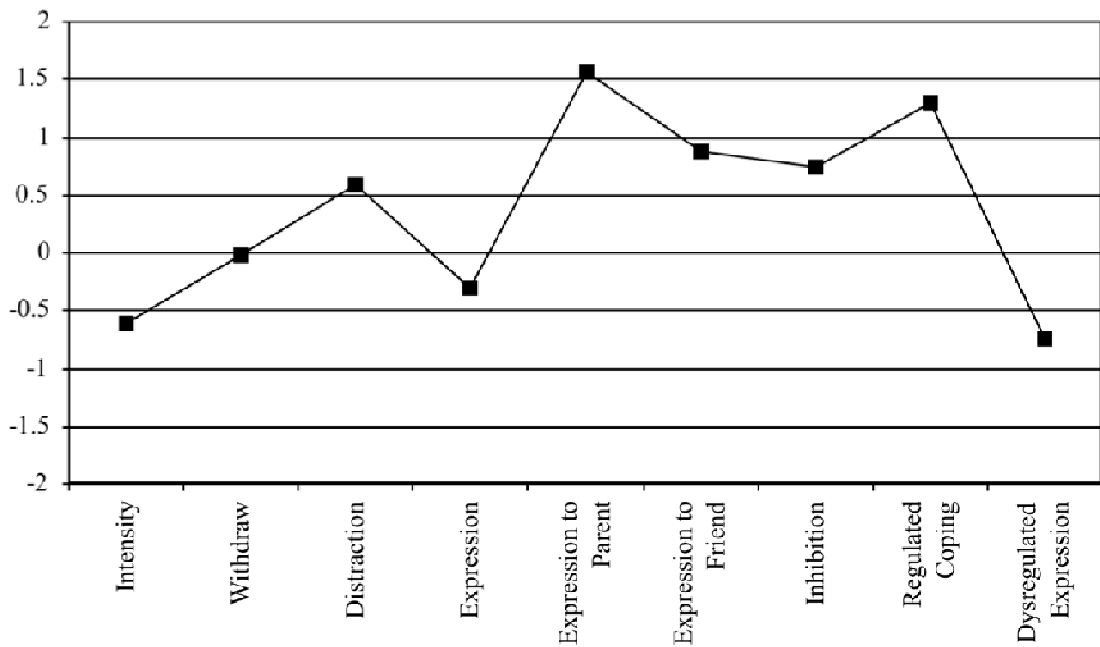
Figure 7. Graph of Z-scores on emotion-related variables for Class 5 / High Support Seeking
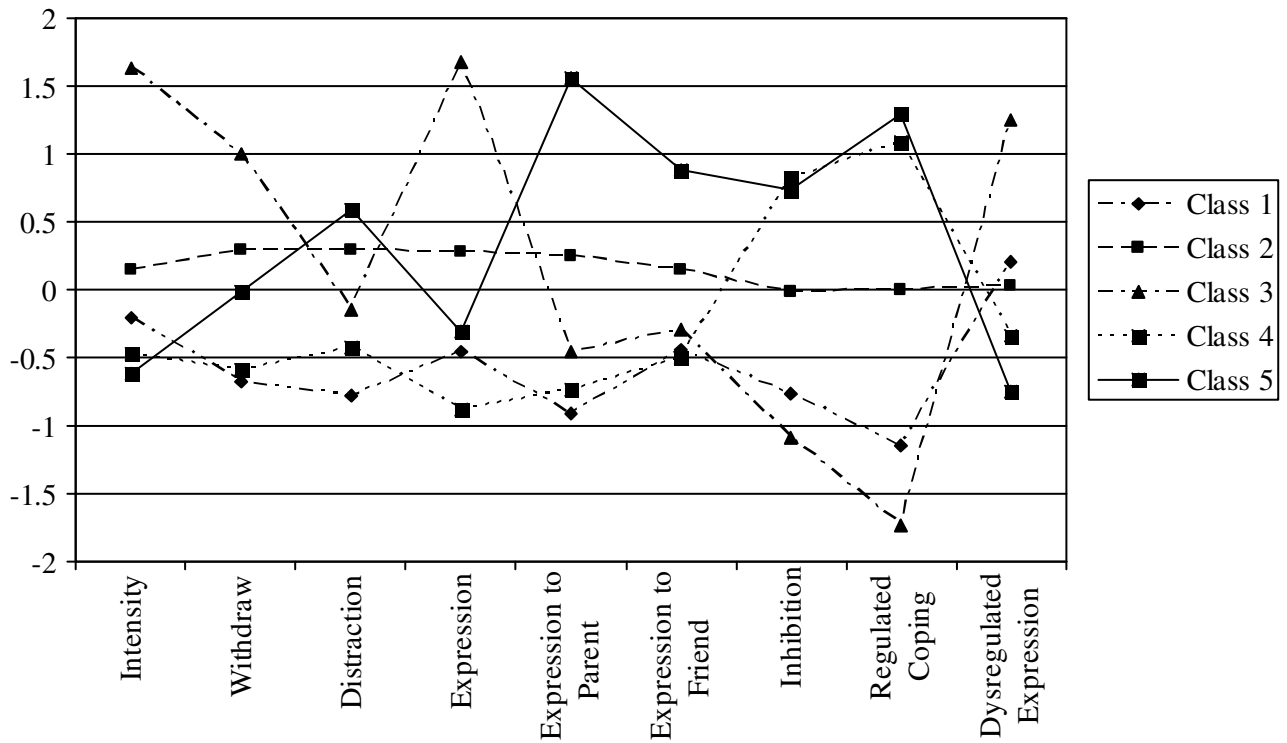
Figure 8. Graph of the 5-class solution: Z-scores on emotion-related variables for all

subgroup

Summary. All nine emotion-related variables were used in the identification of

subgroups based on the results of the principal components analyses. These nine

variables were included in the latent variable mixture models and according to fit indices,

a five-class solution offered the best fit to the data in light of conceptual and sample size

restraints. These classes include Low-Average Coping (Class 1), Average Coping (Class

2), High Intensity/Expression (Class 3), High-Efficacy (Class 4), and High Support

Seeking (Class 5).

After the subgroups were identified, demographics were re-examined to determine if there were any associations between subgroup classification and sex, race or grade. Chi square tests revealed that subgroup classification was not significantly associated with sex or race. There was a significant association between subgroup classification and grade (Cramer's $V = .26$, $p < .01$; a moderate effect size); however, this difference did not appear to be due to development or increased age or maturity because when treated as a continuous variable no significant association was found. Therefore, ANOVAs were used as planned to address the second aim rather than controlling for these descriptive variables.

Aim 2: Relations between Subgroup Membership and Adjustment

One-way ANOVA was used to assess differences in group means for the five classes separately for each of the five dependant variables. This yielded a total of five ANOVAs with 25 post-hoc comparisons. There were significant group differences for self-report of social competence ($F (4, 143) = 4.44$, $p < .01$) and self-report of depression ($F (4, 145) = 6.42$, $p < .001$). Post-hoc analyses indicated that the Low-Average Coping subgroup (Class 1; $M = 2.60$) and High Intensity/Expression subgroup (Class 3; $M = 2.37$) reported significantly lower levels of social competence than Average Coping subgroup (Class 2; $M = 2.88$), High-Efficacy subgroup (Class 4; $M = 2.99$) and High Support Seeking subgroup (Class 5; $M = 3.13$). Post-hoc analyses indicated that High Intensity/ Expression subgroup ($M = 47.80$) reported significantly higher levels of depression than Low-Average Coping subgroup ($M = 32.69$), Average Coping subgroup ($M = 33.74$), High-Efficacy subgroup ($M = 27.87$) and High Support Seeking subgroup (Class 5; $M = 28.29$). In addition, the group with the lowest depression score (High-

Efficacy subgroup) reported significantly lower levels of depression than the group with the second highest level of depression (Average Coping subgroup).

There were no significant group differences for peer-report of sociability (F (4, 145) = 1.83, p = .13), peer-report of overt aggression (F (4, 145) = 1.31, p = .27), and peer-report of overt aggression (F (4, 145) = .84, p = .51). Of note, despite the overall lack of statistical significance of the tested models there were some post-hoc differences. Specifically, the High Support Seeking subgroup had higher levels of peer-reported sociability compared to the High Intensity/Expression subgroup and the Low-Average Coping subgroup. The High Support Seeking subgroup also had lower levels of overt aggression compared to the High Intensity/Expression subgroup. See Table 3 and Figure 9.

The association between subgroup membership and depression scores was further investigated using the cut-off score for depression discussed earlier (i.e., scores above 15 may indicate significant depression). Chi Square analysis indicated that there were differences among subgroups. Although children who had scores above 15 were found in all subgroups; in the High Intensity/Expression Subgroup (Class 3) 80% of children had scores above 15. This stands out when compared to rates of between 13 and 34 % for all other subgroups.

