

THE EFFECTS OF RELATIONSHIP QUALITY ON AFFECT EXPRESSED IN
DYADIC INTERACTIONS OF PRESCHOOL-AGED CHILDREN

Except where reference is made to the work of others, the work described in this thesis is my own or was done in collaboration with my advisory committee. This thesis does not include proprietary or classified information.

Stefanie Elaine Goetz

Certificate of Approval:

Ellen Abell
Associate Professor
Human Development and Family
Studies

Brian E. Vaughn, Chair
Professor
Human Development and Family
Studies

Stephen A. Erath
Assistant Professor
Human Development and Family
Studies

George T. Flowers
Dean
Graduate School

THE EFFECTS OF RELATIONSHIP QUALITY ON AFFECT EXPRESSED IN
DYADIC INTERACTIONS OF PRESCHOOL-AGED CHILDREN

Stefanie Elaine Goetz

A Thesis

Submitted to

the Graduate Faculty of

Auburn University

in Partial Fulfillment of the

Requirements for the

Degree of

Master of Science

Auburn, AL
August 10, 2009

THE EFFECTS OF RELATIONSHIP QUALITY ON AFFECT EXPRESSED IN
DYADIC INTERACTIONS OF PRESCHOOL-AGED CHILDREN

Stefanie Elaine Goetz

Permission is granted to Auburn University to make copies of this thesis at its discretion, upon request of individuals or institutions and at their expense. The author reserves all publication rights.

Signature of Author

Date of Graduation

THESIS ABSTRACT

THE EFFECTS OF RELATIONSHIP QUALITY ON AFFECT EXPRESSED IN
DYADIC INTERACTIONS OF PRESCHOOL-AGED CHILDREN

Stefanie Elaine Goetz

Master of Science (August 10, 2009)
(B.A., University of Missouri-Columbia, 2007)

114 Typed Pages

Directed by Brian E. Vaughn

The purpose of the present study was to examine the effects of relationship quality on expressed affect in the dyadic interactions of preschool-aged children. The effects of six different types of relationship quality (i.e., two like dyads, two control dyads, and two dislike dyads), as well as the effects of the age and sex of the dyad, on the positive and negative affect expressed by the dyads were examined. In addition, the study attempted to control for the effects of personality by controlling for eight individual characteristics believed to influence the expression of both positive and negative affect.

To address this issue, preschool children from two separate early learning centers were studied ($N = 365$). Of these children there was a total of 1550 dyads. The sample was taken from four years worth of data from a larger study on social competence,

friendship, and emotion. From each year, information on children's friendship choices, expressed affect, and internal characteristics was collected.

Four separate hypotheses were tested. First, it was expected that a dyad's relationship quality would be associated with the dyadic expression of affect. Analyses supported this hypothesis. Specifically, like dyads expressed the most positive affect and dislike dyads expressed the most negative affect.

Second, it was expected that same-sex dyads would express more positive and negative affect than mixed-sex dyads. Analyses partially supported this hypothesis. Dyad sex only affected the expression of negative affect with male dyads expressing the most, mixed-sex dyads expressing the second most, and female dyads expressing the least.

Third, it was expected that older dyads would express more positive and negative affect than younger dyads. Analyses testing for the effects of dyad age on the expression of affect supported this hypothesis.

Fourth, it was expected that individual characteristics would influence the expression of affect but not alter the effects of relationship quality, dyad sex, and dyad age. This hypothesis was partially supported. Certain individual characteristics were associated with the expression of affect and the effects of relationship quality, dyad sex, and dyad age were altered in some analyses, but not all.

This study contributes to the literature on child development. The quality of peer relationships influences children's expressed affect, which is believed to lead to a variety of life outcomes.

ACKNOWLEDGEMENTS

The author would like to thank Dr. Brian E. Vaughn for his guidance and patience; without his instruction and time, this thesis would not have been possible. The author would also like to thank Dr. Ellen Abell and Dr. Stephen Erath for their insightful comments and suggestions regarding this thesis.

Style manual or journal used *Publication Manual of the American Psychological Association, 5th Edition*

Computer software used *SYSTAT version 12* and *Microsoft Word 2007*

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES	xi
I. INTRODUCTION	1
II. LITERATURE REVIEW	6
Affect and Positive Psychology	6
Peers and Friendship	12
Affect and Relationship Quality in Friendships	15
Individual Characteristics	18
III. STATEMENT OF RESEARCH OBJECTIVES	21
Broad Questions Not Answered	21
Research Question	21
Hypotheses	22
Relationship quality	22
Sex	22
Age	22
Individual characteristics	23
IV. METHODS	24
Participants	24

Measures	25
Affect Expression	25
Taped Dyadic Interactions	25
Sociometrics	26
Nominations Task	27
Paired-Comparisons Task	27
Ratings	28
Internal Characteristics	28
Procedure	30
Dyadic Play Interactions	30
Coding of Dyadic Play Interactions	30
Friendship Pairings	31
Creation of Internal Characteristics Variable	33
V. RESULTS	34
Preliminary Analyses	34
Plan of Analysis	38
Heirarchical Loglinear Modeling	39
Cluster Analysis	39
Dyad Sex, Dyad Age, and Relationship Quality on Positive Affect	42
Dyad Sex, Dyad Age, and Relationship Quality on Negative Affect	43
Dyad Sex, Dyad Age, and Relationship Quality on Positive Affect	
Controlling for Individual Characteristics	45

	Dyad Sex, Dyad Age, and Relationship Quality on Negative Affect	
	Controlling for Individual Characteristics	46
VI.	DISCUSSION	48
	Main Effects: Dyad Sex, Dyad Age, and Relationship Quality on	
	Expressed Affect	49
	Dyad Sex	50
	Dyad Age	51
	Relationship Quality	51
	Interaction Effects: Dyad Sex, Dyad Age, and Relationship Quality on	
	Expressed Affect	54
	Dyad Sex and Dyad Age	54
	Dyad Sex, Dyad Age, and Relationship Quality	54
	Alternative Interpretation: What about the Effects of Individual	
	Characteristics?	55
	Limitations and Future Directions	58
	Conclusions and Implications	61
	REFERENCES	64

LIST OF TABLES AND FIGURES

T1. Breakdown of Items Included in Each of the Individual Characteristic Factors	78
T2. Range, Means, and Standard Deviations of the Study Variables	81
T3. Breakdown of Dyads by Sex and Age	82
T4. Intraclass Correlations Between Child 1 Individual Characteristics and Child 2 Individual Characteristics ($df = 1000$)	83
T5. Intraclass Correlations Between Child 1 and Child 2 Individual Characteristics and Positive and Negative Affect ($df = 1000$)	84
T6. Correlations Between the Average Dyad Individual Characteristics ($df = 1548$)	85
T7. Correlations Between the Average Dyad Individual Characteristics and Positive and Negative Affect ($df = 1548$)	86
T8. Dyad Sex by Dyad Age for Reciprocated Like Dyads	87
T9. Dyad Sex by Relationship Quality	88
T10. Dyad Age by Relationship Quality for the Mixed-Sex Dyads	89
T11. Relationship Quality by Dyad Age by Dyad Sex	90
T12. Means and Standard Deviations for Dyad Sex and Significant Individual Characteristics	91
T13. Means and Standard Deviations for Dyad Age and Significant Individual Characteristics	92

T14. Means and Standard Deviations for Relationship Quality and Significant Individual Characteristics	93
T15. Means and Standard Deviations for Dyad Sex x Dyad Age and Significant Individual Characteristics	94
T16. Means and Standard Deviations for Dyad Sex x Relationship Quality and Significant Individual Characteristics	95
T17. Analysis of Variance for Dyad Sex, Dyad Age, and Relationship Quality on Positive Affect ($N = 1550$)	96
T18. Means and Standard Deviations for Dyad Age, Dyad Sex, and Relationship Quality on Positive Affect ($N = 1550$)	97
T19. Analysis of Variance for Dyad Sex, Dyad Age, and Relationship Quality on Negative Affect ($N = 1550$)	98
T20. Means and Standard Deviations for Dyad Age, Dyad Sex, and Relationship Quality on Negative Affect ($N = 1550$)	99
T21. Analysis of Variance for Dyad Sex, Dyad Age, and Relationship Quality on Positive Affect Controlling for Individual Characteristics ($N = 1550$)	100
T22. Analysis of Variance for Dyad Sex, Dyad Age, and Relationship Quality on Negative Affect Controlling for Individual Characteristics ($N = 1550$)	101
F1. Heirarchical clustering of the average dyad individual characteristics	102

I. INTRODUCTION

The study of affect and its expression has a long history in the social sciences. Specifically, there have been two different approaches, one being developmental psychology and the other being positive psychology. The earliest studies of affect focused on expressions of discrete emotions and when these expressions appeared developmentally (e.g., Izard & Malatesta, 1987; Malatesta, Culver, Teasman, & Shepard, 1989). More recently, however, developmental studies of affect tend to emphasize children's understanding and regulation of affect rather than expression *per se*.

Positive psychology, on the other hand, focuses on phenomenological studies, in particular, the experience of emotion and its shorter and longer term consequences. Regarding the importance of affect, the field of positive psychology has suggested that there is a connection between affect and life outcomes. In particular, positive psychology assumes that the continual experience of mild positive affect is a causal precursor to a broad range of positive life outcomes (see Lyubomirsky, King, & Diener, 2005 for a meta-analysis of supporting data). Further, positive psychology suggests a "broaden and build" model of positive affect, where an individual's experiences of positive affect support mastery of existing physical, intellectual, and social skills as well as providing opportunities to add new skills (Fredrickson, 1998). While positive psychology proposes interesting ideas about the experience of affect and subsequent life outcomes, there has been a noticeable lack of studies examining contexts or their meanings with regard to the

experience of positive affect. One context that has been ignored is peer relationships and how experiences in specific peer relationships lead to the experience of positive (and negative) affect.

Peers are a significant aspect in children's lives and relationships with peers are significant influences on children's development (Rubin, Coplan, Chen, Buskirk, & Wojslawowicz, 2005). Over the first three years of life, peer interactions become increasingly complex and eventually lead to the development of friendships. Friendships are distinguished by a variety of characteristics, such as reciprocity, positive engagement, closeness, and loyalty, to name a few.

Reciprocity refers to the returning of behavior. Between friends, the behaviors are like behaviors (i.e., being nice). In fact, it has been found that friends engage in more positive behaviors with one another, such as talking, cooperating, successful conflict resolution, and positive affect compared to non-friends (Hartup, 1996). Friends also engage in more positive interactions characterized by increased social contact, talking, cooperation, and positive affect (Newcomb & Bagwell, 2005). Further, friends also share strong emotional bonds and support and trust one another (Newcomb & Bagwell, 2005).

Based on these findings, research suggests that friends interact differently with one-another than with non-friends. In particular, interactions between friends are generally positive and characterized by positive affect (Hartup, 1996; Newcomb & Bagwell, 2005).

In fact, no studies have been conducted examining the association between a dyad's relationship quality (e.g., friends or non-friends and reciprocated or non-

reciprocated) and the expressed affect (positive or negative) in the dyad. Several studies have examined the effects of an individual's expressed affect on social status with peers. Overall, these studies have suggested that children who are angry/aggressive are less liked by their peers (Eisenberg, Fabes, Nyman, Bernzweig, & Pinuelas, 1994; Schmitt, 2000; Walter & LaFreniere, 2000). In other words, negative affect expression in children was associated with being less liked by peers, potentially resulting in few friendships. This could be extended to a potential relationship between a dyad's liking status and the expressed affect in the dyad, with non-friends being more likely to express negative affect in interactions. This potential relationship would need to be empirically evaluated.

Research regarding peer interactions, specifically friendship studies, and the association between expressed affect and peer social status suggest that relationship quality has an effect on the expression of affect in peer interactions. Other research, however, states that internal characteristics of the child influence peer interactions and expressed affect. Particularly, individual characteristics such as temperament and social skills may contribute to children's friendships.

According to Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, et al. (1987) temperament is defined as the biological basis for several affective components of personality, such as arousal, expression, and regulation. Children with certain temperamental characteristics may be more likely to express certain types of affect (i.e., prone to expressing positive affect), thus affecting children's friendships and the expressed affect in dyadic exchanges (Rubin et al., 2005). In addition to temperament, other individual factors influence expressed affect. Examples of such factors include the

child's social skills (e.g. social cognition and awareness; Howes, 1988; Parker & Asher, 1993).

The purpose of this study is to examine the positive and negative affect experiences (inferred from expressions of affect) of preschool children engaged in dyadic play in relation to demographic (sex composition of dyad, ages of dyad partners) and liking status (reciprocated like, non-reciprocated like, reciprocated dislike, non-reciprocated dislike, or no-choice). Relationships were classified as reciprocated if both children identified one another in the same manner (either as a like or dislike). Relationships were classified as non-reciprocated if one child identified the other as either a like or dislike, and the other child did not identify the one child as a like or dislike. Any potential effects due to internal characteristics (i.e., temperament/personality) will be controlled for in this study using eight factors relating to children's emotionality and social skills (Vaughn et al., in press). The specific family of questions posed for this study concern the extent to which experience/expression of positive and negative affects are influenced by demographic (sex composition of dyad, ages of dyad partners) and dyadic liking status (e.g., mutual choice as liked or disliked, unilateral or non-reciprocated choice as liked or disliked, unchosen by either dyad partner as liked or disliked). In other words, are relationships a critical feature driving affect expression in dyadic interactions when controlling for children's non-relational characteristics?

This study will examine the sex compositions of the dyads with an expectation that same-sex dyads will be more prevalent in the choice groups (either reciprocated or

non-reciprocated like or dislike). It is also expected that liking status of the dyad will have a direct effect on the dyadic expression of affect, with the reciprocated like dyads expressing the highest levels of positive affect and the reciprocated dislike dyads expressing the highest levels of negative affect. Further, this study will examine the relationship between the sex composition of the dyad and the age of dyad partners to the dyad's expression of affect. It is expected that same-sex dyads will be more likely to express both positive and negative affect than mixed-sex dyads. It is also expected that older dyads will express more positive, and potentially more negative, affect than younger dyads. Regarding internal characteristics, this study will examine if the intrinsic properties (i.e., temperament) of the children in the dyad are related to the amount of affect expressed in the dyadic interactions.

II. LITERATURE REVIEW

The purpose of this literature review is to examine the research on which the aims of the present study are based. First, the theory of positive psychology and its assumptions regarding the effects of experiencing mild, chronic positive affect will be described. Second, the formation of friendships from peer interactions, as well as key characteristics of friendships relevant to this particular study will be discussed. Third, this review will examine how friendships serve as a context for emotional experience. Fourth, individual characteristics that may influence affect will be considered.