Table 3

Means by subgroup classification

	Group 1	Group 2	Group 3	Group 4	Group 5
	Low-Average Coping (*n* = 26)	Average Coping (*n* = 74)	High Intensity/ Expression (*n* = 10)	High-Efficacy (*n* = 23)	High Support Seeking (*n* = 17)
Emotion-related variables					
Intensity	2.10	2.41	3.75	1.87	1.74
Withdraw	1.83	2.66	3.27	1.90	2.39
Distraction	2.00	2.75	2.44	2.25	2.96
Expression	1.53	2.02	2.96	1.24	1.63
Expression to Parent	1.38	2.73	1.92	1.59	4.24
Expression to Friend	1.66	2.27	1.82	1.59	3.04
Inhibition	1.36	1.77	1.18	2.24	2.19
Regulated Coping	1.49	2.16	1.15	2.79	2.91
Dysregulated Expression	1.60	1.50	2.20	1.29	1.06
Outcome variables					
Self-Report of Social Competence	2.60	2.88	2.37	2.99	3.13
Peer-report of Sociability	-0.15	0.14	-0.24	0.06	0.61
Peer-report of Overt Aggression	-0.07	-0.13	0.27	0.07	-0.43
Peer-report of Relational Aggression	-0.22	-0.08	0.39	0.08	-0.08
Self-Report of Depression	32.69	33.74	47.80	27.87	28.29

Note. N = 150. Scores from peer-report measures were z-scores. Overall Means, SDs, and ranges for all subgroups combined can be found in Table 1. Means of the emotion-related variables are depicted in Figure 2. Means of the outcome variables are depicted in Figure 9, by subgroup.

Self-Report of Depression

Legend:
- □ Low-Average Coping
- ◻ Average Coping
- ▥ High Intensity/Expression
- ▨ High-Efficacy
- ▦ Support-Seeking

Self-Report of Social Competence

Legend:
- □ Low-Average Coping
- ◻ Average Coping
- ▥ High Intensity/Expression
- ▨ High-Efficacy
- ▦ Support-Seeking
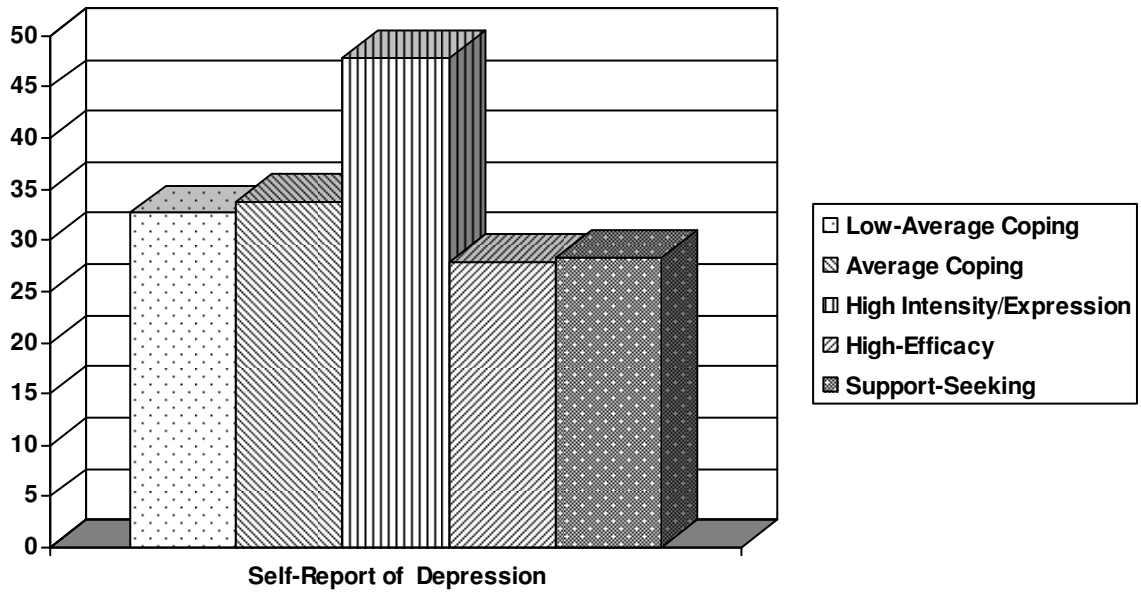
Figure 9. Means of subgroups by outcomes
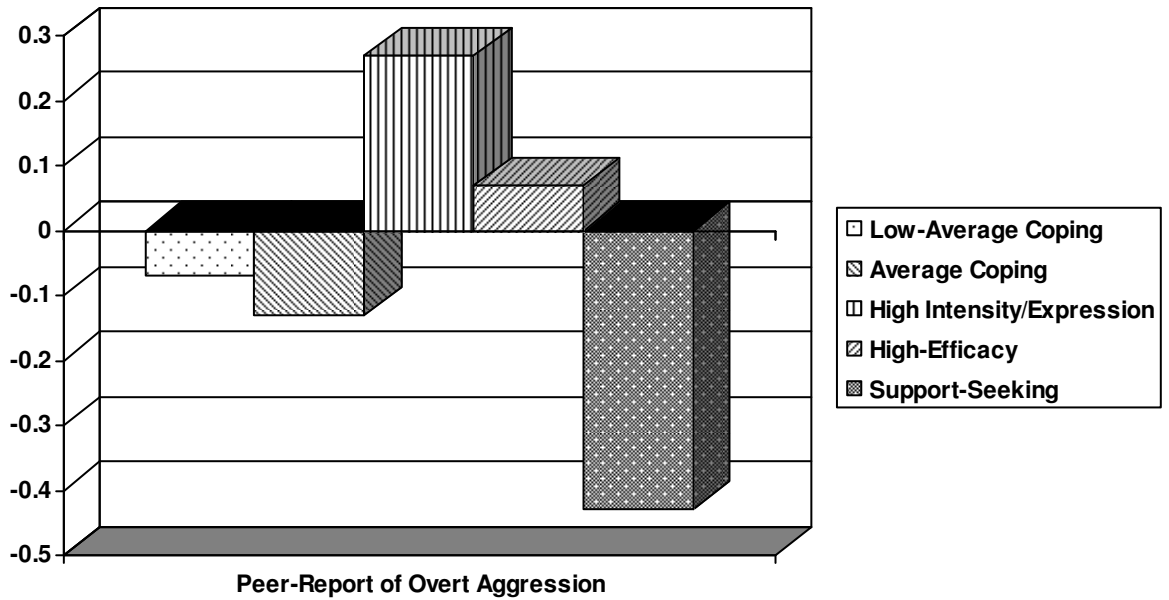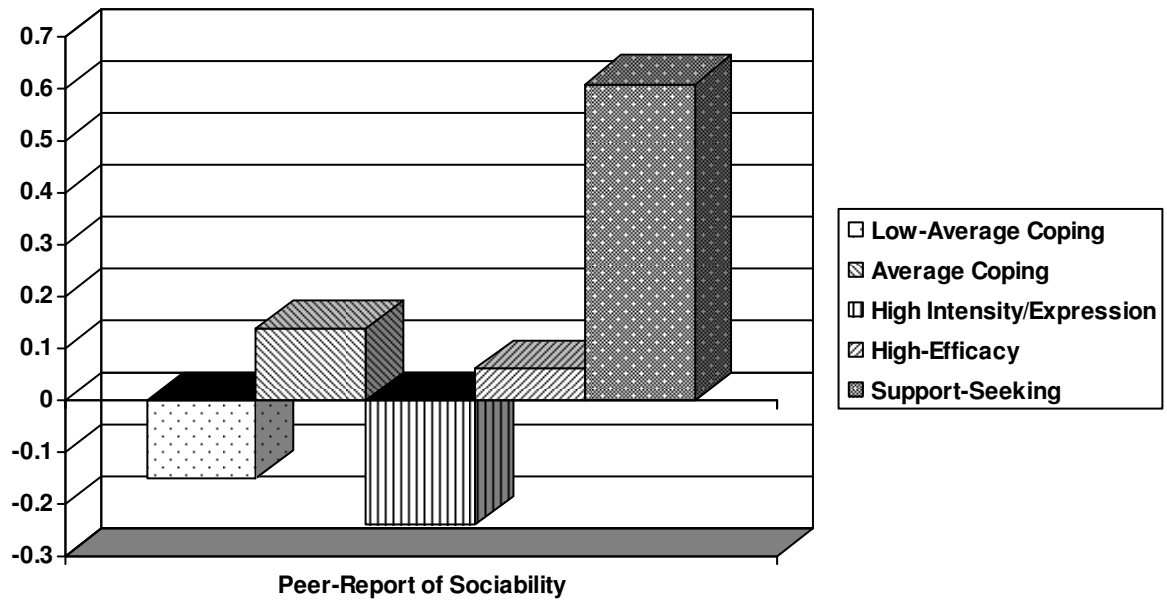
Figure 9. Means of subgroups by outcomes <u>continued</u>

Figure 9. Means of subgroups by outcomes continued

Additional Analyses: Is Subgroup Membership Associated with Adjustment Beyond the Effects of the Emotion Regulation Components?

Regressions were conducted to assess whether the subgroup membership was related to adjustment beyond the components that defined the subgroups. Although only two of the five outcomes had group differences in the original analyses (for the second aim), all five outcomes were evaluated using regression analyses. This allowed for associations between the emotion regulation components and the outcomes to be found, even if no group differences were found using the person-centered approach. For each of the five outcome variables, three descriptive variables (grade, sex, and race) were controlled for in Step 1, nine emotion-related variables were entered in Step 2, and then dummy coded variables for classifications were entered in Step 3.

There were no instances of significant R-squared change with the inclusion of the subgroup classifications after the inclusion of the emotion regulation components. Few emotion regulation components had significant relations to outcomes when entered into the analyses together. Distraction, expression of emotions, inhibition of emotions, and dysregulated expression of emotions were not related to any outcomes Grade was also not related to any outcomes.

For self-report of social competence, the initial model was significant and there was a significant change in R squared when the emotion regulation components were entered into the model ($\Delta R^2 = .25$, $p < .001$). Of the nine emotion regulation components, emotional intensity ($\beta = -.30$, $p < .01$) and expression to friends ($\beta = .18$, $p < .05$) were the only variables significantly related to self-report of social competence. Specifically, less emotional intensity and more expression to friends were related to self-perceptions of higher social competence.

For peer-report of sociability, the initial model was significant and there was only a marginally significant change in R squared when the emotion regulation components were entered into the model ($\Delta R^2 = .09$, $p < .10$). Sex ($\beta = .27$, $p < .01$) and regulated coping ($\beta = .24$, $p < .05$) were the only variables significantly related to peer-report of sociability. Specifically, a higher level of regulation coping was related to peer-perceptions of higher sociability. Girls were perceived by peers to have higher levels of sociability.

For peer-report of overt aggression, the initial model was significant and there was a marginally significant change in R squared when the emotion regulation components were entered into the model ($\Delta R^2 = .10$, $p < .10$). Sex ($\beta = -.25$, $p < .01$), race

($\beta = .21$, $p < .05$), and expression to parents ($\beta = -.28$, $p < .01$) were the only variables significantly related to peer-report of overt aggression. Specifically, children who were perceived as more overtly aggressive reported going to parents less often. Boys were also perceived as more overtly aggressive. African American children were perceived as more overtly aggressive compared to Caucasian children (see Clemens, 2011 for a discussion of gender/race biases in peer-reports of aggression).

For peer-report of relational aggression, the initial model was significant and there was a marginally significant change in R squared when the emotion regulation components were entered into the model ($\Delta R^2 = .10$, $p < .05$). Race ($\beta = .23$, $p < .01$), expression to parents ($\beta = -.29$, $p < .01$), and expression to friends ($\beta = .19$, $p < .05$) were the only variables significantly related to peer-report of relational aggression. Specifically, children who were perceived as more relationally aggressive reported going to parents less often and going to friends more often. African American children were perceived as more relationally aggressive compared to Caucasian children.

For self-report of depression, the initial model was not significant and there was a significant change in R squared when the emotion regulation components were entered into the model ($\Delta R^2 = .45$, $p < .001$). Intensity ($\beta = .52$, $p < .001$) and withdraw ($\beta = .16$, $p < .05$) were the only variables significantly related to self-report of depression. Specifically, more emotional intensity and more frequent withdraw were related to higher self-reported depression levels.

Discussion

The large literature on children's emotion regulation has not adequately considered the interplay of the multiple components of emotion regulation within

individuals. This study was designed to identify subgroups of children based on emotion regulation profiles and to determine if subgroup membership predicted children's adjustment. In satisfying the first aim, five subgroups were identified. These subgroups were labeled Low-Average Coping, Average Coping, High Intensity/Expression, High Self-Efficacy, and Support Seeking based on children's relative use of the various components of emotion regulation. In satisfying the second aim, there were differences between the subgroups on levels of self-reported social competence and depression but not peer-reported sociability or aggression (overt or relational). Thus the aims of the study were met and provide initial insight into the ways that emotion regulation components may co-occur within individuals. The results also highlight the potential utility of these classifications for understanding developmental processes associated with children's adjustment and pathology.

Despite over 4,000 articles being published on the topic of emotion regulation, person-centered analyses, and more generally consideration for how multiple components of emotion regulation components might work together within individuals, is uncommon. Thus, in discussing the results of the present study we must draw comparisons to studies that used variable-centered approaches and to a recent study that used a person-centered approach. The recent study by Laible et al. (2010) used a person-centered approach (cluster analysis) to examine 203 adolescents' (ages 12-16) scores on two emotion-related variables: emotion regulation (the emotion coping scale used in the current study) and emotion intensity. Despite some differences in methodology (e.g., the current study used many more indicators to define subgroup membership) and sample (middle childhood vs. adolescence), it is useful to compare the results of these two studies, as they

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are currently the only examples of person-centered approaches to the study of emotion regulation with comparable components.

Based on the two indicators of emotion regulation and emotion intensity, Laible et al. (2010) found four profiles of adolescents, and the adjustment of these adolescents differed across subgroups. Adolescents in the High Negative Emotionality/Low Regulation subgroup were highest in negative social behavior (aggression, personal distress, and negative expressiveness) and were moderate in their prosocial behaviors. The Moderate Negative Emotionality/Moderate Regulation group was highest in prosocial behaviors but still had moderate levels of negative social behaviors as well. The Low Negative Emotionality/Low Regulation group was described as being the least well-adjusted due to low prosocial and moderate negative social behaviors. Low Negative Emotionality/High Regulation group had good functioning with moderate prosocial and low negative behaviors although this was an unexpected result. The current study, using a larger number of indicators and a younger sample, identified similar patterns in a middle childhood sample. Together, the results of the two studies suggest that person-centered analyses have the potential to elucidate important individual differences in children's emotion regulation and in the association between this regulation and adjustment.

Aim 1: Identification of Subgroups.

Despite the plethora of research on emotion regulation and its various components, our knowledge of how these characteristics and skills co-exist within individuals is limited. As such, the current study was largely exploratory and it was unknown how the profiles might look. Flat profiles would indicate a lack of specificity among the emotion regulation components where each component operates at virtually

the same level within individuals. Flat profiles could be found at levels ranging from more regulation (high or potentially over-regulated levels) or more dysregulation (low or potentially under-regulated levels). On the other hand, mixed profiles would indicate relative strengths and weaknesses (or more or less preferred or skilled strategies utilized) that may yield unique associations to outcomes when examined in concert. In fact, both types were found.

Two subgroups had relatively flatter profiles. Children in the Average Coping and Low-Average Coping subgroups were characterized by having scores that fell around the overall sample average and around a half standard deviation below the sample average, respectively. In these subgroups, all component characteristics could be described as fairly moderate. Primarily focusing on the levels of emotional intensity and regulated coping, these subgroups are most similar to Laible et al.'s (2010) subgroups labeled Moderate Negative Emotionality/Moderate Regulation and Low Negative Emotionality/Low Regulation, respectively. Likewise, in both studies children in the subgroups characterized by lower levels of emotionality and regulation were found to be less socially competent. It may be that these children infrequently experience intense negative emotions and therefore the lower social competence could be due to inadequate opportunity to develop skills needed when intense emotions do occur. Interestingly, no subgroup was identified that had high levels of emotional intensity and high levels of regulatory strategies; rather, the associations found using variable-centered correlational analyses point to intensity being associated with poor regulation (e.g., more dysregulated expression and less regulation coping). This can be interpreted in at least two ways. First, it may lend some support to the idea that regulation is a limited resource (Mauraven,

Tice, & Baumeister, 1998) and thus children may not be able to maintain high levels of regulatory strategies when intensity tends to be high. Another possibility is that when children use regulation strategies their attempts are successful at reducing or modifying negative emotion, as demonstrated by the High Support Seeking subgroup.

The High Support Seeking and High Intensity/ Expression subgroups had relatively more mixed profiles with scores at high, moderate, and low levels across components. The children in the High Support Seeking subgroup had the lowest intensity and the highest regulated coping and thus they were most similar to the Low Negative Emotionality/High Regulation subgroup identified by Laible et al. (2010). Although it has been suggested that these types of children could be somewhat over-regulated (Eisenberg & Fabes, 1992), in the Laible study they were found to be relatively well-adjusted and in the current study this subgroup of children had trends towards higher social competence and lower overt aggression. The constellation or patterns of scores (frequent expression to parents and friends, more use of distraction, and high self-efficacy) found for this subgroup supports the suggestion made by Suveg and Zeman (2004) that children with higher self-efficacy (potentially assessed by regulation coping items) might try more regulation strategies; this is in contrast to children in the Low-Average subgroup who had comparable self-efficacy and low levels of regulation strategies.