Affect and Positive Psychology

Affect and its expression are topics that have long been studied by developmental psychologists. Early studies of affect tended to focus on expressions of discrete emotions and the point in development when these expressions appeared (e.g., Izard & Malatesta, 1987; Malatesta, Culver, Teasman, & Shepard, 1989). There have been, however, extraordinary changes in the study of emotion over the last 30 years (Saarni, Campos, Camras, & Witherington, 2006). As a result of these studies, the very important effects that emotions have on child development have been identified. For example, social, cognitive, perceptual, and self-regulatory processes are significantly influenced by emotions (Saarni et al., 2006). Further, the link between emotion and behavior, as well as the social functions of emotion, has been supported by research in just the last 10 years. Studies of affect in infants and toddlers are still being reported in the developmental

literature. These studies tend to emphasize children's understanding and regulation of affect rather than expression *per se*. While these developmental studies illustrate the importance of affect on a child's social, cognitive, and behavioral domains, they do not describe the positive effects that emotions have on development.

Positive psychology, on the other hand, has suggested that there is a connection between affect and life outcomes. In particular, positive psychologists assume that the continual experience of mild positive affect is a causal precursor to a broad range of positive life outcomes (Lyubomirsky, King, & Diener, 2005). The approach to studying affect from the field of positive psychology differs from developmental psychology approaches in that positive psychology focuses on the phenomenology of affect and experience. Further, positive psychology makes the assumption that there is a causal association between affect and life events. Affect is not just an appraisal but positive affect may motivate some good outcomes, in addition to the negative outcomes of negative affect that previous research has identified (Fredrickson, 1998).

Due to the fact that previous research has ignored the importance of positive emotions, positive psychology suggests a model for the effects of positive emotions. Fredrickson (1998) suggests a "broaden and build" model of positive affect, where an individual's experiences of positive affect support mastery of existing physical, intellectual, and social skills, as well as providing opportunities to add new skills. Once acquired, the advances in resources are believed to be durable (Fredrickson, 1998).

Positive emotions broaden the scope of attention, cognition, and action and build physical, intellectual, and social resources. With respect to broadening the scope of

attention, it has been found that high arousal positive emotions expand attentional focus (Derryberry & Tucker, 1994). Studies involving manic individuals are cited as support for this claim. In addition, laboratory studies have suggested that, even in non-clinical samples, experiencing positive emotions are associated with a broadened scope of attention (Basso, Schefft, Ris, & Dember, 1996; Kimchi, 1992).

With respect to broadening the scope of cognition, research suggests that positive affect “gives rise to an enlarged cognitive context” (Isen, 1987, pp. 222). In other words, experiencing positive affect leads to changes in cognition. In particular, individuals are able to see how thoughts and ideas are related and interconnected, as well as being able to process material in more integrated and adaptable manners (Isen, 1987; Isen & Daubman, 1984). Further, experiencing positive affect may lead to more widespread cognitive elaboration on ideas and concepts, which in turn may facilitate memory (Isen, 1987). Another manner in which positive emotions may broaden cognition is by impacting creative thinking. Specifically, experiencing positive affect leads to better performance on the Mednick’s Remote Associates Test (Foder & Greenier, 1995; Isen, Daubman, & Nowicki, 1987) and Torrance’s Creativity Test (Ziv, 1976).

Additionally, the experience of positive affect broadens an individual’s scope of action. Along the lives of the potential increase in creative thinking reported above, experiencing positive affect leads individuals to employ more creative solutions to problems (Isen et al., 1987; Greene & Noice, 1988). Furthermore, individuals will also engage in a wider variety of actions/activities when experiencing positive affect compared to their neutral counterparts (Kahn & Isen, 1993; Renninger, 1992). In sum,

experiencing positive affect broadens an individual's scope of attention, cognition, and action.

Positive affect experiences also build resources. One type of resource built upon is physical. High-energy positive emotions are associated with an increased urge to play and be playful (Fredrickson, 1998). One type of play, in particular, that children engage in is rough-and-tumble play (i.e., play fighting, play chasing, and role-reversal). This type of play is very physical and facilitates muscle growth and general physical and cardiovascular fitness (Groos, 1898, 1901). The exact relationship between positive affect and rough-and-tumble play is not specified. It may be that rough-and-tumble play creates the conditions for high energy positive affect or that high energy positive affect motivates children to engage in rough-and-tumble play.

Another resource benefitting from positive affect is intellectual. The impact that positive emotions have on broadening the scope of cognition has already been described, but the experience of positive emotions also improves intellectual resources (i.e., learning and performance) by facilitating the individual's ability to learn and master ideas and concepts (Isen, 1987). Specifically, the positive emotion of interest serves as a motivator for learning throughout childhood, adolescence, and adulthood (Fredrickson, 1998). Intrinsic interest, especially, is associated with higher levels of academic achievement, lower drop-out rates, greater conceptual understanding, and greater psychological adjustment (for reviews, see Deci, Vallerand, Pelletier, & Ryan, 1991; Renninger, Hidi, & Krapp, 1992).

Moreover, positive affect builds social resources. Positive emotions can help create and sustain positive social relationships. For example, mutual positive experiences and emotions lead to shared enjoyment and lasting alliances, friendships, or family bonds (Fredrickson, 1998). These relationships can later be used as resources. Another mechanism through which positive affect may build on social resources is through fostering altruism. This suggests that individuals who experience positive affect may be more apt to help others in need (Isen, 1987). In turn, individuals receiving help may feel grateful and inclined to reciprocate the help, thus leading to the formation of a cooperative relationship (Oatley & Jenkins, 1996). By broadening and building upon an individual's skills and resources, the experience of positive affect is associated with a variety of positive life outcomes. In addition to the broadening and building effects of positive emotions, there are other benefits.

Research has also supported the claims that positive emotions can undo the aftereffects of negative emotions and protect health. It has been suggested that the effect of positive emotions might undo the harmful effects of negative emotions (Cabanac, 1971; Fredrickson & Levenson, 1998; Lazarus, Kanner, & Folkman, 1980; Solomon, 1980). One way, particularly, is by undoing the psychological and physiological thought-action repertoires formed by negative emotions and restoring flexible thinking (Fredrickson & Levenson, 1998). Along the lines of health, positive emotions may improve cardiovascular health by interrupting the harmful effects of the cardiovascular reactivity caused by negative emotions (Fredrickson, 1998). Positive emotions may also

improve immune system functioning (Stone, Cox, Valdimarsdottir, Jandorff, & Neale, 1987; Stone, Neale, Cox, & Napoli, 1994).

In summary, positive psychologists believe that the chronic experience of mild positive affect is a causal precursor to a wide variety of positive life outcomes. Positive affect experiences broaden and build an individual's skills and resources, as well as undo the aftereffects of negative emotions and promote health. It is important to note that the research cited as support for the effects of positive affect on broadening attention, cognition, action and building physical, intellectual, and social resources come from studies using samples of individuals 13 years of age or older. It is unknown whether experiences of positive affect will have similar outcomes in preschool-aged children.

While positive psychology proposes interesting ideas about the experience of affect and subsequent life outcomes, there has been a noticeable lack of studies examining contexts or their meaning with regard to the experience of positive affect. One of these contexts is relationships and how experiences in specific relationships give rise to the experiences of positive (and negative) affects.

Historically, when studying well-being and affect, the context most examined was the family and relationships within the family. These are not, however, the only relationship contexts that children experience. There is currently a secular trend toward earlier non-family care. Over 50% of children aged 12+ months are cared for by others outside of the home environment. This provides a new arena for studying well-being and affect: the relationships children form with peers while in out-of-home care. These relationships with peers are a source of affect experience.

Peers and Friendship

Peers are a significant aspect in children's lives and affect children's development (McElwain & Volling, 2005; Rubin et al., 2005). Relationships with peers can produce psychological benefits or costs that affect child development and adjustment (Ladd, Kochenderfer, & Coleman, 1996). Because of the importance of these peer relationships, within this section, I will review literature examining how these relationships become friendships and the how children's friendships are characterized.

Over the first three years of life, peer interactions become increasingly complex. In the first year of life, interactions between infants are typically of short duration. In the second year, interactions between toddlers are more predictable, complex, coordinated, and lengthier (Ross & Conant, 1992; Verba, 1994). These interactions are typically centered around one peer directing the other peer's attention toward a toy, food, or other object (Eckerman, Davis, & Didow, 1989). In the third year, peer interactions become more complex with children being able to share symbolic meanings (Howes & Matheson, 1992). These interactions may lead to the development of possible friendships. One way friendship is defined is as "the presence of a close, mutual, and voluntary dyadic bilateral relationship" (Rubin et al., 2005, pp. 474).

There are a variety of characteristics that classify a peer relationship as a friendship. One feature is reciprocity (Rubin et al., 2005). Reciprocity refers to the returning of behavior. Between friends, the behaviors are pleasant behaviors (i.e., being nice). In fact, it has been found that friends engage in more positive behaviors with one another, such as talking, cooperating, successful conflict resolution, and positive affect

(Hartup, 1996). Preschool friendships, specifically, are characterized by synchrony in play, shared positive affect, and proximity (Sebanc, 2003). Interestingly, research has found that friends engage in more quarreling and hostility than non-friends. In particular, nursery school children have been found to engage in more conflict with friends than with neutral counterparts (Hartup & Laursen, 1995; Hartup, Laursen, Stewart, & Eastenson, 1998). Further, when interacting with friends compared to control children, a study by Simpkins and Parke (2002) found greater levels of negative behavior, negative affect, and guilty coercion. These greater amounts of negativity between friends than non-friends could be attributed to the fact that children tend to spend more time interacting with their friends than with non-friends (Rubin et al., 2005). It is important to note, however, that the difference in conflict between friends and non-friends is that friends resolve their conflicts in a fair and equitable manner (Newcomb & Bagwell, 1995; Tomada, Schneider, & Fonzi, 2002).

A meta-analysis by Newcomb and Bagwell (1995) compiled research on friendships in the preschool, childhood, and early adolescent ages. A variety of comparison groups were used: friends (reciprocal friends and unilateral friends) and non-friends (acquaintances, strangers, and disliked peers). Two characteristics of friendship that Newcomb and Bagwell (1995) examined were positive engagement and relationship properties. The positive engagement characteristic is based on the expectation that there will be positive experiences from interactions and shared activities between friends. The positive engagement category included social contact (e.g., frequent interaction, common activities, etc.), talking (e.g., discussion, verbalization, social conversation, etc.),

cooperation (e.g., sharing, helping, giving, etc.), and positive affect (e.g., smiling, looking, laughing, and touching). With respect to positive engagement, friends were found to engage in greater amounts of social contact, talking, cooperation, and positive affect than non-friends (Newcomb & Bagwell, 1995).

The relationship properties characteristic included similarity (e.g., demographic and behavioral similarities), equality (e.g., establishing and maintaining an equal, fair relationship), dominance (e.g., competition, aggression, non-mutual commands, and submission), mutual liking (e.g., strength of affective and affiliative ties), closeness (e.g., strong emotional bond), and loyalty (e.g., reliable alliance and support, faithfulness, trust, and commitment). It was found that friends were more similar, maintained more equality in their relationships, engaged in fewer dominant behaviors during interactions, engaged in more mutual liking, were closer, and were more loyal than non-friends (Newcomb & Bagwell, 1995).

When comparing reciprocated friends and unilateral friends, reciprocated friends scored higher in positive engagement and relationship properties than unilateral friends (Newcomb & Bagwell, 1995). This indicates that reciprocated friends engaged in more social contact, talking, cooperation, positive affect, similarity, equality, mutual liking, closeness, loyalty and less dominance than unilateral friends. Overall, friends were associated with more positive characteristics than non-friends. Also, reciprocated friends were associated with more positive characteristics than unilateral friends.

An additional friendship characteristic is that the majority of friendships are between children of the same sex (Brendgen, Little, & Krappmann, 2000; Graham &

Cohen, 1997; Howes & Phillipsen, 1992; Rubin et al., 2005; Vaughn, Colvin, Azria, Caya, & Krzysik, 2001). This may be because children have a tendency to interact more with children of the same sex than children of the opposite sex. The increase in interactions may strengthen the likelihood of forming a friendship.

Stability is another key characteristic that classifies friendships. The stability of preschool friendships has been debated. It is believed that once children form friendships, those friendships will be stable regardless of age (Rubin et al., 2005). This belief has been supported by research. Many children's friendships are stable for at least a year (Howes, 1988). In a study by Gershman and Hayes (1983), two-thirds of mutual friendships in preschool-aged children were still present 4 to 6 months later. Based on these findings, it will be assumed that the friendships reported in this study are stable.

In summary, friendships are an important developmental context for children. It is through these friendships that children learn social, affective, and cognitive skills. Friendships are relatively stable relationships, usually between children of the same sex, that are characterized by reciprocity, social contact, talking, cooperating, positive affect, similarity, equality, mutual liking, closeness, and loyalty.

Affect and Relationship Quality in Friendships

Based on the findings from the friendship literature, friends interact differently with one another than with non-friends. For example, when compared to non-friends, preschool-aged children tend to engage in more social interactions and play in more complex ways with friends (Doyle, 1982). Also, preschool-aged friends are more cooperative during play (Charlesworth & LaFreniere, 1983). With respect to affect,

friendships provide an outlet for the expression and regulation of affect (Parker & Gottman, 1989). The question still remains as to whether friendships have a direct effect on the expression of affect. This section will review the literature on associations between expressed affect and peer interactions, specifically the relationship between expressed affect and peer social status.

No studies were found that have examined the direct associations between a preschool dyad's relationship quality (i.e., friends or non-friends and reciprocated or non-reciprocated) and the expressed affect (positive or negative) in the dyad. There have, however, been a few studies examining the associations between preschoolers' expressed affect and social status with peers. One study by Eisenberg and colleagues (1994) examined children's anger-related reactions. The study used 94 children (45 girls and 49 boys) 4 to 6 years of age and observed their naturally occurring anger reactions. Anger reactions were classified as either non-disruptive or disruptive. Non-disruptive reactions included verbal objections (e.g., child defends self verbally without using insults or demands action on another's part) and defending (e.g., non-verbal defense of an object or the self). Disruptive reactions included venting (e.g., vent emotions by yelling, stomping feet, screaming, etc.) and physical retaliation (e.g., non-defensive physical aggression aimed at either the instigator or another child). Further, as part of the study, children in the participating classrooms completed an Asher-type ratings scale (Asher, Singleton, Tinsley, & Hymel, 1979), where each child classified his peers as someone he likes to play with a lot, likes to play with some, and likes to play with only a little. From this ratings scale, a summary score was calculated for each child. Eisenberg et al. (1994)

found that managing anger through aggressive strategies (e.g., disruptive reactions) was associated with low social status. In other words, negative affect expression in children was associated with being less liked by peers.

Another study found similar results to those of Eisenberg et al. (1994). Schmitt (2000) examined 51 preschoolers and their naturally occurring aggressive behaviors, peer acceptance, teacher-rated social skills, etc. This study found that initiating more aggressive behaviors was associated with being less liked by peers and being less socially competent (Schmitt, 2000).

A third study by Walter and LaFreniere (2000) looked at 56 preschoolers and their naturally occurring moderate positive affect, strong positive affect, anger, and distress. In addition, teacher-rated social competence and peer sociometrics were collected. Walter and LaFreniere (2000) found that peer acceptance was associated with strong positive affect but not moderate positive affect. Further, there was a gender difference regarding anger and distress. Girls' anger, but not distress, was negatively related to peer rejection (Walter & LaFreniere, 2000). This suggests that girls' expressions of anger were related to peer acceptance. On the other hand, both boys' anger and distress were positively related to peer rejection (Walter & LaFreniere, 2000).