The High Intensity/Expression subgroup was most similar to the High Negative Emotionality/Low Regulation subgroup identified by Laible et al. (2010). The pattern of scores that identified the High Intensity/Expression subgroup may also support the findings of Tortella-Feliu et al. (2010), who found that a high level of negative affectivity

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was associated with more emotion regulation difficulties. This was the only subgroup in which children reported a high level of emotional intensity. They also had high levels of withdrawal, low levels of inhibition, and the lowest levels of regulation coping. They reported high levels of expression (e.g., yelling and crying) and high levels of dysregulated expression, both types of expression that may be maladaptive and that could be generally described as under-regulated. Not surprisingly, children in this subgroup had significantly more problems with adjustment in the form of lower social competence and higher depression. These associations are consistent with the findings of Zeman and colleagues (2001) who found dysregulated expression to be associated with more internalizing problems such as depression. There also appeared to be a trend towards higher scores for overt aggression, findings comparable to those of Laible but in contrast to the findings of Zeman, who found an association between dysregulated expression and lower levels of peer-reported aggression. These discrepancies could be due to emotion-specific effects, however, because Zeman examined sadness but not anger in the 2001 study.

The High-Efficacy subgroup was made up of children whose profiles were mixed with scores being nearly identical to either the Low-Average Coping or High Support Seeking subgroups depending on the skill. Children in the High-Efficacy subgroup had intensity and regulated coping levels nearly identical to those in the High Support Seeking subgroup and thus they were most similar to the Low Negative Emotionality/High Regulation subgroup identified by Laible et al. (2010). At the same time these two subgroups differed greatly on distraction and expression to parents and peers. On these components, the High-Efficacy subgroup had scores nearly identical to

the Low-Average Coping group. This suggests that the current study was able to find subgroups of children that were similar to those found in a sample of adolescents. At the same time, the inclusion of additional components in the current study appeared to differentiate these subgroups further.

In a study by Contreras and colleagues (2000), the association between peer competence and constructive coping was found to be stronger for children with high negative emotionality. The two subgroups that displayed the highest levels of regulation coping, the only emotion regulation component associated with peer reports of sociability, also had the lowest levels of negative emotionality. Also the subgroup with the highest level of negative emotionality also had the lowest level of regulation coping. This suggests that in addition to a negative association between negative emotionality and regulation coping, approximately 1/3 of children had this inverse relationship and 2/3 had fairly even and average levels of both components, but no subgroups had a positive association. Thus it does not appear that children report feeling intense negative emotions and at the same time the use of multiple strategies to cope with those emotions.

The study by Laible et al. (2010) offers a comparison for the current study. At the same time, their study examined two components (emotionality and regulation) and the current study examined nine. These nine can be thought to address three main aspects: experience, expression, and regulation with regulation coping being an identical measure and emotional intensity being comparable to emotionality. Overall, the current study found groups that were similar to the four groups identified by Laible. In addition, associations to adjustment were similar and thus may offer some replication. Beyond these comparisons, the current study examined additional outcomes, including depression

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and found more complex profiles given the additional components used in the analyses of the current study. Also, the person-centered approach demonstrated that some variables we might expect to co-exist within individuals do not often occur. The stand-out characteristics of each of the five subgroups and the associations of these subgroups to outcomes are discussed in comparison to other studies in the next section on Aim 2

Aim 2: Relations between Subgroup Membership and Adjustment

Overall, a person-centered approach may be useful for understanding children's adjustment. In this study, this approach was useful in predicting children's self-reported adjustment but not peer-reported adjustment (though some interesting, but not statistically significant, trends were found in the peer analyses). Subgroups differed from one another on measures of self-reported depression and social competence but not peer-reported aggression or sociability. The children in the Low-Average Coping and High Intensity/Expression subgroups reported significantly lower levels of social competence compared to the other three subgroups. The High Intensity/ Expression subgroup reported significantly higher levels of depression compared to all other subgroups. In addition, the High-Efficacy subgroup reported significantly lower levels of depression than the Average Coping subgroup.

Overall children in the High Intensity/ High Expression subgroup seemed to have the most adjustment problems. They had the highest scores for depression and aggression (overt and relational) and lowest scores for social competence and sociability. This subgroup was characterized by intense negative emotions that were expressed without the use of many regulatory efforts. Because not all of the trends were significant, the findings can only partially support Laible and colleagues' (2010) finding that high negative

emotionality combined with low regulation was associated with aggression. The children in the High Support Seeking Subgroup appeared to have the least adjustment problems, or in other words the highest levels of competence. Membership in this subgroup was associated with the lowest scores for aggression (overt and relational) and highest scores for social competence and sociability. This subgroup was characterized by lower levels on negative emotional experience coupled with high levels of regulatory strategies, most notably expressing their feelings to their parents and friends. This subgroup demonstrated that expression to a support person (parent or friend) may be beneficial whereas other types of expression of emotions (e.g., slamming doors, yelling, crying) is likely not helpful. Another interesting class that emerged was the High Efficacy subgroup. This subgroup was characterized by the children's relatively low levels of emotional intensity coupled with more reliance on self-regulatory strategies such as inhibition and regulation coping rather than social support (i.e., parents and friends). As the items that contribute to regulation coping can be interpreted to assess self-efficacy rather than specific regulation strategies, these scores may indicate that these children believe they can handle their own emotions (e.g., keep their cool). This group was associated with positive self-reported outcomes (lower depression and higher social competence). Interestingly, peer-reports painted a different picture and indicate that these children may be among the more aggressive children (second highest scores for overt and relational aggression) and only close to average in sociability.

Combining Person- and Variable-Centered Approaches: Additional Analyses beyond the

Aims of the Study

Although not an original aim of the study, there are three main take-home messages that can be gathered from the results of the additional variable-centered analyses. First, subclass membership did not explain additional variance after controlling for demographic characteristics and the emotion regulation components on which the subgroup classifications were based. This is not surprising given the large number of variables that were accounted for prior to entering the subgroup classifications. Second, just as the person-centered analysis considered multiple components, it appeared that inclusion of multiple components in the variable centered analyses resulted in only a few components standing out as being particularly important for understanding children's adjustment problems. Third, there were instances when person-centered and variable-centered analyses did not agree. This is not uncommon (e.g., Laursen, Furman, & Mooney, 2006). More often though, the components that stood out in the variable-centered analysis as having an association with one type of adjustment, were also found to stand out in the profiles of subgroups that also had associations to the same type of adjustment. Thus the variable-centered analyses often corroborated the person-centered analyses. Taken together the results primarily yield an additional way to examine the associations between emotion regulation variables and adjustment.

As noted above, both variable- and person-centered approaches lend support for the utility of considering multiple components as indicators of children's emotion regulation. In the current study, some but not all measures of emotion regulation were correlated in expected ways with children's adjustment when all nine components were

considered together. In some cases, finding an association even in the context of considering multiple components suggests substantial relevance for the components that did stand out. At the same time, accounting for nine components eliminated some associations that had been found in other studies. For example, using a variable-centered approach, Zeman et al. (2001) found that emotional inhibition, regulation coping, and dysregulated expression were associated with child adjustment (i.e., depression, aggression, social problems). In the current study by controlling for additional emotion-related variables, regulation coping was only related to peer-perceptions of higher social-competence but no other outcomes (including depression and aggression). Emotional inhibition and dysregulated expression were not related to any outcomes. One explanation for these different findings could be that the present study accounted for more components of emotion regulation, and thus eliminated some of the shared variance allowing only the components with the strongest associations to remain significantly related to the outcome measures. These differential findings are more fully explained through an integrated discussion of both person-centered and variable-centered analyses. Thus the following sections integrate the findings of the variable-centered and person-centered analyses for each the five aspects of adjustment that were examined in the study.

Self-report of social competence. Variable-centered analyses suggested that <u>higher emotional intensity and lower levels of expression of emotion to friends were related to lower self-perceptions of social competence</u>. In this case the person-centered and variable-centered analyses partially agreed. One would expect that Class 5 would be associated with higher self-perceptions of social competence and Class 3 would be associated with lower self-perceptions social competence. Using a person-centered

approach, children in the Low-Average Coping (Class 1) and High Intensity/Expression (Class 3) subgroups reported significantly lower levels of social competence than children in the other three subgroups. Classes 1, 2, and 4 did not have differences in inverse directions (i.e., high intensity coupled with low expression to friends and vice versa). This is interesting given these classes account for 82% of the sample. In other words, the person-centered analyses tell us that the two variables that confer risk rarely co-occur within individuals. Thus, the significant correlation between more intensity and less expression to friends may be driven by a small group of individuals. Membership in the two groups with substantial peaks on emotional intensity and lower levels of expression of emotion to friends was related to self-competence in the direction predicted in the variable centered analyses. These two classes appear to be mirrors of each other, whereby a similar pattern is played out at opposing levels across variables (e.g., variables that are high for class 3 are low for class 5). Also, the person-centered analyses indicate that Class 1's risk for lower social competence is not due to higher intensity as the variable-centered analyses might suggest. Instead, children in this subgroup had average levels of intensity coupled with low-average levels of regulation skills across multiple strategies. So, what the person-centered analyses adds is that these risk variables rarely co-occur and there are other instances in which risk for lower social competence may occur, multiple pathways.

Self-report of depression. Using a variable centered approach, more emotional intensity and more frequent withdraw were related to higher self-reported depression levels. This finding was consistent with the person-centered analyses. Using a person-centered approach, the High Intensity/ Expression subgroup reported significantly higher

levels of depression compared to all other subgroups. Children in the High Intensity/ Expression subgroup also had the highest levels of emotional intensity and withdraw. Another person-centered finding was that the High-Efficacy subgroup had lower levels of depression than the Average Coping subgroup. The High-Efficacy subgroup had low-average levels of emotional intensity and withdrawal but these were in the context of high levels of regulated coping (potentially indicative of high self-efficacy). Thus, besides emotional intensity and withdrawal there may be an additional role for self-efficacy as a potential buffer against depression for children who have levels of emotional intensity and withdrawal that are not substantially lower than average.

Peer-report of sociability. Using a person-centered approach, no subgroup differences for peer-report of sociability were found. Using a variable centered approach, higher levels of regulation coping was related to peer-perceptions of higher sociability. Children in the High-Efficacy and High Support Seeking subgroups had the highest levels of regulation coping that were nearly identical (see Figure 8) but in the context of the other emotion regulation variables, differed on scores for peer-reported sociability (see Figure 9). The High-Efficacy subgroup fell near the overall average whereas the High Support Seeking subgroup had the highest level of peer-reported sociability. The need for external regulation by parents has been associated with peer relations (Gottman, Katz, & Hooven, 1996) so we might expect that children who might utilize parent support would also have better sociability. Although the High Support Seeking subgroup did report high levels of expression to parents there were not statistically significant subgroup differences. Also with the variable-centered approach, the current study did not find an association between expression to parents and sociability but did find an association

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between expression to parents and peer reports of aggression (overt aggression was correlated with peer-reports of sociability). Thus there may be some trends that support the person-centered findings and link expression to parents to more sociability as viewed from a wider lens (i.e., that being less aggressive is one way to be more social competent).

Peer-report of overt aggression. Using a person-centered approach, no subgroup differences for peer-report of overt aggression were found. Using a variable-centered approach, children who had lower levels of expression to parents were perceived as more overtly aggressive. The children in the High Support Seeking subgroup were characterized in part by their high level of expression to parents and friends. This subgroup also had the lowest level of peer-reported overt aggression. Although statistically significant differences were not found in the present study, it could be that the sample size was too small to detect the effects. It is also interesting that eight out of the nine emotion regulation components were not significantly related beyond that of expression of emotion to ones parents, especially given that the settings (home vs. school) and reporters (self vs. peer) differed. This suggests that this may be an important association worthy of further study. The connection between expression of emotions to ones parents and peer aggression is unclear but may represent an opportunity for antecedent problem solving about potentially difficult peer relationships or parental emotion coaching regarding peer interactions.

Peer-report of relational aggression. The findings for overt and relational aggression were similar. There were no significant subgroup differences but when using a variable-centered approach, children who reported less expression to parents and more

expression to friends were perceived as more relationally aggressive. This suggests that expression to parents is different than expression to friends in terms of benefit. It may even be that expression to friends, for example when angry, is perceived as an aggressive act rather than an attempt to regulate emotions. Or, it could be that expression to a peer is a maladaptive form of regulation such as "taking feelings out" on the peer. Overall, subgroups did not appear to have inverse levels of expression to parents and friends. This may indicate that within individuals there is not often a split in which type of support person emotions are expressed to. The High Support Seeking was characterized high levels of expression to parents and friends and was not found to have substantially lower or higher levels of peer-reported relational aggression.

Study Strengths and Limitations

The primary limitation of this study was the limited sample size, which likely contributed to the selection of a five-class solution (as opposed to more subgroups if the minimum size of ten children in a subgroup hadn't been reached) and also to the failure to find statistically significant mean differences among subgroups where there were trends. At the same time, there are indications that these limitations may be acceptable especially given the novel approach used in the study and unique contribution of the findings to the vast literature on emotion regulation. Thus the study has both limitations and strengths that lay a reasonable foundation for future work in this area.

It is unknown how many classes would be identified if a larger sample was used but there was some indication that adding more subgroups would not have been better, based on the fit indices. After the five-class solution no group larger than ten individuals could be found and after a seven-class solution there was no further convergence. So, a

five-class solution may be ideal but this can only be determined through replication. As much as comparisons could be made to the Labile and colleagues (2010) study, it did appear that there were similarities between their four subgroups and the five subgroups found in present study. This is interesting because one might expect substantial differences from middle childhood to adolescence in terms of emotional competence and development of regulatory skills. A larger sample would allow for further confirmation of the optimal number of subgroups and if conducted across a larger developmental window may yield some additional information about the stability of these subgroups. At least within this study, the lack of association between grade (a proxy for age) and any of the emotion regulation components suggests that there may not be too much variability in this window and as such may not be a substantial limitation of the study not to have delved deeply into potential age effects. Another exciting opportunity of a study that utilizes a larger sample size would be able to explore the stability of the High Intensity/ Expression subgroup, which included only 10 children in the current study (7% of the sample). This subgroup may be of particular interest for understanding the associations between emotion regulation and adjustment difficulties.

The inclusion of both self- and peer-report measures strengthened the study; however, it is unclear if reporter bias may have affected the results. The results indicated that subgroup classification (based on self-report measures) was related to adjustment but only when adjustment was self-reported. Thus response tendencies could have potentially influenced the results. The inclusion of multiple emotion regulation variables also strengthened the study; however, there may still be additional variables of interest that were not assessed by the measures used in the present study. The development of

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additional measures may be needed given the scarcity of those validated for elementary age children. Another strength of the study was that it is one of very few studies to examine emotion regulation in children using a person-centered approach. This study also builds on previous work because group membership was based on more measures of emotion regulation. Conceptually there may be limitations to the utility of subgroup classifications due to emotion regulation being a dynamic process that changes as a result of context and development. Subgroups then can only hope to be used as a guide to general tendencies not a stable descriptor of the type of person someone might be, akin to some conceptualizations about personality. Thus caution is warranted to prevent overstating the permanence of subgroup classifications. Viewing these classifications as changeable is vital to their utility for evaluation of treatment outcomes.

<div align="center">Clinical Implications and Future Research</div>

This study highlighted particular components of emotion regulation and contexts in which these components may be associated with adjustment. In addition to furthering our understanding of these associations, the specificity of the results may be able to guide intervention strategies. Clearly more research will need to be done to replicate the findings and develop interventions that utilize information about emotion regulation profiles. In addition to establishing that the subgroups are stable across different studies and populations, more will need to be done to examine other emotion-related components. For example, Gross and John (2003) found that adults differ in their use of reappraisal and suppression and that these two regulation strategies are differentially related to emotional experience and adjustment. Relatedly, Gross and John break emotion regulation into antecedent- and response-focused strategies. The strategies evaluated in

the present study could be described as response-focused or behaviors that children do in response to negative emotions. It may be useful for future studies to examine antecedent-focused strategies such as situation selection and modification. There may also be physiological and biological variables to consider. For instance, glucose processing may differ in adolescents who have impulse control difficulties (Gans et al., 1990; Matykiewicz, La Grange, Vance, Mu, & Reyes, 1997) and glucose levels can be depleted by self-regulation, including emotion regulation at different rates depending on other factors (Gailliot et al., 2007). The current study considered multiple emotions but combined them consistent with a global approach. Future studies may also want to examine emotion-specific regulation and intensity. It may be that subgroups exist that reflect strengths or weaknesses in regulation skills that differ by emotion, and in turn may have differential associations to outcomes such as depression and aggression. This study does take a step forward by utilizing a person-centered approach and by considering multiple emotion-related components in conjunction with one another. If these findings are replicated, then it may follow that interventions could be tailored to specific subgroups who are at risk for particular adjustment problems (or experiencing them already) and who may share similarities in emotion-related skill deficits.

Conclusion

This exploratory study identified five subgroups based on the intensity of sadness and anger experienced and the regulation of these emotions during middle childhood. Differences in self-reported levels of depression and social competence were found between subgroups. Variable-centered analyses found similar evidence of particular emotion-related components as being relevant for understanding adjustment in childhood.

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Regardless of the analytic approach, valuable information is gained by considering the multiple strategies that children may use to regulate emotions. Using both forms of analyses provides a foundation for understanding the complexity of emotion regulatory processes between and within individuals.

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Appendix A

Dear Parent,

This letter is being sent to notify you that we wish to conduct a project at Campus School. The purpose of this project is to learn more about the emotions of children and how the adults in their life help shape the ways children handle their feelings and behaviors. Learning about the ways that adults respond to children's feelings, such as sadness and anger, is important in order to identify the types of responses that are most helpful. We are asking that children, teachers and a parent participate by answering questions about emotions.

We will be asking children to fill out four questionnaires in group sessions lasting approximately thirty minutes at a time chosen by the classroom teacher. Children are told that they *do not* have to complete any parts of the questionnaires that they do not wish to complete and they will be assured that there will be *no* consequences should they decide not to participate. Also we are asking teachers to fill out a questionnaire about the things they do when children in the class are feeling sad and angry. Of course, parents are the adults who children may look to most in order to know how to handle their feelings and behaviors. There is a great deal we can learn from you. If you are willing to help us learn more about the emotions of children by participating in this project there is nothing more you need to do. We will send home the questions that we would like you to answer and you can send your answers back to school with your child.