Overall, these three studies on affect expression and social status suggest that children who are angry/aggressive are less liked by peers. [Note: Walter and LaFreniere (2002) found that girls' anger was not positively related to peer rejection. The other two studies (Eisenberg et al., 1994; Schmitt, 2000) and boys from the Walter and LaFreniere (2000) study did find positive associations between anger/aggression and low social

status.] This potentially could result in few friendships. Moreover, expressing strong positive affect was positively associated with peer acceptance. Potentially, children who express high levels of strong positive affect and are more accepted by peers will have an increased likelihood of having a multitude of friendships. Both findings could be extended to a potential relationship between a dyad's relationship quality and the expressed affect in the dyad, with non-friends being more likely to express negative affect and friends being more likely to express positive affect in interactions. This potential relationship would need to be empirically evaluated.

Using the results of the aforementioned studies of friendship, reciprocated friends engage in more positive interactions (i.e., greater expressions of positive affect, cooperation, closeness, etc.) than unilateral friends and non-friends (Newcomb & Bagwell, 1995). Also, reciprocated friends have been found to engage in more conflict than non-friends (Hartup & Laursen, 1995; Hartup et al., 1998). Based on these results, one could assume that the relationship quality between two individuals would have an effect on the affect expressed in a dyadic interaction.

Individual Characteristics

The findings from the literature on expressed affect and peer social status indicate that children who express certain types of affect are more or less likely to be accepted by their peers, thus influencing the quality of their peer interactions. What other factors, however, influence peer interactions? Research has found that individual characteristics of children in dyads can shape their interaction (McElwain & Volling, 2002). There are

several individual factors that may contribute to children's friendships, including temperament, social cognition, and social awareness.

According to Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, et al. (1987), temperament can be defined as a biological basis for several affective components of personality, such as arousal, expression, and regulation. These temperamental characteristics play a dominant role in peer interactions (Rubin et al., 2005).

There are three broad groups of temperament traits that researchers have found to influence peer interactions. The first is resistance to control. This includes the child's lack of attention, low agreeableness, and strong attention to rewarding stimuli (Rubin et al., 2005). The second group is negative affect. This includes the child's negative emotional reactivity and difficult-to-regulate or -control affect (Rubin et al., 2005). The last group is shyness/inhibition. This includes wary responses to social situations and novelty (Rubin et al., 2005). These temperamental traits may affect children's activity choices and the ability to reciprocate peers' overtures.

Temperament influences more than just peer interactions. There is also a close link between emotions and temperament (Saarni et al., 2006). Children with certain temperamental characteristics may be more likely to express certain types of affect (i.e., children who are adaptable may be more prone to expressing positive affect), thus affecting children's friendships and the expressed affect in dyadic exchanges. In addition to temperament, it is expected that other individual factors could influence expressed affect.

A child's social skills (i.e., social cognition and awareness) may influence friendship and expressed affect. First, prosocial behaviors, such as being responsive and reciprocal with peers, are characteristics of children who have friends compared to those who do not (Howes, 1988). Further, the characteristic of peer acceptance might impact friendship and affect with higher peer acceptance being indicative of children with greater reciprocated friendships (Parker & Asher, 1993). On the other side, children who are physically aggressive may be less likely to have friendships (Snyder, Horsch, & Childs, 1997). Based on this literature, one cannot deny that individual factors may contribute to friendship and expressed affect. Whether these characteristics will influence the relationship between relationship quality and affect will be tested in this study.

III. STATEMENT OF RESEARCH OBJECTIVES

Broad Questions not Answered

Based on the literature review, there are several broad questions that have not been answered in prior research. The first question is “do different relationships serve as differential contexts for the expression and experience of affect?” Moreover, do friendships differ from non-friendships? Also, what about dislike relationships? The second question is “are there demographic categorical differences?” For example, as the child gets older (age), it has been found that the frequency of affect expression increases. Also, it has been found that boys express more negative affect than girls. What about any interactions between these demographic categories?

Research Question

The specific family of questions posed for this study concern the extent to which experience/expression of positive and negative affects are influenced by demographic characteristics (sex composition of dyad, ages of dyad partners) and relationship quality (e.g., mutual choice as liked or disliked, unilateral or non-reciprocated choice as liked or disliked, unchosen by either dyad partner as liked or disliked). In other words, are relationships a critical feature driving affect expression in dyadic interactions when controlling for children’s non-relational characteristics?

Hypotheses

Relationship quality. This study is concerned with whether the relationship status of a dyad has an impact on the type and amount of affect expressed during a 5-minute play session. It is expected that control dyads will be the most prevalent of all the relationship quality categories. Further, it is expected that the non-reciprocated relationship quality categories will be more prevalent than the reciprocated relationship quality categories. In addition to the hypotheses regarding the distribution of dyads, it is expected that relationship quality of the dyad will have a direct effect on the dyadic expression of affect. The reciprocated like dyads are expected to express the highest levels of positive affect and the reciprocated dislike dyads are expected to express the highest levels of negative affect.

Sex. This study will also examine any effects that the sex of the dyad (i.e., both male, both female, or one male and one female) has on the type and amount of affect expressed during a 5-minute play session. It is expected that same-sex dyads will be more prevalent in the choice groups (i.e., reciprocated or non-reciprocated like or dislike). Children have a tendency to interact more with peers of the same-sex (Rubin et al., 2005), thus providing greater opportunities for affect exchanges. Because of this, it is expected that same-sex dyads will be more likely to express both positive and negative affect than mixed-sex dyads.

Age. This study is also concerned with the impact that dyad age (i.e., old or young) has on the type and amount of affect expressed during a 5-minute play session. Because research has found that affect expression increases with age (Cervantes &

Callanan, 1998; Vaughn et al., 2001), it is expected that older dyads will express more positive, and potentially more negative, affect than younger dyads.

Individual characteristics. This study will control for any effects of individual characteristics by using eight factors related to children's emotionality and social skills (Vaughn et al., in press). These eight factors are peer acceptance, positive mood, social cognition, withdrawn, social awareness, negative emotionality, aggressive/coercive style, and defiance. It is hypothesized that the intrinsic properties of the children in the dyad may influence affect expressed, but they will not alter any potential effects of relationship quality, sex, and age.

IV. METHODS

Participants

The sample contributing data for this study was taken from a larger study gathering data on social competence, friendship, and emotion. Four years of data collection are used for this study (2001-2003 and 2005). Classes used were from two different early learning centers. Both centers are managed by a state university in the Southeastern United States. One is located in a large metropolitan area within the state (four years of data), and the other is located on the campus of the managing university (two years of data). The total sample size is 365 children (females = 169 and males = 196). The total number of dyads in the sample is 1550 dyads (female dyads = 321, male dyads = 455, and mixed-sex dyads = 774). The total number of older dyads (48 to 60 months) is 834, and the total number of younger dyads (36 to 48 months) is 716.

The ethnic composition of the early learning center located within the large metropolitan area is predominantly European American with approximately 35% of ethnic minorities being served. The largest ethnic minority is African American, but Asian and Indian ethnicities are also present. The socioeconomic status (SES) of the early learning center located within the large metropolitan area is predominantly middle-class families (Vaughn et al., in press). The ethnic composition and SES of the early learning center located on the campus of the managing university is similar to the other learning center. The children are predominantly European American with approximately 35% of

children being of an ethnic minority. The majority of ethnic minority children are Asian and South Asian, with less than 10% being African American. Parents of the participating children were informed about the project from either their child's classroom teacher or the director of the early learning center. Parents signed informed consent forms agreeing for their children to participate in the study.

Measures

Affect Expression

For the purposes of this study, affect will be measured using a facial expression measure. The assumption is made that preschool children do not, routinely, display affect expressions that are not signs of internal feeling. There is no reason to think that this is not correct, and when there are correlates of affect expression, these tend to be consistent with the notion that expression = experience.

Taped Dyadic Interactions. Each child was asked to come to a room separate from the classroom to play with each of the other participating classmates. The play sessions lasted for 5-minutes each. Every time the child was brought to the room to participate in the dyadic play interaction, he/she was provided with a different toy. It was the toy that would be the focus of the child's interaction with his/her classmate. The number of times the child was seen depended on the number of classmates participating.

At the beginning of each of the dyadic interactions, the researcher would introduce the toy to the children and identify if there were any play roles for toys with clearly different play opportunities. For example, if the toy was a Mr. Potato Head, then there would be no roles identified. If the toy was a remote control car, however, then the

role of controller and assistant would be identified to the children prior to the play session. These roles were identified, but were not assigned to the children in the dyad. Therefore, the child could compete against the other for his/her desired role.

After the introduction of the toy, the researcher would signal the start of the 5-minute interaction by telling the children, "You now have 5 minutes to play." The researcher would stay in the room with the children during the interaction and controlled a video camera in an adjacent room that taped the interactions. The video camera's angle was fixed so that a child could move outside of the camera's view. After the play session, the children were returned to their room.

Sociometrics

A popular method for measuring friendship is the use of sociometric measures in which children identify peers that they do or do not like. The reciprocity of these friendships or non-friendships can be ascertained using the same sociometric measures (Rubin et al., 2005). Children completed sociometric tasks as part of the larger project. The sociometric tasks were administered by trained assistants who were not involved with any classroom observation data collection. The sociometric tasks were usually administered within two weeks before or after classroom observations.

The sociometric tasks used photographs of each child in the classroom. The pictures were of each child's head and torso. Before administering each of the sociometric tasks, care was taken to ensure that each child knew the names of his/her classmates. The tasks were usually administered in the following order: rating scale test, nominations task, and paired-comparisons task. The order of the first two tasks was not

invariant, but the paired-comparisons task was always last. Each task was completed in a quiet area outside of the child's classroom. At the end of each task, the child received a sticker as a reward.

Nominations Task. The nominations task used was a positive/negative nominations picture-sociometric (McCandless & Marshall, 1957). The children provided both positive and negative nominations in this task. Each child was shown a randomly-mixed arrangement of the photographs of his/her classmates. From this arrangement, each child chose three classmates that he/she especially liked and three classmates that he/she especially did not like. (These nominations were the ones of interest to this study.) After the child's three positive and three negative choices had been recorded, the child continued to nominate peers that he/she liked until all the classmates were nominated.

Paired-Comparisons Task. A paired-comparisons picture-sociometric task was used (Vaughn & Waters, 1981). In this task, each child viewed pairs of children on a laptop computer screen. The amount of pairs shown to each child was calculated by $N*(N-1)/2$, where N was equal to the amount of children in the classroom. For each pair, the child was asked, "Which of these two children do you especially like?" This task did have a tendency to be time consuming and children occasionally got tired of participating. The assistant administering the task would gauge each child's interest level and would stop the session if the child appeared to be too distracted. The majority of children were able to complete the task in one session, but none took longer than two 15- to 20-minute sessions. This study is only interested in the scores each child gave his/her classmates.

Ratings. An Asher-type rating scale sociometric task was used (Asher, Singleton, Tinsley & Hymel, 1979). Each child was presented with his/her classmates photographs and told to sort the photographs into one of three containers: classmates with whom the child liked to play with a lot (score of 3), classmates with whom the child sort-of liked to play with (score of 2), and classmates with whom the child did not like to play with at all (score of 1). Prior to administering the above rating scale task, each child was pre-trained on the meaning of the containers using food items (i.e., pancakes with syrup, a sandwich, cooked mushrooms, etc). This was in accord with the process of Asher et al. (1979). The containers were also marked with a schematic face to ensure that each child understood the meaning of the choice/placement of each classmate. This study is only interested in using the rating scores each child gave his/her classmates.

Internal Characteristics

As part of the larger study, teachers rated children's social behavior, social engagement tactics, and temperament/personality using items from a variety of widely used instruments [*Child Characteristics Questionnaire*, CCQ, an age-appropriate extension of the *Infant Characteristics Questionnaire*, 32 items (Bates, Freeland, & Lounsbury, 1979); *Social Competence and Behavior Evaluation Scale-Short Form*, SCBE, 30 items (LaFreniere & Dumas, 1996); *Interpersonal Competence Scale*, ICS, 18 items (Cairns, Leung, Gest, & Cairns, 1995); *Teacher Rating of Social Skills*, TRSS, 17 items (Dodge & Somberg, 1987); *Social Behavior Scale*, SBS, 7 item aggressive engagement list (Cairns et al., 1995)]. Both classroom teachers completed ratings for each child, and each item's scores were averaged.

A study by Vaughn et al. (in press) re-dimensioned the set of items from the instruments used. The items for each instrument were standardized to reduce any effects resulting from the different scales used in the original versions of the instruments. In addition, the values of redundant items (items with similar content-domains; i.e., an item that refers to getting into fights with peers appears in the TRSS, ICS, & SBS) appearing in different instruments were averaged which reduced the total number of items by nineteen. The final item set consisted of 86 items and was dimensionalized using principal axis factoring with an oblique rotation. This resulted in a 15-factor solution. Two factors were dropped from subsequent analyses because one had a significant loading for only one item, and the other was composed of two items with loadings $< .40$ (see Hair, Anderson, Tatham, & Black, 1995 and Tabachnick & Fidell, 2001 for arguments favoring dropping factors with such loadings). All items with factor pattern loadings $> .39$ were unit-weighted in order to derive scores for each of the 13 remaining factors. The factors were given the following labels: adaptable, peer acceptance, positive mood, social cognition, withdrawn, social awareness, academic skills, desire for adult contact, negative emotionality, aggressive/coercive style, defiant, resistance to control, and regularity. Eight of these factors refer to temperament/personality-like attributes and/or social skills that might influence the affect expressed in dyadic interactions (i.e., peer acceptance, positive mood, social cognition, withdrawn, social awareness, negative emotionality, aggressive/coercive style, and defiant) and these were retained for further analysis.

Procedure

Dyadic Play Interactions

Children participated in dyadic play interactions as part of the project. The dyadic interactions took place as described above in the description of the measure. Children were brought to a separate room, introduced to the toy and roles, if any. The children were allowed to play freely for 5 minutes, and the researcher did not interact with the children unless the child initiated the interaction. If this occurred, then the researcher tried to keep the interaction to a minimum. After each 5-minute interaction, the children received a sticker as a reward. It is important to note that not all possible dyads were seen due to absences or a child declining to play with another classmate.

Coding of Dyadic Play Interactions

The coding of the dyadic play interactions was done as part of the project. Each of the dyadic play interactions was videotaped so that they could be coded for affect expression later. The taped interactions lasted 5-minutes and were scored every 15-sec. (20 intervals total for a 5-minute interaction). During the intervals, each child was scored as displaying positive, negative, or neutral affect. Occasionally, because of the fixed camera angle during recording, a child would be off-screen for a period of time. If this child was off-screen for more than half of the interval (approximately 8 seconds) and did not display any affect during the portion of the interval for which he or she was on camera, then the child was considered unscorable for that interval.

Tapes were coded by teams of two undergraduate or graduate assistants with each coder watching one child per dyad. The coders were not involved in any of the classroom

data collection and had no other knowledge of the children. Undergraduate and graduate students who coded the tapes were trained in the coding system using a set of tapes not assigned to them. Within rater-pairs, the raters were trained to an agreement level of 85% or higher for the occurrence of positive or negative affect. Each team coded a subset of the dyadic interactions. Approximately 25% of the tapes were coded by two or more teams. The teams were unaware of which tapes within their subset were also being coded by another team. Rater agreement scores during the course of coding ranged from .50 to .80, with a median of .69, across different rater pairings (using the kappa statistic). (Note that kappa statistics between .61 and .80 are interpreted as substantial agreement between raters.) After the coding had been completed, total scores for the dyad (total dyadic expressive behavior) were created for positive and negative affect.

Friendship Pairings

The three sociometric tasks were used to create relationship quality pairs. Five relationship quality types were defined: non-reciprocated like, reciprocated like, non-reciprocated dislike, reciprocated dislike, and no-choice. In order to create these pairings, data from the three sociometric tasks were evaluated simultaneously.

Relationship quality categories were derived on the basis of children's mutual or unilateral sociometric choices and ratings. Briefly, children in the top 20% of a given child's nomination ranking or paired comparison distribution (usually 3 or 4 children, depending on class size) who also received a rating score of "2" or "3" were identified as a "like" dyad. When both members of a dyad named each other by these criteria, they were classified as having a "reciprocated like" relationship. If only one child ranked the

other in the top of his/her nomination ranking or paired comparison distribution and gave the child a rating score of “2” or “3,” then that dyad was classified as having a “non-reciprocated like” relationship. The process was similar for identifying the “dislike” dyads. Children in the bottom 20% of a given child’s nomination ranking or paired comparison distribution (usually 3 or 4 children, depending on class size) who also received a rating score of “1” were identified as a “dislike” dyad. When both members of a dyad named each other by these criteria, they were classified as having a “reciprocated dislike” relationship. If only one child ranked the other in the bottom of his/her nomination ranking or paired comparison distribution and gave the child a rating score of “1,” then the dyad was classified as having a “non-reciprocated dislike” relationship. If neither child identified the other as being part of the top or bottom 20% of his/her nomination ranking or paired comparison distribution, then the dyad was classified as a “no-choice/control” dyad.

The created relationship quality dyads were then compared to the pairs for which dyadic play data was available. If one of the dyadic play pairs had been identified as one of the relationship quality dyads, then the pair received that relationship quality label. If the dyadic play pair had not been identified as one of the relationship quality pairs, then the pair was labeled as a control dyads (not chosen by either child). During this coding process, another relationship quality group was discovered (non-reciprocated like/dislike dyads), where one child classified the classmate as non-reciprocated like, but the classmate classified the child as non-reciprocated dislike.

A total of 2358 dyads could be classified using these procedures, however, dyadic play data were available for only 1028 of these dyads and unavailable for 1330 identified dyads. There were 522 control dyads (i.e., each child did not identify the other as being one that he/she did or did not like) with dyadic play data.

Creation of Internal Characteristics Variable

The eight internal characteristics factors (peer acceptance, positive mood, social cognition, withdrawn, social awareness, negative emotionality, aggressive/coercive style, and defiant) were created using the principal axis factoring with an oblique rotation technique described in the measures section. These factors will be examined in relation to both dyadic affect expression and overall affect expression rates. If significant associations are found, then these variables will be used as covariates in the primary analyses. Table 1 includes the breakdown of items included in each factor, whether the item was reversed scored (indicated by an “R” following the item), and the item’s factor loading.

V. RESULTS

Preliminary Analyses

Descriptive analyses were conducted to determine the ranges, means, and standard deviations of the study variables for the total sample (Table 2). On average, dyads expressed 8.84 instances of positive affect and 1.11 instances of negative affect per play session. There were some dyads who did not express any positive and/or any negative affect per play session. (Note: The scores reported for all individual characteristics have been standardized using principle axis factoring described in the methods section.)

Frequencies analyses were used to describe the distribution of dyads by age, sex, and pair type. First, the dyad sex by dyad age distribution was examined (Table 3). Of the 1550 total dyads, there were more male than female dyads. The mixed-sex dyads were the most populated group with almost as many dyads as the male and female combined. Also, of the 1550 total dyads, there were more older dyads than younger dyads. When looking at the breakdown of dyads by age and sex, the older mixed-sex groups were the most populated, followed by the younger mixed-sex groups, older male groups, younger male groups, older female groups, and the younger female groups were the least populated. In addition, the 1550 dyads were broken down to determine the distribution among relationship quality categories. The control dyads were the most populated with 522 dyads. The non-reciprocated like and dislike dyads were the next most populated

with 414 non-reciprocated like dyads and 251 non-reciprocated dislike dyads. There were 201 reciprocated like dyads and 119 non-reciprocated like/dislike dyads. The least populated group was the reciprocated dislike dyads with only 43 dyads falling into this category.

Correlations were also conducted for several of the study variables. The first intraclass correlation examined the relationship between individual characteristics (Table 4; using a *df* of 1000). The 28 significant correlations, after applying Bonferroni protection, ranged from -.11 to .19. Bonferroni protection was used to protect the alpha level because the variables may have a common source of covariation that is not due to something intrinsic in the measures. In this case, the same teachers did all of the ratings, and the scales may be correlated because they come from the same source (teacher). While these correlations are significant, many are small. These correlations may be significant because of the large sample size and the same children's scores being used more than once and as both child 1 and child 2 in different dyads.

Next, intraclass correlations were conducted between individual characteristics (child 1 and 2) and affect (positive and negative) (Table 5; using a *df* = 1000). For positive affect, the correlations ranged from -.05 to .04, and there was one marginally significant correlation after applying Bonferroni protection. The social cognition score for child 2 was negatively correlated to positive affect. For negative affect, the correlations ranged from -.04 to .06, and the only significant correlation after applying Bonferroni protection was with child 1 aggressive/coercive. Child 1 aggressive/coercive was positively correlated to negative affect.

Since the dyads are the unit of analysis in this study, child 1 and child 2 individual characteristics were averaged for each dyad. A correlational analysis was conducted between the average dyad individual characteristics (Table 6; $df = 1548$). All average dyad individual characteristics were significantly correlated after applying Bonferroni protection, except for the correlation between defiant and withdrawn ($r = -.02$, $df = 1548$, *ns*). In addition, correlations were conducted between average dyad individual characteristics and affect (positive and negative) (Table 7). These correlations indicated that the expression of positive affect was positively associated with the dyad's peer acceptance and negatively associated with the dyad's defiance and aggression/coercion. Further, the expression of negative affect was positively associated with the dyad's defiance, aggression/coercion, and negative emotionality and negatively associated with the dyad's social awareness and social cognition.

When examining the correlations among these significant average dyad individual characteristics (see Tables 6 and 7), we noticed that the correlations were rather large. In addition, because the individual characteristics of negative emotionality and positive mood seem to be directly related to the expression of affect, both will be included in later analyses. Because of the rather large correlations among the significant average dyad individual characteristics, a cluster analysis will be performed later in hopes of grouping these separate individual characteristics.

Because the taped dyadic interactions were coded with unscorable information, the unscorable intervals need to be evaluated to ascertain whether they are associated with the expression of positive and negative affect and related to the distribution of

relationship quality. The total unscorable intervals for a random sample of 50 dyads from each relationship quality category, except for the reciprocated dislike dyads where all 43 were used, were collected. First, a correlation was conducted to examine the association between unscorable intervals and positive and negative affect. Unscorable intervals were not significantly correlated to either positive affect ($r = .06$, $df = 2$, $p = .27$) or negative affect ($r = -.05$, $df = 2$, $p = .39$). Further, an ANOVA for unscorable intervals and relationship quality was conducted to determine whether unscorable intervals interacted significantly with relationship quality. The results of the ANOVA indicated that unscorable intervals did not have an effect on relationship quality, $F(5, 293) = 1.54$, $p = .18$. Based on these results, unscorable intervals will not be used in later analyses.

As the last part of the preliminary analyses, Pearson chi-squared tests were conducted to determine whether the sample distributions were significant. The first chi-squared tests examined whether there was a significant dyad age and dyad sex distribution for each relationship quality category. The dyad age and dyad sex distributions were not significant for the reciprocated dislike dyads ($\chi^2 = .11$, $df = 2$, ns), non-reciprocated dislike dyads ($\chi^2 = 4.60$, $df = 2$, ns), control dyads ($\chi^2 = 2.89$, $df = 2$, ns), non-reciprocated like dyads ($\chi^2 = 1.69$, $df = 2$, ns), and non-reciprocated like/dislike dyads ($\chi^2 = 4.30$, $df = 2$, ns). The only significant dyad age and dyad sex distribution was found in the reciprocated like dyads ($\chi^2 = 13.10$, $df = 2$, $p \leq .001$; Table 8). The distribution showed that, on average, reciprocated like dyads were more common in the older group. Also, reciprocated like dyads were more likely for same-sex dyads in the older group and less likely in the younger group, on average. Boys may be responsible

for this trend, with younger boys being more likely to choose girls for reciprocated like dyads. The second chi-squared test examined the distribution of dyad sex among the relationship quality categories (Table 9). There was an overall effect for dyad sex in relationship quality ($\chi^2 = 123.77$, $df = 10$, $p \leq .001$). There were also significant overall effects for dyad sex in relationship quality in the older dyads ($\chi^2 = 97.53$, $df = 10$, $p < .01$) and in the younger dyads ($\chi^2 = 46.48$, $df = 10$, $p < .01$). The last chi-squared tests examined the distribution of dyad age among the relationship quality categories. The distribution was not significant overall ($\chi^2 = 4.36$, $df = 5$, ns) and for both male ($\chi^2 = 5.74$, $df = 5$, ns) and female ($\chi^2 = 8.19$, $df = 5$, ns) dyads, but was significant for mixed-sex dyads ($\chi^2 = 15.17$, $df = 5$, $p \leq .01$; Table 10). The age difference is due to the mixed-sex dyads distribution of choices with older children being more likely to dislike children of the opposite sex.

Plan of Analysis

This study used hierarchical loglinear modeling and analysis of variance (ANOVA) to test the other hypotheses. A multi-way cross-tabular analysis (hierarchical loglinear model) will be used to examine relations between sex, age, and relationship quality of the dyad. Using this analysis, we will be able to see whether there are any interactions among the categorical dimensions that are non-significant and can be deleted.

As mentioned earlier, a cluster analysis will be used to attempt to group the individual characteristics. The six significant average dyad individual characteristics, as well as positive mood, will be used.

ANOVAs will be used to test whether relationship quality, age of the dyad, and sex composition of the dyad have an effect on expressed affect in dyadic interactions. The ANOVAs test the means of each group and will provide an *F*-statistic indicating which categorical variables have a significant effect on expressed affect. Separate analyses will be conducted based on relationship quality and type of expressed affect (positive and negative). ANOVAs will be used to compare reciprocated, non-reciprocated, and no-choice groups for like and dislike categories based on the valence of affect expressed in the dyad. Further, the same types of ANOVAs will be conducted using the average dyad individual characteristics as covariates.

Heirarchical Loglinear Modeling

Heirarchical loglinear modeling was done in order to test the relationships among dyad sex, dyad age, and relationship quality. The results of this test indicate how the independent categorical variable categories are related. The results of the heirarchical loglinear model indicated that there was a significant three-way interaction among dyad sex, age, and relationship quality ($\chi^2 = 22.13$, $df = 10$, $p < .05$; see Table 11). This indicates that these three variables are complexly interrelated. ANOVAs will be conducted for each affective valence that include all three study variables.

Cluster Analysis

The first step of the cluster analysis used MANOVA to determine which study variables (dyad sex, dyad age, and relationship quality) and interactions with which the average individual characteristics were significant. The second step of the cluster analysis was to determine if, and how, the average individual characteristics were grouped.

For dyad sex, the Wilks's Lambda was significant ($F(14, 3016) = 7.83, p < .001$). This indicates that the average individual characteristics had a significant association with dyad sex. All seven characteristics were significant: defiant ($F(2, 1514) = 19.53, p < .001$), peer acceptance ($F(2, 1514) = 3.78, p < .05$), aggressive/coercive ($F(2, 1514) = 19.90, p < .001$), positive mood ($F(2, 1514) = 4.19, p < .05$), socially aware ($F(2, 1514) = 24.47, p < .001$), social cognition ($F(2, 1514) = 24.06, p < .001$), and negative emotionality ($F(2, 1514) = 4.28, p < .05$). Looking at the means (see Table 12), males scored highest on defiant, aggressive/coercive, socially aware, and negative emotionality. Females scored highest on positive mood (tied with mixed-sex) and social cognition. Mixed-sex dyads scored highest on peer acceptance and positive mood (tied with mixed-sex).

For dyad age, the Wilks's Lambda was significant ($F(7, 1508) = 11.27, p < .001$). This indicates that the average individual characteristics had a significant association with dyad age. Five of the seven characteristics were significant: defiant ($F(1, 1514) = 55.98, p < .001$), peer acceptance ($F(1, 1514) = 6.98, p < .01$), aggressive/coercive ($F(1, 1514) = 11.04, p < .001$), socially aware ($F(1, 1514) = 4.81, p < .05$), and negative emotionality ($F(1, 1514) = 11.94, p < .001$). Positive mood was marginally significant ($F(1, 1514) = 3.46, p < .10$). Looking at the means (Table 13), older dyads scored higher on peer acceptance and positive mood. Younger dyads scored higher on defiant, aggressive/coercive, socially aware, and negative emotionality.

For relationship quality, the Wilks's Lambda was significant ($F(35, 6346) = 2.91, p < .001$). This indicates that the average individual characteristics had a significant

association with relationship quality. Six of the seven characteristics were significant: defiant ($F(5, 1514) = 5.05, p < .001$), peer acceptance ($F(5, 1514) = 9.60, p < .001$), aggressive/coercive ($F(5, 1514) = 6.14, p < .001$), positive mood ($F(5, 1514) = 2.43, p < .05$), social cognition ($F(5, 1514) = 5.60, p < .001$), and negative emotionality ($F(5, 1514) = 4.69, p < .001$). Socially aware was marginally significant ($F(5, 1514) = 1.97, p < .10$). Looking at the means (Table 14), the reciprocated dislike dyads scored highest on defiant. The non-reciprocated dislike dyads scored highest on aggressive/coercive and negative emotionality. The control dyads scored highest on social awareness. The reciprocated like dyads scored highest on peer acceptance, positive mood, and social cognition.

For the interaction between dyad sex and dyad age, Wilks's Lambda was significant ($F(14, 3016) = 1.79, p < .05$), thus indicating a significant association with the average individual characteristics. Specifically, only aggressive/coercive was significant ($F(2, 1514) = 4.24, p < .05$). Negative emotionality was marginally significant ($F(2, 1514) = 2.52, p < .10$). Looking at the means (Table 15), older males scored the highest in aggressive/coercive and younger males scored the highest in negative emotionality.

For the interaction between dyad sex and relationship quality, Wilks's Lambda was significant ($F(70, 8799) = 1.32, p < .05$), thus indicating a significant association with the average individual characteristics. None of the average individual characteristics were significant, but aggressive/coercive was marginally significant ($F(10, 1514) = 1.61,$

$p < .10$). Looking at the means (Table 16), male reciprocated dislike dyads scored the highest on aggressive/coercive.