No information about any individual child will be made available to any teacher or administrator at the school. Our information will be kept completely confidential. All data will be encoded with ID numbers; all publications and reports to the school resulting from this research will appear as group analyses. Again, no individual child, parent or teacher will ever be identified by name.

We have a number of ways that we would like to show our appreciation for your help, including:

For classrooms that have:
- At least one parent, teacher and child participating: we will pay for pizza at the next classroom party.
- 50 % or more participation: we will randomly select one class to fund their next field trip (and above).
- 90 % or more participation: we will give each child in the class a $10 movie ticket book (and above).

Dr. Susan Copeland, Director of Campus School, has approved this project. If you have any questions concerning this project please call us at 678-4683 For answers to questions regarding research subjects' rights, you may contact the Chair of the Committee for the Protection of Human Research Participants at 678-2533.

We greatly appreciate your support.

Sincerely,

Katherine Kitzmann, PhD
Professor

If you are willing to have your family participate in this project there is nothing more you need to do and the questions we would like you to answer will be sent home with your child. If you do NOT want you or your child to participate please indicate on the reverse side, sign and return this form to school.

I do not want my child to participate

I do not want to participate

Child's name _____

Parent's signature _____

Dear Teacher,

This letter is being sent to notify you that we wish to conduct a project at Campus School. The purpose of this project is to learn more about the emotions of children and how the adults in their life help shape the ways children handle their feelings and behaviors. Learning about the ways that adults respond to children's feelings, such as sadness and anger, is important in order to identify the types of responses that are most helpful. We are asking that children, teachers and a parent participate by answering questions about emotions.

We will be asking children to fill out four questionnaires in group sessions, lasting approximately thirty minutes, at a time chosen by the classroom teacher. Also we are asking teachers to fill out one questionnaire about the things they do when children in the class are feeling sad and angry. We are also asking parents to participate by completing questionnaires at home. First, we would like to send a letter home telling parents about the project. Parent's who do not want to participate will send a signed letter back to school which we will pick up. Second, we will prepare questionnaire packets for parents who are willing to participate. We would like to send these packets home with children. Parents will return these packets which we will pick up.

Our information will be kept completely confidential. All data will be encoded with ID numbers; all publications and reports to the school resulting from this research will appear as group analyses. Again, no individual child, parent or teacher will ever be identified by name.

We have a number of ways that we would like to show our appreciation for your help, including:

For classrooms that have:
- At least one parent, teacher and child participating: we will pay for pizza at the next classroom party.
- 50 % or more participation: we will randomly select one class to fund their next field trip (and above).
- 90 % or more participation: we will give each child in the class a $10 movie ticket book (and above).

We would also like to show our appreciation for your help by giving you a $5 Starbucks gift card.

If you are willing to participate, please sign the informed consent agreement (attached). We will contact you to schedule a time that is most convenient for you when we can come to the class to have you and the children complete the questionnaires.

Dr. Susan Copeland, Director of Campus School, has approved this project. If you have any questions concerning this project please call us at 678-4683. For answers to questions

regarding research subjects' rights, you may contact the Chair of the Committee for the Protection of Human Research Participants at 678-2533.

We greatly appreciate your support.

Sincerely,

Katherine Kitzmann, PhD
Professor

Informed Consent Agreement for Parents

Purpose of the Study. We are trying to better understand the ways that adults influence the emotions of children. Also we are interested in how the emotions and behaviors of children influence parenting. In addition we are interested in how differences in the ways in which parents and teachers respond to children's emotions influence their behavior in the classroom and in general. Our goal is to figure out the types of things that adults do that help children cope with their emotions. Children, their teachers and their parents are being invited to participate in this research project.

What You Will Do in This Study. We are asking you to fill out a few questionnaires asking about your child and the things that you do when they are feeling different emotions. In addition, we are asking you about different aspects of your child's behavior. We ask that you return your questionnaires to us at Campus School within one week.

Time Required. Participation will take approximately one half hour this week.

Risks. There are minimal risks associated with participating in this research. You may experience some discomfort after answering some of the questions, but you are free to leave any question(s) blank. It is important to point out that the levels of discomfort are expected to be minimal and are not expected to be more than the feelings experienced on a daily basis.

Benefits. Your participation will help us better understand how parents react to children's emotions and are influenced by the emotions of their children. Results from the study should assist in helping parents learn ways of responding to their children's emotions in ways that are helpful. The compensation for your participation consists of various incentive programs we are offering at the classroom level. Specifically, for your participation your child's class will receive a pizza lunch. As added compensation we are offering additional incentives for participation. The first is randomly selecting one class with more than 50% participation and funding their next field trip. The second is giving each child in classes that have more than 90% participation a $10 movie ticket book.

Confidentiality. Your privacy is very important to us. As such, any information you and your child provide will be kept confidential within the limits allowed by law. Information from the questionnaires you and your child complete will be assigned a code number, so that your name is not associated with your responses. The information will be kept in a locked filing cabinet.

By law, there are a few limits to confidentiality. These limits were developed to make sure that research participants are safe. The researchers are required by law to take some action if there is evidence that (a) you are in danger of harming yourself or somebody else, (b) your child is in danger of harming himself/herself or somebody else, or (c) a child may be in danger. If any of these situations should occur, we would attempt to contact you prior to taking any action.

Right to Withdraw from the Study. Your participation is completely voluntary. Thus, you can decide to stop participating at any time. If you wish to stop participating, simply send a note to the researcher indicating that you no longer would like to participate. Even once you've completed the study, if you decide you do not want your questionnaires used for research purposes, you can ask us to destroy those materials and we will do so immediately.

Whom to Contact if You Have Questions About the Study. If you have concerns or questions about the study or about your participation in it, please contact the supervising investigator: Dr. Katherine Kitzmann, University of Memphis, (901) 678-4683. You should note that the University of Memphis does not have any funds budgeted to compensate you for injury, damages, or unspecified expenses incurred as a result of participating in research. If you have questions about your rights as a research participant, please contact the Chair of the Committee for the Protection of Human Research Participants at the University of Memphis, at 678-2533.

I, _____ (name of legal guardian),

agree to participate in this research project. My signature below certifies that I have read and understand the information presented.

_____   _____
    Signature of Parent   Date

Informed Consent Agreement for Teachers

Purpose of the Study. We are trying to better understand the ways that adults influence the emotions of children. Also we are interested in how the emotions of children influence parenting. Our goal is to figure out the types of things that parents do that help children cope with their emotions. In addition we are interested in how differences in the ways in which parents and teachers respond to children's emotions influence their behavior in the classroom and in general. Children, their teachers and their parents are being invited to participate in this research project.

What You Will Do in This Study. We will ask you to fill out one questionnaire asking about how you respond in general to the emotions of the children in your class.

Time Required. Participation will take about 10 minutes.

Risks. There are minimal risks associated with participating in this research. You may experience some discomfort after answering some of the questions, but you are free to leave any question(s) blank. It is important to point out that the levels of discomfort are expected to be minimal and are not expected to be more than the feelings experienced on a daily basis.

Benefits. Your participation will help us better understand how teachers react to children's emotions at school and are influenced by the emotions of the children in their class. Results from the study should assist in helping us better understand type of responses to children's emotions that are helpful. The compensation for your participation consists of various incentive programs we are offering at the classroom level. Specifically, for your participation your class will receive a pizza lunch. There are also other incentives which are determined by the participation of parents and children, including randomly selecting one class with more than 50% participation and funding their next field trip and giving each child in classes that have more than 90% participation a $10 movie ticket book. As added compensation we will give you a $5 Starbucks gift card.

Confidentiality. Your privacy is very important to us. As such, any information you provide will be kept confidential within the limits allowed by law. Information from the questionnaires you complete will be assigned a code number, so that your name is not associated with your responses. The information will be kept in a locked filing cabinet.

By law, there are a few limits to confidentiality. These limits were developed to make sure that research participants are safe. The researchers are required by law to take some action if there is evidence that (a) you are in danger of harming yourself or somebody else, (b) a child is in danger of harming himself/herself or somebody else, or (c) a child may be in danger. If any of these situations should occur, we would attempt to contact you prior to taking any action.

Right to Withdraw from the Study. Your participation is completely voluntary. Thus, you can decide to stop participating at any time. If you wish to stop participating, simply tell the research assistant that you would like to stop. Even once you've completed the study, if you decide you do not want your questionnaires used for research purposes, you can ask us to destroy those materials and we will do so immediately.

Whom to Contact if You Have Questions About the Study. If you have concerns or questions about the study or about your participation in it, please contact the supervising investigator: Dr. Katherine Kitzmann, University of Memphis, (901) 678-4683. You should note that the University of Memphis does not have any funds budgeted to compensate you for injury, damages, or unspecified expenses incurred as a result of participating in research.   If you have questions about your rights as a research participant, please contact the Chair of the Committee for the Protection of Human Research Participants at the University of Memphis, at 678-2533.