For the interaction between dyad age and relationship quality, Wilks's Lambda was not significant ($F(35, 6346) = 1.22, ns$). This was also the case for the interaction between dyad sex, dyad age, and relationship quality ($F(70, 8799) = 1.20, ns$). This indicates that there was not a significant association with the average individual characteristics and these interactions.

Because these seven individual characteristics were related to the study variables and a couple of the interactions, as well as being correlated with one another (see Table 6), hierarchical clustering was performed. This resulted in two separate clusters (see Figure 1). In the first cluster, negative emotionality, defiant, and aggressive/coercive were combined. This was renamed dyad negative characteristics. In the second cluster, peer acceptance, positive mood, social cognition, and socially aware were combined. This was renamed dyad positive characteristics. It is these two clusters that were used as covariates in later analyses.

Dyad Sex, Dyad Age, and Relationship Quality on Positive Affect

A three-way ANOVA was conducted to test the associations between dyad sex, dyad age, and relationship quality with positive affect (Table 17; see Table 18 for means and standard deviations). Dyad sex and all the interaction terms were not significant. Only dyad age ($F(1, 1514) = 5.54, p < .05$) and relationship quality ($F(5, 1514) = 2.63, p < .05$) were significant.

Regarding dyad age, older dyads expressed more positive affect than younger dyads, on average. Regarding relationship quality, on average, the reciprocated like dyads expressed the most positive affect, followed by non-reciprocated like dyads, control dyads, non-reciprocated like/dislike dyads, non-reciprocated dislike dyads, and reciprocated dislike dyads expressed the least positive affect. The pattern for relationship quality appeared to be linear with like dyads expressing the most positive affect and dislike dyads expressing the least, so an ANOVA test of linearity was conducted. For positive affect, relationship quality was not linear ($F(1, 1544) = 17.70, p < .001$).

Dyad Sex, Dyad Age, and Relationship Quality on Negative Affect

A three-way ANOVA was conducted to test the associations between dyad sex, dyad age, and relationship quality with negative affect (Table 19; see Table 20 for means and standard deviations). Dyad age and the interactions between dyad age and relationship quality and dyad sex and relationship quality were not significant. Only dyad sex ($F(2, 1514) = 4.29, p < .05$), relationship quality ($F(5, 1514) = 2.94, p < .05$), and the interaction between dyad age and sex were significant ($F(2, 1514) = 4.80, p < .01$). The three-way interaction between dyad age, dyad sex, and relationship quality was marginally significant ($F(10, 1514) = 1.70, p < .10$).

Regarding dyad sex, on average, male dyads expressed the most negative affect, followed by mixed-sex dyads, and female dyads expressed the least negative affect. Regarding relationship quality, on average, reciprocated dislike dyads expressed the most negative affect, followed by non-reciprocated like/dislike dyads, non-reciprocated dislike dyads, control dyads, reciprocated like dyads, and non-reciprocated like dyads expressed

the least negative affect. Just as with positive affect, there appeared to be a pattern of relationship quality regarding the expression of negative affect with dislike dyads expressing the most negative affect and like dyads expressing the least. An ANOVA test of linearity was conducted. For negative affect, relationship quality was not linear ($F(1, 1544) = 10.44, p < .001$).

Regarding the dyad sex and dyad age interaction, on average, older male dyads expressed the most negative affect, followed by younger male dyads, older mixed-sex dyads, younger mixed-sex dyads, older female dyads, and younger female dyads expressed the least negative affect. In other words, older dyads expressed more negative affect than younger dyads for each dyad sex category with the same dyad sex pattern as mentioned earlier (male dyads expressing the most and female dyads expressing the least).

Regarding the marginally significant three-way interaction, there was a different dyad sex and dyad age distribution for each relationship quality category. For reciprocated dislike dyads, on average, older male dyads expressed the most negative affect, followed by younger female dyads, older female dyads, older mixed-sex dyads, and younger male and younger mixed-sex dyads were tied for expressing the least negative affect. For non-reciprocated dislike dyads, on average, younger female dyads expressed the most negative affect, followed by older male dyads, younger male dyads, older mixed-sex dyads, younger mixed-sex dyads, and older female dyads expressed the least negative affect. For control dyads, on average, younger male dyads expressed the most negative affect, followed by younger mixed-sex dyads, older male dyads, younger

mixed-sex dyads, older female dyads, and younger female dyads expressed the least negative affect. For non-reciprocated like dyads, on average, older male dyads expressed the most negative affect, followed by younger male dyads, older female dyads, older mixed-sex dyads, younger female dyads, and younger mixed-sex dyads expressed the least negative affect. For reciprocated like dyads, on average, older male dyads expressed the most negative affect, followed by older female dyads, younger mixed-sex dyads, younger male dyads, older mixed-sex dyads, and younger female dyads expressed the least negative affect. For non-reciprocated like/dislike dyads, on average, older male dyads expressed the most negative affect, followed by older mixed-sex dyads, older female dyads, younger mixed-sex dyads, younger male dyads, and younger female dyads expressed the least negative affect.

Dyad Sex, Dyad Age, and Relationship Quality on Positive Affect Controlling for Individual Characteristics

A three-way ANOVA was conducted to examine the associations between dyad sex, dyad age, and relationship quality with positive affect. For this ANOVA, the two individual characteristic clusters (dyad positive and dyad negative) were added as covariates (Table 21; see Table 18 for means and standard deviations). Dyad sex and all the interactions were not significant. Dyad age ($F(1, 1512) = 4.76, p < .05$) and relationship quality ($F(5, 1512) = 2.41, p < .05$) were significant. Regarding dyad age, older dyads expressed more positive affect than younger dyads, on average. Regarding relationship quality, on average, the reciprocated like dyads expressed the most positive affect, followed by non-reciprocated like dyads, control dyads, non-reciprocated

like/dislike dyads, non-reciprocated dislike dyad, and reciprocated dislike dyads expressed the least positive affect. For the individual characteristics, neither positive characteristics nor negative characteristics were significant.

Dyad Sex, Dyad Age, and Relationship Quality on Negative Affect Controlling for Individual Characteristics

A three-way ANOVA was conducted to examine the associations between dyad sex, dyad age, and relationship quality with negative affect. For this ANOVA, the two individual characteristic clusters were added as covariates (Table 22; see Table 20 for means and standard deviations). The interactions between dyad sex and relationship quality and dyad age and relationship quality were not significant. Dyad age ($F(1, 1512) = 5.79, p < .05$) and the interaction between dyad sex and dyad age ($F(2, 1512) = 4.53, p < .05$) were significant.

Regarding dyad age, older dyads expressed more negative affect than younger dyads, on average. Regarding the interaction between dyad age and dyad sex, older male dyads expressed the most negative affect, followed by younger male dyads, older mixed-sex dyads, younger mixed-sex dyads, older female dyads, and younger female dyads expressed the least negative affect, on average.

Dyad sex ($F(2, 1512) = 2.95, p < .10$), relationship quality ($F(5, 1512) = 2.05, p < .10$), and the three-way interaction ($F(10, 1512) = 1.72, p < .10$) were all marginally significant. For dyad sex, on average, male dyads expressed the most negative affect, followed by mixed-sex dyads, and female dyads expressed the least negative affect. For relationship quality, on average, reciprocated dislike dyads expressed the most negative

affect, followed by non-reciprocated like/dislike dyads, non-reciprocated dislike dyads, control dyads, reciprocated like dyads, and non-reciprocated like dyads expressed the least negative affect. For the three-way interaction, the same different dyad sex and dyad age distribution for each relationship quality category was seen in this ANOVA as was seen in the previous negative affect ANOVA (see *Dyad Sex, Dyad Age, and Relationship Quality on Negative Affect* section for a detailed description of the distributions.) Regarding the individual characteristics, only dyad negative characteristics were significantly associated with the expression of negative affect ($F(1, 1512) = 29.18, p < .001$).

VI. DISCUSSION

The purpose of this study was to examine the effects of dyad sex, dyad age, and relationship quality on the expression of both positive and negative affect. Hypotheses were tested with a large sample of dyads from two separate early learning centers. This study is situated within the context of positive psychology, where the experience of chronic mild, positive affect is associated with a wide variety of positive life outcomes (Fredrickson, 1998). More specifically, this study is situated within the context of peer relationships and how these relationships and the affect experienced within them affect child development. While this study does not specifically examine the effects of affect on positive life outcomes, it illustrates the importance of relationship quality on expressed affect. In turn, relationships and the affect experienced within them may affect these positive life outcomes. Further studies need to be conducted to verify this assumption.

Preschool children spend a significant amount of time interacting with each other. From these interactions, children are able to develop certain types of relationships with their peers (Rubin et al., 2005). Mainly, children are able to distinguish among peers they enjoy playing with (liked peers), peers they do not enjoying playing with (disliked peers), and peers they have no opinion of either way (control peers). Further, these relationship categories (or friendship status) can either be reciprocated or non-reciprocated (Rubin et al., 2005). Within these relationships, children are presented with a source of affect experience. This further illustrates the importance of peer relationships (Ladd et al., 1996;

McElwain & Volling, 2005; Rubin et al., 2005) and affect experiences (Deci et al., 1991; Fredrickson, 1998; Greene & Noice, 1988; Isen, 1987; Isen & Daubman, 1984; Renninger et al., 1992) on child development. The specific relationship between these two arenas (peer relationships/friendship status and affect experience) has yet to be investigated for children in preschool. In particular, differences between affect experiences in friendships versus other types of relationships (dislike or neutral relationships) have yet to be examined. By focusing on how the quality of the relationship between two peers influences the amount and type of affect expressed, we will better understand child development and how certain relationships may improve or worsen development.

As expected, relationship quality was associated with the amount and type of affect expressed in dyadic interactions. The effect of relationship quality was significant in all analyses except the negative affect analysis in which the individual characteristics were controlled. These findings are similar to friendship studies that have found that friends interact differently with one another than with non-friends (Charlesworth & LaFreniere, 1983; Doyle, 1982; Parker & Gottman, 1989). Specifically, friends express more positive affect in interactions than non-friends.

Main Effects: Dyad Sex, Dyad Age, and Relationship Quality on Expressed Affect

Analysis of variance analyses revealed some support for the hypotheses regarding dyad sex, dyad age, and relationship quality. For each variable, we will discuss how this study's results relate to previous research.

Dyad Sex. For this study, there were almost as many mixed-sex dyads as both male and female dyads combined. Regarding the distribution among relationship quality categories, there were 298 male dyads, 245 female dyads, and 485 mixed-sex dyads. Percentage wise, for male dyads 65.49% of dyads were in the “choice” categories, for female dyads 76.32% of dyads were in the “choice” categories, and for mixed-sex dyads 62.74% of dyads were in the “choice” categories. This is consistent with the hypothesis that same-sex dyads were more likely to be classified in the “choice” categories than mixed-sex dyads.

Dyad sex was only significant for negative affect (significant when not controlling for individual characteristics and marginally significant when controlling for individual characteristics). Specifically, male dyads expressed the most negative affect, followed by mixed-sex dyads, and female dyads expressed the least negative affect. This finding is partly consistent with the study’s hypothesis that same-sex dyads would express more negative affect than mixed-sex dyads. Male dyads did express more negative affect than mixed-sex dyads, but female dyads did not. This may suggest that the negative affect expression of males is responsible for this dyad sex effect. For example, if male dyads expressed the most negative affect, it would be expected that any dyad including a male (mixed-sex dyads) would have higher levels of negative affect than any dyad not including a male (female dyads). In line with this conjecture, previous research (Hanson, 1995) has found that males express more negative affect than females.

This study also hypothesized that dyad sex would be significant for positive affect, but that was not the case in these analyses. This suggests that a dyad being same-

sex or mixed-sex had no bearing on whether the dyad expressed more or less positive affect. We found this to be an interesting finding because it is widely thought that females express more positive emotion than males (Hanson, 1995). In our study of preschoolers, however, this was not the case. Perhaps these children are too young to have been socialized regarding gender differences with the expression of positive affect.

Dyad Age. For this study, there were more older dyads than younger dyads. This study, however, was mainly concerned with the effect dyad age had on the expression of affect and not the distribution of age among the relationship quality categories. It was expected that older dyads would express more positive, and potentially more negative, affect than younger dyads, because research has found that affect expression increases with age (Vaughn et al., 2001).

Dyad age was significant for positive affect (both analyses) and negative affect (only when controlling for individual characteristics). For both affective valences, older dyads expressed more affect than younger dyads. This finding is consistent with both previous research (Vaughn et al., 2001) and this study's hypotheses.

Relationship Quality. For this study, there were six different relationship quality categories defined: reciprocated dislike, non-reciprocated dislike, control, non-reciprocated like/dislike, non-reciprocated like, and reciprocated like. Regarding the distribution of dyads, the most populated group was the control dyads. Also, the non-reciprocated relationship quality dyads were more populated than the reciprocated relationship quality dyads, with the exception of the non-reciprocated like/dislike dyads. This is probably because the non-reciprocated like/dislike dyads were an unanticipated

relationship quality category. The distribution of dyads was consistent with this study's hypotheses. Moreover, the distribution of dyads was in agreement with previous research. Particularly, research indicates that over the first three years of life, peer interactions become increasingly complex and that these interactions lead to the development of possible friendships (Howes & Matheson, 1992; Ross & Conant, 1992; Rubin et al., 2005; Verba, 1994). In addition, once friendships have been formed, they are relatively stable (Gershman & Hayes, 1983; Howes, 1988; Rubin et al., 2005). The fact that each relationship quality category in this study was populated indicates that children are able to identify peers who they do like (i.e., friends) or do not like (i.e., acquaintances or disliked peers) based on their previous interactions. The below description of the associations of relationship quality with expressed affect may provide support for the claim that friendships are relatively stable. If relationship quality has a significant association with expressed affect, then the relationships that were identified during sociometric nominations were more than likely stable, since the taped dyadic interactions were completed at a different time than the sociometric nominations.

This study was mainly concerned about the association between relationship quality and the expression of both positive and negative affect. It was found that relationship quality was either significant or marginally significant for both positive and negative affect. Regarding positive affect, on average, the reciprocated like dyads expressed the most and regarding negative affect, the reciprocated dislike dyads expressed the most. This was consistent with this study's hypotheses and in accordance with previous literature for both positive and negative affect.

For positive affect, it has been reported that friends engage in more positive behaviors with one another, including positive affect (Hartup, 1996; Sebanc, 2003). In addition, Newcomb and Bagwell's (1995) meta-analysis found that friends (reciprocated and non-reciprocated) engage in more positive affect than non-friends (acquaintances, strangers, and disliked peers). Further, Newcomb and Bagwell (1995) found that reciprocated friends engaged in more positive affect than non-reciprocated friends. This was also supported by this study. The reciprocated like dyads expressed more positive affect than the non-reciprocated like dyads.

For negative affect, it has been reported that non-friends (acquaintances, strangers, and disliked peers) engage in more dominant behaviors during interactions (e.g., competition, aggression, non-mutual commands, and submission) than friends (reciprocated and non-reciprocated; Newcomb & Bagwell, 1995). In addition, there was an interesting finding for relationship quality and negative affect. The reciprocated like dyads expressed more negative affect than the non-reciprocated like dyads, on average. This was not entirely surprising though. Research does state that friends engage in more hostility and conflict with one another than with non-friends and neutral counterparts (Hartup & Laursen, 1995; Hartup et al., 1998; Simpkins & Parke, 2002). This finding could potentially be attributed to the fact that children spend more time interacting with their friends than non-friends (Rubin et al., 2005). For example, the reciprocated like dyads may interact with one another more in the classroom than the non-reciprocated like dyads. When the frequency of interactions increases, the possibility of expressing affect (both positive and negative) increases as well.

Interaction Effects: Dyad Sex, Dyad Age, and Relationship Quality on Expressed Affect

Analysis of variance analyses indicated which interaction effects were significant. This study did not have any hypotheses regarding interaction effects, and there was no literature regarding the various interactions. Only the significant interactions will be discussed below. Interestingly, interactions were only significant for negative affect.

Dyad Sex and Dyad Age. For negative affect, the dyad sex and dyad age interaction was significant. Therefore, the effects of dyad age on negative affect did significantly differ for the various dyad sex categories. This study found that older male, female, and mixed-sex dyads expressed more negative affect than the younger male, female, and mixed-sex dyads, on average. While there was no previous research regarding this interaction, this study's findings do make sense. If affect expression increases with age (Vaughn et al., 2001), older dyads would express more negative affect than younger dyads. Also, males typically express more negative affect than females (Hanson, 1995). Thus, the older male dyads would express the most negative affect, followed by older mixed-sex dyads, and older female dyads. This same pattern would be found for younger dyads with the younger male dyads expressing less negative affect than the older female dyads but more negative affect than the younger mixed-sex dyads.

Dyad Sex, Dyad Age, and Relationship Quality. The three-way interaction was marginally significant for the expression of negative affect. The effect of relationship quality on negative affect differed for the varying dyad sex and dyad age categories. There does not seem to be an overall pattern for the three-way interaction. Also, because the variables are not continuous, it is difficult to interpret the three-way interaction. For

some relationship quality categories, there did not seem to be a logical pattern regarding the distribution. For others, there seemed to be a pattern where older dyads expressed more negative affect than younger dyads, and male and mixed-sex dyads expressed more negative affect than female dyads. There was no literature with which to compare this study's marginal three-way interaction. But for the relationship qualities where there did seem to be a pattern, it could be explained by the findings for the dyad sex and dyad age interaction. For the relationship qualities where there did not seem to be a pattern, perhaps this could be attributed to the small subsample for that group. For example, with the reciprocated dislike dyads ($n = 43$) older male dyads expressed the most negative affect and were followed by younger female dyads and older female dyads. This is just speculation and future studies should examine this three-way interaction in more detail.

Alternative Interpretation: What about the Effects of Individual Characteristics?

When it comes to child development, nothing is straight forward. There are a variety of variables that can have a direct effect on development or effect development through interaction with another variable. Regarding the expression of affect and relationship quality, there are internal characteristics that may influence relationships with peers and affect expression. In this study, the significant average dyad individual characteristics, as well as the average dyad individual characteristics that were related to affect expression, were clustered into two separate individual characteristics: dyad positive and dyad negative. Both of these composite characteristics were added as covariates for positive and negative affect analyses.

Only the dyad negative characteristic was found to be significantly associated with the expression of affect in the negative affect analysis. In other words, dyads that were characterized as being more negative (more likely to be defiant, aggressive/coercive, and emotionally negative) were positively associated with the expression of more negative affect, on average.

Further, when adding the positive and negative characteristics as covariates, the effects of some of the study variables were altered. For example, dyad sex and relationship quality went from being significant to marginally significant. Also, dyad age gained significance with the addition of the individual characteristics. (Note: The interaction between dyad sex and dyad age remained significant and the three-way interaction remained marginally significant.) These findings suggest that the association between dyad sex and relationship quality with negative affect, as well as the newly significant effect of dyad age, may be partly attributed to the effects of the individual characteristics, in particular, the negative characteristic. This may be explained by the variables that comprise the negative characteristic: defiant, aggressive/coercive, and negative emotionality. These three characteristics are related to negative behaviors and affect expression (this study's dependent variable). The variables that comprise the positive characteristic on the other hand (positive mood, peer acceptance, social cognition, and social awareness), are only partly related to relationship quality and affect expression. Therefore, one might expect the negative characteristic to have a stronger association with expressed affect than the positive characteristic.

Based on the results from the analyses controlling for individual characteristics, this study found partial support for its hypotheses. It was expected that individual characteristics would be significantly associated with both types of affect. This study found that individual characteristics were associated with the expression of negative affect but not positive affect. With respect to previous research, the negative characteristic would be expected to influence affect expression. Temperamental characteristics (Rubin et al., 2005) and social skills (Howes, 1988; Parker & Asher, 1993; Snyder et al., 1997) play a dominant role in peer interactions. Specifically, the child's negative emotional reactivity and difficult-to-regulate or –control affect has been found to influence peer interactions (Rubin et al., 2005). Also, being physically aggressive (Snyder et al., 1997) might influence peer interactions. In addition to influencing peer interactions, these internal characteristics may influence the expression of affect (Saarni et al., 2006). For negative characteristics, children who are rated high by their teachers as being aggressive/coercive may be more inclined to express negative affect.

Moreover, it was expected that the individual characteristics would not alter the associations between the study variables and expressed affect. This was also only partially supported. The associations between the study variables and positive affect were not altered, but several of the associations between the study variables and negative affect were altered. Significance, however, was never lost, it just became marginal. This lends support to this study's findings that relationship quality is significantly associated with the expression of both positive and negative affect, even when controlling for positive and negative individual characteristics.

Limitations and Future Directions

The results of the current study contribute to our knowledge of child development. In particular, the current study sheds light on the importance of relationship quality on the expression of affect in the dyadic interactions of preschool-aged children, something research has yet to examine. There were several limitations of this study, however.

First, the current study's sample was limited in diversity. While the sample did include approximately 35% of ethnic minorities, the majority of children were Caucasian and from middle-class families. Therefore, these findings cannot be generalized across various economic backgrounds. Future research should consider how relationship quality influences affect expression for children from a variety of socioeconomic statuses. Also, future research might want to examine a larger and more diverse sample of ethnic minorities to determine whether the effects of relationship quality on expressed affect differ across these various ethnic and racial groups.

Second, this study was not experimental, so we cannot conclude that relationship quality caused the expression of affect. We can determine that there was an association, but not the direction. In the current study, the association between relationship quality and expressed affect could be interpreted in one of two ways. It could be the relationship quality that influences the type and amount of expressed affect or the amount and type of affect an individual expresses may influence the relationship quality. For example, it could be that friends express more positive affect and non-friends express more negative affect. On the other hand, it could be that children who express more positive affect are

more likely to have friendships, and children who express more negative affect are more likely to be disliked by their peers. Future research should consider using longitudinal studies to determine the directionality and change in relationship quality and expressed affect.

Third, the analyses used for the current study operate under the assumption that the sample is independent. A study by Vaughn et al. (2001) found that individual's friendships are only modestly correlated with one another. Therefore, the pairs were treated as independent units. However, the sample was not entirely independent. A child's individual characteristic scores were used for as many dyads as which he/she was a part. Also the child could have been the first or second child in a dyad, so the child's individual characteristic scores were used as child 1 and child 2. The current study tried to minimize this by averaging the two children in each dyad's individual characteristic scores. Also, the dyad's expressed affect was not totally independent. Some affect may have been specific to the dyad's relationship quality and some may have been specific to the child's personality. Future research should consider using methods to ensure independence.

Fourth, other contexts that might influence relationship quality or expressed affect were not taken into account for the current study. Perhaps the child's family or classroom environment or other individual characteristics influenced the association between relationship quality and expressed affect. For example, attachment security is associated with a child's prosocial responses (Burns, 2003). Specifically, attachment security

promotes prosocial responses associated with the expression of positive affect. Future research should take these additional contexts into account.

Last, this study was unable to explain some of the findings. There was a noticeable lack of previous studies that have examined the association between relationship quality and expressed affect. Specifically, this study could not find any literature discussing interaction effects. There were a couple interaction effects that were significant in this study, some could be related to the previous literature, but the three-way interaction between dyad sex, dyad age, and relationship quality was difficult to interpret. The fact that the variables were all categorical versus continuous also made interpretation of the interactions difficult. Also, the three-way interaction was only found for negative affect. (It is important to note that the three-way interaction was only marginally significant.) Future research might want to look at how these variables interact with one another and why the interaction was only seen for negative affect.

Further, this study was situated within the context of positive psychology, which states that the chronic experience of mild, positive affect is associated with a wide variety of positive life outcomes (Lyubomirsky et al., 2005), such as supporting mastery of existing physical, intellectual, and social skills, as well as providing opportunities to add new skills (Fredrickson, 1998). This study did not examine how the experience of positive affect was associated with positive life outcomes. Moreover, the positive psychology research does not contain samples of preschool-aged children. If future research is conducted that studies the effects of experiencing positive affect on life outcomes (i.e., school adjustment, social competence, emotional competence, etc.) for

preschool-aged children, then that would significantly contribute to the positive psychology literature.

Conclusions and Implications

Despite these limitations, there were strengths to this study that both contribute to and advance the current literature on child development, specifically by examining the context of peer relationships and how the quality of the relationship may influence the experience and expression of affect. The current study had a relatively large sample and examined the associations of sex, age, and personality in addition to relationship quality with expressed affect. The study's design allowed for the identification of all possible relationship types, even the unanticipated non-reciprocated like/dislike dyads. The current study found that these unanticipated dyads were similar to control and non-reciprocated dislike dyads. In addition, unlike several of the other relationship quality dyads, there was no overall pattern. For instance, with some dyad sex by dyad age groups, the non-reciprocated like/dislike dyads expressed the most negative affect, while for other dyad sex by dyad age groups, they expressed the least negative affect (see Table 20 for an example). Previous research has not studied the affect expression of dyads where one child likes the other and the other child dislikes the one child.

Results from this study indicate that dyad sex, dyad age, relationship quality, a couple interactions between the key variables, and the negative individual characteristic are associated with the expression of either or both positive and negative affect. Dyad sex was only significant for the expression of negative affect with male dyads expressing the most negative affect and female dyads expressing the least negative affect. Dyad age was

significant for both positive and negative affect with older dyads expressing more affect than younger dyads. Relationship quality was significant for both positive and negative affect. There was a pattern of relationship quality for each affective valence. For positive affect, like dyads expressed the most positive affect and dislike dyads expressed the least positive affect. For negative affect, dislike dyads expressed the most negative affect and like dyads expressed the least negative affect. The interactions that were significant were dyad sex and dyad age and dyad sex, dyad age, and relationship quality. This indicates that the variables were interrelated. For dyad sex and dyad age, there was a similar pattern for each age group. In older dyads, the male dyads expressed the most negative affect and female expressed the least negative affect, but in younger dyads, the male and mixed-sex dyads expressed the most negative affect and female dyads expressed the least. The three-way interaction was very complex and there did not seem to be a coherent explanation for the interaction.

Regarding the average dyad individual characteristics, we were able to create two composite characteristics: one positive and one negative. Only the negative characteristic was significantly associated with the expression of negative affect. When the individual characteristics were controlled for, the effects of some of the significant variables were altered.

Overall, dyad sex, dyad age, and relationship quality had an effect on the expression of affect. The negative individual characteristic also had an effect on the expression of negative affect. These individual characteristics were partly responsible for

the associations between dyad sex, dyad age, and relationship quality with the expression of negative affect.

This study contributes to the literature on child development and has several practical implications. Regarding child development, the current study contributes to the literature stating that peer relationships are a significant contributor to development. This study found that the quality of the peer relationship also has an impact on expressed affect, which positive psychology suggests influences development. Regarding the practical implications, preschool children are given a multitude of instances in which they interact with their peers. In these instances, it is likely that reciprocated like dyads have increased time spent playing together. On the other side, children who dislike each other will probably not choose to play with one another. In other words, the frequency of interaction between the like dyads will probably be much more frequent than the interactions between the dislike dyads. Therefore, children are at an increased likelihood to experience positive affect over negative affect.

An additional practical implication pertains to the influence of individual characteristics. Since this study found that individual characteristics do impact the amount of affect expressed, then not all individuals are as likely to express positive or negative affect. Therefore, it may be beneficial to introduce some type of social skills training. This could help foster interactions for children who cannot get them readily. If the children are more socially competent, then they may experience more positive interactions with their peers, thus leading to more friendships and the increased experience of positive affect and its benefits.

REFERENCES

- Asher, S. R., Singleton, L. C., Tinsley, B. R., & Hymel, S. (1979). A reliable sociometric measure for preschool children. *Developmental Psychology, 15*, 443-444.
- Azmitia, M., & Montgomery, R. (1993). Friendship, transactive dialogues, and the development of scientific reasoning. *Social Development, 2*, 202-221.
- Basso, M. R., Schefft, B. K., Ris, M. D., & Dember, W. N. (1996). Mood and global-local visual processing. *Journal of the International Neuropsychological Society, 2*, 249-255.
- Bates, J. E., Freeland, C. A., & Lounsbury, M. L. (1979). Measurement of infant difficulty. *Child Development, 50*, 794-803.
- Berndt, T. J. (2004). Children's friendships: Shifts over a half-century in perspectives on their development and their effects. *Merrill-Palmer Quarterly, 50*, 206-223.
- Boulton, M. J., & Smith, P. K. (1992). The social nature of play fighting and play chasing: Mechanisms and strategies underlying cooperation and compromise. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 429-444). New York: Oxford University Press.
- Brendgen, M., Little, T. D., & Krappmann, L. (2000). Rejected children and their friends: A shared evaluation of friendship quality?. *Merrill-Palmer Quarterly, 46*, 45-70.

- Buhrmester, D., & Furman, W. (1986). The changing functions of friends in childhood: A neo-Sullivanian perspective. In V. J. Derlega & B. A. Winstead (Eds.), *Friendship and social interaction* (pp. 41-62). New York: Springer-Verlag.
- Bukowski, W. M., & Hoza, B. (1989). Popularity and friendship: Issues in theory, measurement, and outcome. In T. Berndt & G. Ladd (Eds.), *Peer relationships in child development* (pp. 15-45). New York: Wiley.
- Burns, S. R. (2003). Attachment security as a predictor of preschoolers' prosocial responses to mothers and peers. *Dissertation Abstracts International*, 63, 6120. Abstract obtained from Dissertation Abstracts database. (AAI 3076087)
- Cabanac, M. (1971). Physiological role of pleasure. *Science*, 173, 1103-1107.
- Cacioppo, J. T., Klein, D. J., Berntson, G. G., & Hatfield, E. (1993). The psychophysiology of emotion. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotion* (pp. 119-142). New York: Guilford Press.
- Cairns, R. B., Leung, M. C., Buchanan, L., & Cairns, B. (1995). Friendships and social networks in childhood and adolescence: Fluidity, reliability, and interrelations. *Child Development*, 66, 1330-1345.
- Campos, J., Frankel, C., & Camras, L. (2004). On the nature of emotion regulation. *Child Development*, 75, 377-394.
- Camras, L., Meng, Z., Ujiie, T., Dharamsi, S., Miyake, K., Oster, H., et al. (2002). Observing emotion in infants: Facial expression, body behavior, and rater judgments of responses to an expectancy-violating event. *Emotion*, 2(2), 179-193.