I, _____ agree to participate in this research project. My signature below certifies that I have read and understand the information presented. My signature also certifies that I have had an opportunity to discuss this study with the research assistant and that I have had my questions about the study answered.

_____   _____
      Signature of Teacher   Date

Appendix B

Demographic Information

Please answer the questions below

1. YOUR Biological Sex
   A. Male
   B. Female

2. YOUR Age _____

3. YOUR Race/Ethnicity (mark one)
   A. Asian or Pacific Islander
   B. Black/African American
   C. Caucasian
   D. Hispanic
   E. Native American
   F. Biracial or Multiracial
   G. Other _____

4. YOUR CHILD' S Biological Sex

   A. Male
   B. Female

5. YOUR CHILD' S Age _____

6. YOUR CHILD' S Race/Ethnicity
(mark one)
   A. Asian or Pacific Islander
   B. Black/African American
   C. Caucasian
   D. Hispanic
   E. Native American
   F. Biracial or Multiracial
   G. Other

7.   Who is the primary **FEMALE** caregiver of your child (mark only one)?
   A.   Biological mother
   B.   Stepmother
   C.   Adoptive mother
   D.   Grandmother
   E.   No female caregiver
   F.   Other:
   _____

8.   Who is the primary **MALE** caregiver of your child (mark only one)?
   A.   Biological father
   B.   Stepfather
   C.   Adoptive father
   D.   Grandfather
   E.   No male caregiver
   F.   Other:
   _____

9.   Do both of the caregivers listed above (whether biological or otherwise) live in the home with your child?
   A.   Yes, both caregivers do live with my child currently
   B.   No, I am the only caregiver who lives with my child currently
   C.   No, I am another caregiver (not primary) live with my child currently

Appendix C

YOUR EMOTIONS

Please think of the emotions that you experienced over the <u>past month</u>. Most people feel and show a variety of emotions. You have probably felt sad, angry, and ashamed recently. You may have experienced these emotions once or more than once in recent weeks.

Over the <u>past month</u>, how OFTEN did you feel these emotions?

	Never	**Not Very Often**	**Sometimes**	**Often**	**Very Often**
1. Your feel **SAD** or **DOWN**	1	2	3	4	5
2. You feel **ANGRY** or **FRUSTRATED**	1	2	3	4	5
3. You feel **ASHAMED**	1	2	3	4	5

Never	Not Very Often	Sometimes	Often	Very Often

1 2 3 4 5
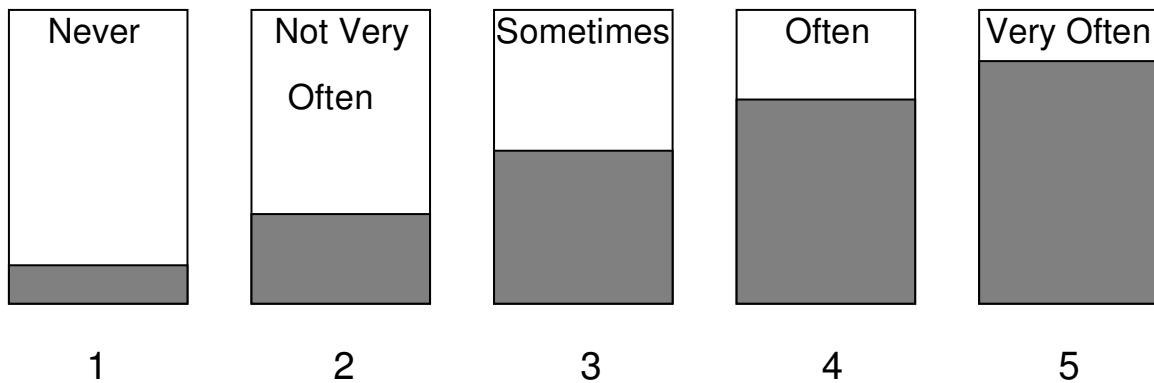
Please indicate how you deal with your feelings, using the scale below.

Think of a few times when you felt **SAD** or **DOWN** during the past month. When you felt **SAD** or **DOWN** over the past month, how often would you respond in these ways?

	Never	Not Very Often	Sometimes	Often	Very Often
1. **When I was** sad**, I would go off by myself.**	1	2	3	4	5
2. **When I was** sad**, I would go to my mother or caregiver.**	1	2	3	4	5
3. **When I was** sad**, I would try to get my mind off of it.**	1	2	3	4	5
4. **When I was** sad**, I would cry.**	1	2	3	4	5
5. **When I was** sad**, I would eat to make myself feel better.**	1	2	3	4	5
6. **When I was** sad**, I would show my sadness.**	1	2	3	4	5
7. **When I was** sad**, I would clam up and keep to myself.**	1	2	3	4	5
8. **When I was** sad**, I would read or watch TV.**	1	2	3	4	5
9. **When I was** sad**, I would withdraw.**	1	2	3	4	5
10. **When I was** sad**, I would tell a friend about the problem.**	1	2	3	4	5
11. **When I was** sad**, I would go to sleep.**	1	2	3	4	5
12. **When I was** sad**, I would go hang out with a friend.**	1	2	3	4	5
13. **When I was** sad**, I would yell or stomp around.**	1	2	3	4	5
14. **When I was** sad**, I would tell my mother or caregiver about the problem.**	1	2	3	4	5
15. **When I was** sad**, I would spend time alone.**	1	2	3	4	5
16. **When I was** sad**, I would show a sad face.**	1	2	3	4	5

Think of a few times when you felt **ANGRY** or **FRUSTRATED** during the past month. When you felt **ANGRY** or **FRUSTRATED** over the past month, how often would you respond in these ways?

	Never	Not Very Often	Sometimes	Often	Very Often
1. When I was angry, **I would go off by myself.**	1	2	3	4	5
2. When I was angry, **I would go to my mother or caregiver.**	1	2	3	4	5
3. When I was angry, **I would try to get my mind off of it.**	1	2	3	4	5
4. When I was angry, **I would cry.**	1	2	3	4	5
5. When I was angry, **I would eat to make myself feel better.**	1	2	3	4	5
6. When I was angry, **I would show my** anger.	1	2	3	4	5
7. When I was angry, **I would clam up and keep to myself.**	1	2	3	4	5
8. When I was angry, **I would read or watch TV.**	1	2	3	4	5
9. When I was angry, **I would withdraw.**	1	2	3	4	5
10. When I was angry, **I would tell a friend about the problem.**	1	2	3	4	5
11. When I was angry, **I would go to sleep.**	1	2	3	4	5
12. When I was angry, **I would go hang out with a friend.**	1	2	3	4	5
13. When I was angry, **I would yell or stomp around.**	1	2	3	4	5
14. When I was angry, **I would tell my mother or caregiver about the problem.**	1	2	3	4	5
15. When I was angry, **I would spend time alone.**	1	2	3	4	5
16. When I was angry, **I would show an** angry **face.**	1	2	3	4	5

Please circle the number that tells how often you express **SADNESS** in the following ways.

Over the <u>past month</u>, when I am feeling **SAD,**

		Hardly Ever	Sometimes	Often
1.	When I am feeling sad, I can control my crying and carrying on.	Hardly Ever 1	Sometimes 2	Often 3
2.	I hold my sad feelings in.	Hardly Ever 1	Sometimes 2	Often 3
3.	I stay calm and don't let sad things get to me.	Hardly Ever 1	Sometimes 2	Often 3
4.	I whine/fuss about what is making me sad.	Hardly Ever 1	Sometimes 2	Often 3
5.	I hide my sadness.	Hardly Ever 1	Sometimes 2	Often 3
6.	When I'm sad, I do something totally different until I calm down.	Hardly Ever 1	Sometimes 2	Often 3
7.	I get sad inside but don't show it.	Hardly Ever 1	Sometimes 2	Often 3
8.	I can stop myself from losing control of my sad feelings.	Hardly Ever 1	Sometimes 2	Often 3
9.	I cry and carry on when I'm sad.	Hardly Ever 1	Sometimes 2	Often 3
10.	I try to calmly deal with what is making me sad.	Hardly Ever 1	Sometimes 2	Often 3
11.	I do things like mope around when I'm sad.	Hardly Ever 1	Sometimes 2	Often 3
12.	I'm afraid to show my sadness.	Hardly Ever 1	Sometimes 2	Often 3

Hardly Ever	Sometimes	Often
1	2	3
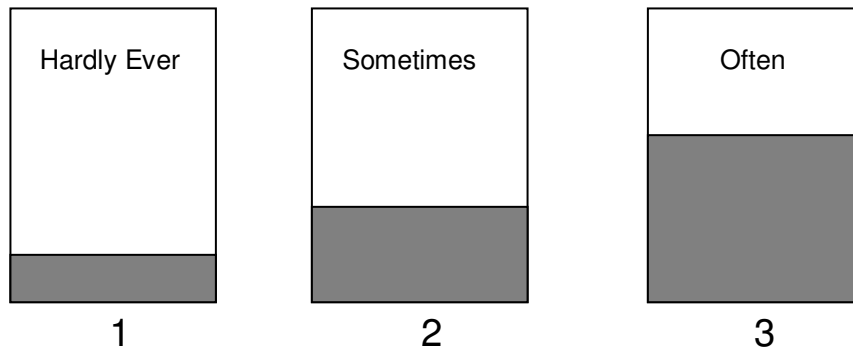
Please circle the number that tells how often you express **ANGER** in the following ways.