- Cervantes, C., & Callanan, M. (1998). Labels and explanations in mother-child emotion talk: Age and gender differentiation. *Developmental Psychology, 34*, 88-98.
- Charlesworth, W.R., & LaFreniere, P. (1983). Dominance, friendship, and resource utilization in preschool children's groups. *Ethology and Sociobiology, 4*, 175-186.
- Deci, E. L., VaUerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *Educational Psychologist, 26*, 325-346.
- DeRivera, J., Possel, L., Verette, J. A., & Weiner, B. (1989). Distinguishing elation, gladness, and joy. *Journal of Personality and Social Psychology, 57*, 1015-1023.
- Derryberry, D., & Tucker, D. M. (1994). Motivating the focus of attention. In P. M. Neidenthal & S. Kitayama (Eds.), *The heart's eye: Emotional influences in perception and attention* (pp. 167-196). San Diego, CA: Academic Press.
- Diener, E., & Larsen, R. J. (1993). The experience of emotional well-being. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (pp. 405-415). New York: Guilford Press.
- Dodge, K. A., & Somberg, D. R. (1987). Hostile attribution biases among aggressive boys are exacerbated under conditions of threats to the self. *Child Development, 58*, 213-224.
- Dolhinow, P. J., & Bishop, N. (1970). The development of motor skills and social relationships among primates through play. In J. E Hill (Ed.), *Minnesota Symposia on Child Psychology* (Vol. 4, pp. 141-198). Minneapolis: University of Minnesota Press.

- Doyle, A. (1982). Friends, acquaintances, and strangers: The influence of familiarity and ethnolinguistic background on social interaction. In K. H. Rubin & H. S. Ross (Eds.), *Peer relations and social skills in childhood*. New York: Springer-Verlag.
- Dunn, J. (1983). Sibling relationships in early childhood. *Child Development, 54*, 787–811.
- Dunn, J. (1993). *Young children's close relationships: Beyond attachment*. Newbury Park, CA: Sage.
- Eckerman, C. O., Davis, C. C., & Didow, S. M. (1989). Toddlers' emerging ways of achieving social coordination with a peer. *Child Development, 73*, 621-635.
- Eisenberg, N., Fabes, R. A., Nyman, M., Bernzweig, J., & Pinuelas, A. (1994). The relation of emotionality and regulation to children's anger-related reactions. *Child Development, 65*, 109-128.
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion, 6*, 169-200.
- Ekman, P. (1994). Strong evidence for universals in facial expressions: A reply to Russell's mistaken critique. *Psychological Bulletin, 115*, 68-87.
- Ellsworth, P. C., & Smith, C. A. (1988). Shades of joy: Patterns of appraisal differentiating pleasant emotions. *Cognition and Emotion, 2*, 301-331.
- Field, T. M., & Walden, T. A. (1982). Production and discrimination of facial expressions by preschool children. *Child Development, 53*, 1299-1311.
- Foder, E. M., & Greenier, K. D. (1995). The power motive, self-affect, and creativity. *Journal of Research in Personality, 29*, 242-252.

- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, 2, 300-319.
- Fredrickson, B. L., & Levenson, R. W. (1998). Positive emotions speed recovery from the cardiovascular sequelae of negative emotions. *Cognition and Emotion*, 12, 191-220.
- Frijda, N. H. (1986). *The emotions: Studies in emotion and social interaction*. Cambridge: Cambridge University Press.
- Furman, W., & Bierman, K. L. (1983). Developmental changes in young children's conceptions of friendship. *Child Development*, 54, 549-556.
- Gershman, E. S., & Hayes, D. S. (1983). Differential stability of reciprocal friendships and unilateral relationship among preschool children. *Merrill-Palmer Quarterly*, 29, 169-177.
- Goldsmith, H. H., Buss, A., Plomin, R., Rothbart, M. K., Thomas, A., Chess, S., et al. (1987). What is temperament? Four approaches. *Child Development*, 58, 505-529.
- Graham, J. A., & Cohen, R. (1997). Race and sex as factors in children's sociometric ratings and friendship choices. *Social Development*, 6, 355-372.
- Greene, T. R., & Noice, H. (1988). Influence of positive affect upon creative thinking and problem solving in children. *Psychological Reports*, 63, 895-898.
- Groos, K. (1898). *The play of animals*. New York: Appleton.
- Groos, K. (1901). *The play of man*. London: Heinemann.
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1995). *Multivariate data analysis with readings*. New Jersey: Prentice-Hall, Inc.

- Hanson, J. G. (1995). Maternal sex-type, child sex, and infant affect expression. *Dissertation Abstracts International*, 55, 4142. Abstract obtained from Dissertation Abstracts database. (AAM9503562)
- Hartup, W. W. (1996). The company they keep: Friendships and their developmental significance. *Child Development*, 67, 1-13.
- Hartup, W. W., French, D. C., Laursen, B., Johnston, M. K., & Ogawa, J. R. (1992). *Conflict and friendship relations in middle childhood: Behavior in a closed-field situation*. Unpublished manuscript, University of Minnesota, Minneapolis.
- Hartup, W. W., & Laursen, B. (1995). Conflict and context in peer relations. In C. H. Hart (Ed.), *Children on Playgrounds*. Ithaca, NY: State University of New York Press.
- Hartup, W. W., Laursen, B., Stewart, M. A., & Eastenson, A. (1998). Conflicts and the friendship relations of young children. *Child Development*, 69, 1590-1600.
- Hartup, W. W., & Sancilio, M. F. (1986). Children's friendships. In E. Schopler & G. B. Mesibov (Eds.), *Social behavior in autism* (pp. 61-80). New York: Plenum.
- Hatfield, E., Caccioppo, J. T., & Rapson, R. L. (1994). *Emotional contagion*. New York: Cambridge University Press.
- Hiatt, S., Campos, J., & Emde, R. (1979). Facial patterning and infant emotional expression: Happiness, surprise, and fear. *Child Development*, 50, 1020-1035.
- Howes, C. (1988). Same- and cross-sex friends: Implications for interaction and social skills. *Early Childhood Research Quarterly*, 3, 21-37.

- Howes, C. (1996). The earliest friendships. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence* (pp. 66–86). New York: Cambridge University Press.
- Howes, C., & Matheson, C. C. (1992). Sequences in the development of competent play with peers: Social and social-pretend play. *Developmental Psychology, 28*, 961-974.
- Howes, C., & Phillipsen, L. (1992). Gender and friendship: Relationships within peer groups of young children. *Social Development, 1*, 230–242.
- Isen, A. M. (1987). Positive affect, cognitive processes, and social behavior. *Advances in Experimental Social Psychology, 20*, 203-253.
- Isen, A. M., & Daubman, K. A. (1984). The influence of affect on categorization. *Journal of Personality and Social Psychology, 47*, 1206-1217.
- Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology, 52*, 1122-1131.
- Izard, C. E. (1977). *Human emotions*. New York: Plenum Press.
- Izard, C. & Malatesta, C. Z. (1987). Perspectives on emotional development I: Differential emotions theory of early emotional development. In J. D. Osofsky (Ed.). *Handbook of Infant Development* (2nd Edition) (pp. 494-554). New York: Wiley.
- Kahn, B. E., & Isen, A. M. (1993). The influence of positive affect on variety seeking among safe, enjoyable products. *Journal of Consumer Research, 20*, 257-270.

- Kaplan, S. (1992). Environmental preference in a knowledge-seeking, knowledge-using organism. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 581-598). New York: Oxford University Press.
- Kerns, K. A. (1996). Individual differences in friendship quality: Links to child-mother attachment. In W. M. Bukowski, A. F. Newcomb, & W. W. Hartup (Eds.), *The company they keep: Friendship in childhood and adolescence* (pp. 137-157). New York: Cambridge University Press.
- Kimchi, R. (1992). Primacy of wholistic processing and global/local paradigm. A critical review. *Psychological Bulletin*, *112*, 24-38.
- Ladd, G. W., & Burgess, K. B. (2001). Do relational risks and protective factors moderate the linkages between childhood aggression and early psychological and school adjustment? *Child Development*, *72*, 1579 – 1601.
- Ladd, G. W., Kochenderfer, B. J., & Coleman, C. C. (1996). Friendship quality as a predictor of young children's early school adjustment. *Child Development*, *67*, 1103-1118.
- Ladd, G. W., & Troop-Gordon, W. (2003). The role of chronic peer difficulties in the development of children's psychological adjustment problems. *Child Development*, *74*, 1344-1367.
- LaFreniere, P. J., & Charlesworth, W. R. (1987). Effects of friendship and dominance status on preschooler's resource utilization in a cooperative/competitive situation. *International Journal of Behavioral Development*, *10*, 345-358.

- LaFreniere, P. J., & Dumas, J. E. (1996). Social competence and behavior evaluation in children ages 3 to 6 years: The short form (SCBE-30). *Psychological Assessment*, 8, 369-377.
- Lazarus, R. (1991). *Emotions and adaptation*. New York: Oxford University Press.
- Lazarus, R. S., Kanner, A. D., & Folkman, S. (1980). Emotions: A cognitive-phenomenological analysis. In R. Plutchik & H. Kellerman (Eds.), *Emotion: Theory, research and experience: Vol. 1. Theories of emotion* (pp. 189-217). New York: Academic Press.
- Levenson, R. W. (1992). Autonomic nervous system differences among emotions. *Psychological Science*, 3, 23-27.
- Levenson, R. W., Ekman, P., & Friesen, W. V. (1990). Voluntary facial action generates emotion-specific autonomic nervous system activity. *Psychophysiology*, 27, 363-384.
- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success?. *Psychological Bulletin*, 131, 803-855.
- Malatesta, C. Z., Culver, C., Teasman, J., & Shepard, B. (1989). The development emotion expression during the first two years of life. *Monographs of the Society for Research in Child Development*, 54 (1-2, Serial No. 219).
- McCandless, B. R., & Marshall, H. R. (1957). A picture sociometric technique for preschool children and its relation to teacher judgments of friendship. *Child Development*, 28, 139-147.

- McElwain, N. L., & Volling, B. L. (2002). Relating individual control, social understanding, and gender to child-friend interaction: A relationships perspective. *Social Development, 11*, 362-385.
- McElwain, N. L., & Volling, B. L. (2005). Preschool children's interactions with friends and older siblings: Relationship specificity and joint contributions to problem behavior. *Journal of Family Psychology, 19*, 486-496.
- Myers, D. G., & Diener, E. (1995). Who is happy? *Psychological Science, 6*, 10-19.
- Newcomb, A. F., & Bagwell, C. (1995). Children's friendship relations: A meta-analytic review. *Psychological Bulletin, 117*, 306-347.
- Orians, G. H., & Heerwagen, J. H. (1992). Evolved responses to landscapes. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 555-579). New York: Oxford University Press.
- Oster, H. (1978). Facial expression and affect development. In M. Lewis, & L. Rosenblum (Eds.), *The development of affect* (pp. 43-75). New York: Plenum.
- Oster, H., & Ekman, P. (1978). Facial behavior in child development. In W. A. Collins (Ed.), *Minnesota Symposia on Child Psychology* Vol. 11 (pp. 231-276). Hillsdale, NJ: Erlbaum.
- Parker, J. G., & Asher, S. R. (1993). Friendship and friendship quality in middle childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychology, 29*, 611-621.

- Parker, J. G., & Gottman, J. M. (1989). Social and emotional development in a relational context: Friendship interaction from early childhood to adolescence. In T. J. Berndt & G. W. Ladd (Eds.), *Peer relations in child development* (pp. 15-45). Wiley series in personality processes, Wiley-Interscience.
- Renninger, K. A. (1992). Individual interest and development: Implications for theory and practice. In K. A. Renninger, S. Hidi, & A. Krapp (Eds.), *The role of interest in learning and development* (pp. 361-395). Hillsdale, NJ: Erlbaum.
- Renninger, K. A., Hidi, S., & Krapp, A. (Eds.). (1992). *The role of interest in learning and development*. Hillsdale, NJ: Erlbaum.
- Ross, H. S., & Conant, C. L. (1992). The social structure of early conflict: Interactions, relationship, and alliances. In C. U. Shantz & W. W. Hartup (Eds.), *Conflict in Child and Adolescent Development*. Cambridge: Cambridge University Press.
- Rubin, K., Coplan, R., Chen, X., Buskirk, A., & Wojslawowicz, J. (2005). Peer Relationships in Childhood. *Developmental science: An advanced textbook (5th ed.)* (pp. 469-512). Mahwah, NJ US: Lawrence Erlbaum Associates Publishers.
- Saarni, C., Campos, J., Camras, L., & Witherington, D. (2006). Emotional Development: Action, Communication, and Understanding. *Handbook of child psychology: Vol. 3, Social, emotional, and personality development (6th ed.)* (pp. 226-299). Hoboken, NJ US: John Wiley & Sons Inc.
- Schmitt, T. M. (2000). Relations among emotion knowledge, social competence and aggression. *Dissertation Abstracts International*, 61, 2799. Abstract obtained from Dissertation Abstracts database. (AAI 9974052)

- Sebanc, A. M. (2003). The friendship features of preschool children: Links with prosocial behavior and aggression. *Social Development, 12*, 249-268.
- Sebanc, A. M., Kearns, K. T., Hernandez, M. D., & Galvin, K. B. (2007). Predicting having a best friend in young children: Individual characteristics and friendship features. *The Journal of Genetic Psychology, 168*, 81-95.
- Shin, N. (2008). *Affect expression and knowledge about emotions as predictors of social competence in preschool-age children*. Unpublished manuscript.
- Simpkins, S., & Parke, R. (2002). Do friends and nonfriends behave differently? A social relations analysis of children's behavior. *Merrill-Palmer Quarterly, 48*, 263-283.
- Snyder, J., Horsch, E., & Childs, J. (1997). Peer relationships of young children: Affiliative choices and the shaping of aggressive behavior. *Journal of Clinical Child Psychology, 26*, 145-156.
- Solomon, R. L. (1980). The opponent-process theory of acquired motivation: The costs of pleasure and benefits of pain. *American Psychologist, 35*, 691-712.
- Sroufe, L. A. (1997). *Emotional development: The organization of emotional life in the early years*. New York: Cambridge University Press.
- Stone, A. A., Cox, D. S., Valdimarsdottir, H., Jandorf, L., & Neale, J. M. (1987). Evidence that secretory IgA antibody is associated with daily mood. *Journal of Personality and Social Psychology, 52*, 988-993.
- Stone, A. A., Neale, J. M., Cox, D. S., & Napoli, A. (1994). Daily events are associated with a secretory immune response to an oral antigen in men. *Health Psychology, 13*, 440-418.