Over the past month, when I am feeling **ANGRY**,

		Hardly Ever	Sometimes	Often
1.	When I'm feeling mad, I can control my temper.	Hardly Ever 1	Sometimes 2	Often 3
2.	I hold my anger in.	Hardly Ever 1	Sometimes 2	Often 3
3.	I stay calm and keep my cool when I'm feeling mad.	Hardly Ever 1	Sometimes 2	Often 3
4.	I do things like slam doors when I'm mad.	Hardly Ever 1	Sometimes 2	Often 3
5.	I hide my anger.	Hardly Ever 1	Sometimes 2	Often 3
6.	I attack whatever it is that makes me very angry.	Hardly Ever 1	Sometimes 2	Often 3
7.	I get mad inside but I don't show it.	Hardly Ever 1	Sometimes 2	Often 3
8.	I can stop myself from losing my temper when I'm mad.	Hardly Ever 1	Sometimes 2	Often 3
9.	I say mean things to others when I'm mad.	Hardly Ever 1	Sometimes 2	Often 3
10.	I try to calmly deal with what is making me mad.	Hardly Ever 1	Sometimes 2	Often 3
11.	I'm afraid to show my anger.	Hardly Ever 1	Sometimes 2	Often 3
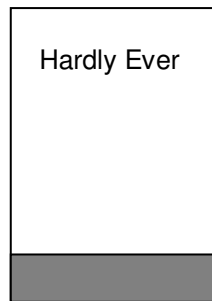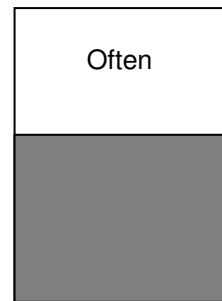
Hardly Ever

1

Sometimes

2

Often

3

Below is a list of the ways you might have felt or acted. Please check how *much* you have felt this way during the *past week*.

DURING THE PAST WEEK	Not at all	A little	Some	A lot
1. I was bothered by things that usually don't bother me.	1	2	3	4
2. I did not feel like eating, I wasn't very hungry	1	2	3	4
3. I wasn't able to feel happy, even when my family or friends tried to help me feel better.	1	2	3	4
4. I felt like I was just as good as other kids.	1	2	3	4
5. I felt like I couldn't pay attention to what I w doing.	1	2	3	4

DURING THE PAST WEEK	Not at all	A little	Some	A lot
6. I felt down and unhappy.	1	2	3	4
7. I felt like I was too tired to do things.	1	2	3	4
8. I felt like something good was going to happen	1	2	3	4
9. I felt like things I did before didn't work out right.	1	2	3	4
10. I felt scared.	1	2	3	4

1	2	3	4
Not at all	A Little	Some	A Lot

Below is a list of the ways you might have felt or acted. Please check how *much* you have felt this way during the *past week*.

DURING THE PAST WEEK	Not at all	A little	Some	A lot
11. I didn't sleep as well as I usually sleep.	1	2	3	4
12. I was happy.	1	2	3	4
13. I was more quiet than usual.	1	2	3	4
14. I felt lonely, like I didn't have any friends.	1	2	3	4
15. I felt like kids I know were not friendly or that they didn't want to be with me.	1	2	3	4

DURING THE PAST WEEK	Not at all	A little	Some	A lot
16. I had a good time.	1	2	3	4
17. I felt like crying.	1	2	3	4
18. I felt sad.	1	2	3	4
19. I felt people didn't like me.	1	2	3	4
20. It was hard to get started doing things.	1	2	3	4

1	2	3	4
Not at all	A Little	Some	A Lot
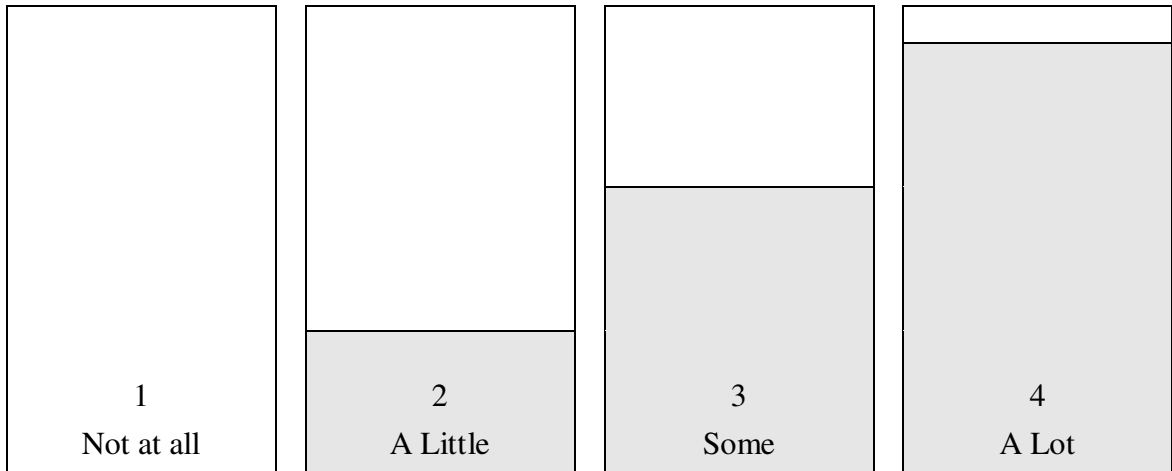
What I Am Like

Directions: For each question, decide if you are more like "A" or more like "B." Circle EITHER the statement for "A" OR the statement for "B" *(Only circle one statement).*

Next, decide if that statement is "Really True for Me" or "Sort of True for Me." Put an "X" in the box if it is "Really True for Me" or Sort of True for Me" *(Put an X in only one box).*

Really True for Me	Sort of True for Me			Really True for Me	Sort of True for Me
☐	☐	**A.** Some kids would rather play outdoors in their spare time.	**B.** Other kids would rather watch T.V.	☐	☐
1. ☐	☐	**A.** Some kids find it *hard* to make friends.	**B.** Other kids find it pretty *easy* to make friends.	☐	☐
2. ☐	☐	**A.** Some kids are often *unhappy* with themselves	**B.** Other kids are pretty *pleased* with themselves	☐	☐
3. ☐	☐	**A.** Some kids have *a lot* of friends	**B.** Other kids *don't* have very many friends.	☐	☐
4. ☐	☐	**A.** Some kids *don't* like the way they are leading their life.	**B.** Other kids *do* like the way they are leading their life.	☐	☐
5. ☐	☐	**A.** Some kids would like to have a lot more friends.	**B.** Other kids have as many friends as they want.	☐	☐
6. ☐	☐	**A.** Some kids are *happy* with themselves as a person.	**B.** Other kids are often *not* happy with themselves.	☐	☐
7. ☐	☐	**A.** Some kids are always doing things with *a lot* of kids.	**B.** Other kids usually do things *by themselves*.	☐	☐
8. ☐	☐	**A.** Some kids *like* the kind of person they are.	**B.** Other kids often wish they were someone else.	☐	☐
9. ☐	☐	**A.** Some kids wish that more people their age liked them.	**B.** Other kids feel that most people their age *do* like them.	☐	☐
10. ☐	☐	**A.** Some kids are very	**B.** Other kids wish they	☐	☐

		happy being the way they are.	were *different*.	
11. ☐ ☐		**A.** Some kids are *popular* with others their age.	**B.** Other kids are *not* very popular.	☐ ☐
12. ☐ ☐		**A.** Some kids are not very happy with the way they do a lot of things.	**B.** Other kids think the way they do things is *fine*.	☐ ☐

Appendix G
Someone who could play the part of:

1. Someone others respect.	2. A person everybody likes to be with.	3. Someone whose feelings get hurt easily.	4. Someone who helps others when they need it.

Someone who could play the part of:

5. Someone who gets into fights for little or no reason.	6. A person who ignores someone or stops talking to someone when mad at them.	7. A person who fights when others wouldn't.	8. A person who is a good leader.

Someone who could play the part of:

9. A person who gets called names by other kids.	10. Someone who gets picked on by other kids.	11. Somebody who teases other children too much.	12. A person who makes new friends easily.

Someone who could play the part of:

13. Someone who is usually sad.	14. A person who threatens people.	15. Someone you can trust.	16. A person who jokes around in a mean way.

Someone who could play the part of:

17. A person who gets even by keeping someone from being in their group of friends.	18. A person who everyone listens to.	19. A person who tries to keep certain kids from being in their group at school.	20. A person kids make fun of.

Someone who could play the part of:

21. Someone who has a good sense of humor.	22. A person with good ideas for things to do.	23. Somebody who has many friends.	24. Somebody who gets pushed and hit by other kids.

Someone who could play the part of:

25. A person who can get things going.	26. A person who would rather play alone than with others.	27. A person who shows respect to others.