- Tabachnick, B., & Fidell, L. (2001). *Using multivariate statistics* (4th ed.). Boston: Allyn and Bacon.
- Tomada, G., Schneider, B., & Fonzi, A. (2002). Verbal and nonverbal interactions of four-and-five-year-old friends in potential conflict situations. *Journal of Genetic Psychology, 163*, 327-339.
- Tomkins, S. S. (1982). Affect theory. In E. Ekman (Ed.), *Emotions in the human face* (2nd ed., pp. 353-395). New York: Cambridge University Press.
- Vaughn, B. E., Colvin, T. N., Azria, M. R., Caya, L., & Krzysik, L. (2001). Dyadic analyses of friendship in a sample of preschool-age children attending Head Start: Correspondence between measures and implications for social competence. *Child Development, 72*, 862-878.
- Vaughn, B. E., Shin, N., Kim, M., Coppola, G., Krzysik, L., & Santos, A. J. (in press). Hierarchical models of social competence in preschool children: A multi-site, multi-national study. *Child Development*.
- Vaughn, B. E., & Waters, E. (1981). Attention structure, sociometric status, and dominance: Interrelations, behavioral correlates, and relationships to social competence. *Developmental Psychology, 17*, 275-288.
- Verba, M. (1994). The beginnings of collaboration in peer interaction. *Human Development, 37*, 125-139.
- Walker-Andrews, A. S. (1997). Infant's perception of expressive behaviors: Differentiation of multimodal information. *Psychological Bulletin, 121*, 437-456.

Walter, J., & LaFreniere, P. (2000). A naturalistic study of affective expression, social competence, and sociometric status in preschoolers. *Early Education and Development, 11*, 109-122.

Witherington, D., Campos, J., & Hertenstein, M. (2001). Principles of emotion and its development in infancy. *Blackwell handbook of infant development* (pp. 427-464). Malden, MA: Blackwell Publishing.

Ziv, A. (1976). Facilitating effects of humor on creativity. *Journal of Educational Psychology, 68*, 318-322.

Table 1.

Breakdown of Items Included in Each of the Individual Characteristic Factors

Factor Label	Item	Source	Factor Loading
Peer Acceptance ($\alpha = .86$)	A composite of "This child is accepted by the peer group" and "No friends (R)"	TRSS,	0.81
	Other children like this child and seek him/her out for play	ICS	
	A composite of "This child gets along well with peers of same sex" and either "Popular among boys" or "Popular among girls"	TRSS	0.65
	(scores were separately calculated for boys and girls)	TRSS, ICS	0.61
	A composite of "This child gets along well with peers of opposite sex" and either "Popular among boys" or "Popular among girls"		
	(scores were separately calculated for boys and girls)	TRSS, ICS	0.61
	Not good at sports (R)	ICS	0.44
	Never wins (R)	BATES	0.71
	Not good looking (R)	ICS	0.71
		BATES	0.68
Positive Mood ($\alpha = .88$)	What kind of mood is this child generally in? (R)	BATES	0.62
	Never smiles (R)	ICS	0.47
	How much does this child smile and make happy sounds?	ICS	0.47
	How excited does this child become when people play with or talk to him or her? (R)	TRSS	0.71
	Always friendly	TRSS	0.70
Social Cognition ($\alpha = .94$)	Accurately interpreting what a peer is trying to do	TRSS	0.68
	Generating many solutions to interpersonal problems	TRSS, SCBE	0.59
	Being aware of the effects of his behavior on others	TRSS	0.56

	Being socially aware of what is happening in a situation	TRSS	0.54
	A composite of “Generating good quality solutions to interpersonal problems” and “Negotiates solutions to conflicts with other children”	TRSS	0.40
	Understanding others’ feelings	SCBE, ICS	0.65
	Refraining from over-impulsive responding	SCBE	0.55
	Takes other children and their points of view into account	SCBE	0.43
Withdrawn ($\alpha = .66$)	A composite of “Worries” and “Always worries”	SCBE	0.55
	Timid, afraid	SCBE	0.43
	Goes unnoticed in group	BATES, SCBE, ICS	0.72
Social Awareness ($\alpha = .67$)	Attentive toward younger children	SCBE, BATES	0.71
	Comforts or assists another child in difficulty	BATES	0.58
Negative Emotionality ($\alpha = .94$)	A composite of “How much does this child cry/fuss in general?,” “Screams or yells easily,” and “Never cries (R)”	BATES	0.55
	A composite of “Irritable, gets mad easily” and “How easily does this child get upset?”	BATES	0.50
	How many times per day, on the average, does this child get fussy and irritable?	BATES	0.49
	When this child gets upset, how vigorously or loudly does she/he cry and fuss?	SCBE, BATES	0.43
	How changeable is this child’s mood?	SCBE	0.41
	How easy or difficult is it for you to calm or soothe this child when he or she is upset?	TRSS, SBS	0.79
	A composite of “Easily frustrated” and “When removed from something he or she is interested in but should not be getting into, does this child get upset?”	TRSS, SBS	0.79
	Gets angry when interrupted	SCBE, SBS	0.73
Aggressive/ Coercive Style	A composite of “This child says mean things to peers in teasing or name-calling” and “Says uncomplimentary or unpleasant things to other children: engages in name calling, ridicule, verbal	TRSS, ICS,	0.71

(α = .96)	derogation”	SBS	
	A composite of “Forces other children to do things they don’t want to do” and “Uses coercive tactics to force the submission of peers; manipulates, threatens”	SBS	0.67
	A composite of “This child gets into verbal arguments with peers,” “Always argues,” and “Argues and must have the last word in verbal exchanges”	TRSS, ICS, SBS	0.66
	Speaks to others in an impatient or cranky tone of voice	TRSS, SBS	0.62
	A composite of “This child starts fights with peers,” “Never gets in a fight (R),” and “Displays physical aggression toward objects or person”	SBS	0.59
	A composite of “This child disrupts the peer group by inappropriate or attention-getting behavior” and “Disturbs other children; teases, provokes fights, interrupts others”	SCBE	0.58
	Openly strikes back with angry behavior in response to other children’s teasing	SCBE	0.40
	Gets into conflicts with other children	SCBE	0.71
	Hits, bites, or kicks other children	SCBE	0.70
		SCBE	0.56
Defiant (α = .83)	Defiant when reprimanded		
	Hits you or destroys things when angry with you		
	Opposes your suggestions		

Table 2.

Range, Means, and Standard Deviations of the Study Variables

Variable	Minimum	Maximum	<i>M</i>	<i>SD</i>
Positive	.00	40.00	8.84	7.91
Negative	.00	34.00	1.11	2.71
Defiant Child 1	-.72	3.34	.004	.82
Defiant Child 2	-.72	3.34	-.004	.81
Defiant Average	-.72	3.16	-.002	.60
Peer Accept Child 1	-2.33	1.35	-.03	.64
Peer Accept Child 2	-2.33	1.35	-.04	.63
Peer Accept Average	-1.56	1.22	-.03	.47
Withdrawn Child 1	-1.19	2.99	.08	.80
Withdrawn Child 2	-1.19	2.99	.12	.82
Withdrawn Average	-1.19	2.91	.10	.62
Aggress/Coerce Child 1	-1.09	2.60	.14	.88
Aggress/Coerce Child 2	-1.09	2.60	.13	.86
Aggress/Coerce Average	-1.08	2.47	.13	.64
Positive Mood Child 1	-3.43	1.41	-.01	.75
Positive Mood Child 2	-3.43	1.41	-.03	.78
Positive Mood Average	-2.76	1.26	-.02	.60
Socially Aware Child 1	-2.00	1.81	-.05	.88
Socially Aware Child 2	-2.00	1.81	-.05	.88
Socially Aware Average	-1.71	1.69	-.05	.69
Social Cognition Child 1	-2.08	1.76	.10	.80
Social Cognition Child 2	-2.08	1.76	.12	.80
Social Cognition Average	-1.66	1.75	.11	.59
Negative Emotionality Child 1	-1.29	2.16	.03	.79
Negative Emotionality Child 2	-1.29	2.10	.02	.77
Negative Emotionality Average	-1.29	2.08	.03	.58

Table 3.

Breakdown of Dyads by Sex and Age

Dyad Sex	Dyad Age		
	Older	Younger	Total
Male	257	198	455
Female	171	150	321
Mixed	406	368	774
Total	834	716	1550

Table 4.

Intraclass Correlations Between Child 1 Individual Characteristics and Child 2 Individual Characteristics ($df = 1000$)

	Defiant 1	Peer Accept 2	Withdrawn 2	Aggressive 2	Positive Mood 2	Socially Aware 2	Social Cognition 2	Negative Emotion 2
Defiant 1	.06*	-.04	.06*	.04	-.05~	-.01	-.05~	.04
Peer Accept 1	-.04	.06*	-.05~	-.02	.05~	.04	.00	-.06*
Withdrawn 1	.06*	-.05~	.12***	.05~	-.09**	-.05~	-.05~	.12***
Aggressive 1	.04	-.02	.05~	.07*	-.03	-.05~	-.06*	.03
Positive Mood 1	-.05~	.05~	-.09**	-.03	.19***	.08**	.09**	-.11***
Socially Aware 1	-.01	.04	-.05~	-.05~	.08**	.19***	.06*	-.04
Social Cognition 1	-.05~	.00	-.05~	-.06*	.09**	.06*	.06*	-.08**
Negative Emotion 1	.04	-.06*	.12***	.03	-.11***	-.04	-.08**	.08**

~ $p < .10$ * $p < .05$ ** $p < .01$ *** $p \leq .001$

Table 5.

Intraclass Correlations Between Child 1 and Child 2 Individual Characteristics and Positive and Negative Affect ($df = 1000$)

Individual Characteristics		Affect	
		Positive	Negative
Child 1	Defiant	-.01	-.01
	Peer Acceptance	-.01	.004
	Withdrawn	.03	-.01
	Aggressive/Coercive	-.02	.06*
	Positive Mood	-.02	.002
	Socially Aware	.001	-.04
	Social Cognition	-.02	-.04
	Negative Emotionality	.02	.01
Child 2	Defiant	.01	-.04
	Peer Acceptance	-.02	.01
	Withdrawn	.03	.01
	Aggressive/Coercive	.002	-.01
	Positive Mood	-.03	-.03
	Socially Aware	-.03	-.03
	Social Cognition	-.05~	-.03
	Negative Emotionality	.04	-.03

~ $p < .10$ * $p < .05$

Table 6.

Correlations Between the Average Dyad Individual Characteristics ($df = 1548$)

	Defiant	Peer Accept	Withdraw	Aggress/Coerce	Positive Mood	Socially Aware	Social Cognition	Negative Emotion
Defiant	1.00	—	—	—	—	—	—	—
Peer Accept	-.30***	1.00	—	—	—	—	—	—
Withdraw	-.02	-.48***	1.00	—	—	—	—	—
Aggress/Coerce	.72***	-.21***	-.16***	1.00	—	—	—	—
Positive Mood	-.29***	.54***	-.56***	-.18***	1.00	—	—	—
Socially Aware	-.32***	.41***	-.24***	-.37***	.50***	1.00	—	—
Social Cognition	-.51***	.57***	-.26***	-.49***	.52***	.60***	1.00	—
Negative Emotion	.72***	-.42***	.19***	.70***	-.45***	-.40***	-.58***	1.00

*** $p < .001$

Table 7.

Correlations Between the Average Dyad Individual Characteristics and Positive and Negative Affect ($df = 1548$)

Average Dyad Individual Characteristics	Affect	
	Positive	Negative
Defiant	-.09*	.12***
Peer Acceptance	.11***	-.04
Withdrawn	-.01	-.05
Aggressive/Coercive	-.09**	.19***
Positive Mood	.02	-.001
Socially Aware	.01	-.09**
Social Cognition	.05	-.12***
Negative Emotionality	-.04	.12***

* $p < .05$ *** $p < .001$

Table 8.

Dyad Sex by Dyad Age for Reciprocated Like Dyads

Dyad Sex	Dyad Age		
	Older	Younger	Total
Male	48	24	72
Female	40	36	76
Mixed	18	35	53
Total	106	95	201

$\chi^2 = 13.10, df = 2, p \leq .001$

Table 9.

Dyad Sex by Relationship Quality

Dyad Sex	Relationship Quality						Total
	Reciprocated Dislike	Non-Reciprocated Dislike	Control	Non-Reciprocated Like	Reciprocated Like	Non-Reciprocated Like/Dislike	
Male	11	55	157	116	72	44	455
Female	6	23	76	114	76	26	321
Mixed	26	173	289	184	53	49	774
Total	43	251	522	414	201	119	1550

$\chi^2 = 123.77$, $df = 10$, $p \leq .001$

Table 10.

Dyad Age by Relationship Quality for the Mixed-Sex Dyads

Dyad Age	Relationship Quality						Total
	Reciprocated Dislike	Non-Reciprocated Dislike	Control	Non-Reciprocated Like	Reciprocated Like	Non-Reciprocated Like/Dislike	
Older	18	101	149	90	18	30	406
Younger	8	72	140	94	35	19	368
Total	26	173	289	184	53	49	774

$\chi^2 = 15.17, df = 5, p \leq .01$

Table 11.

Relationship Quality by Dyad Age by Dyad Sex

Dyad Sex	Dyad Age	Relationship Quality					
		Reciprocated Dislike	Non-Reciprocated Dislike	Control	Non-Reciprocated Like	Reciprocated Like	Non-Reciprocated Like/Dislike
Male	Old	7	30	80	65	48	27
	Young	4	25	77	51	24	17
Female	Old	4	8	47	62	40	10
	Young	2	15	29	52	36	16
Mixed	Old	18	101	149	90	18	30
	Young	8	72	140	94	35	19

$\chi^2 = 22.13, df = 10, p < .05$

Table 12.

Means and Standard Deviations for Dyad Sex and Significant Individual Characteristics

Dyad Sex	Individual Characteristics						
	Defiant <i>M(SD)</i>	Peer Acceptance <i>M(SD)</i>	Aggressive/ Coercive <i>M(SD)</i>	Positive Mood <i>M(SD)</i>	Socially Aware <i>M(SD)</i>	Social Cognition <i>M(SD)</i>	Negative Emotion <i>M(SD)</i>
Male	.23 (.04)	-.11 (.03)	.39 (.04)	-.12 (.04)	.29 (.05)	-.14 (.04)	.15 (.04)
Female	-.16 (.05)	-.06 (.04)	-.04 (.06)	.02 (.06)	.21 (.06)	.28 (.05)	-.03 (.05)
Mixed	.02 (.03)	-.01 (.02)	.18 (.03)	.02 (.03)	.02 (.04)	.12 (.03)	.05 (.03)

Table 13.

Means and Standard Deviations for Dyad Age and Significant Individual Characteristics

Dyad Age	Individual Characteristics					
	Defiant <i>M(SD)</i>	Peer Acceptance <i>M(SD)</i>	Aggressive/ Coercive <i>M(SD)</i>	Positive Mood <i>M(SD)</i>	Socially Aware <i>M(SD)</i>	Negative Emotion <i>M(SD)</i>
Old	-.14 (.03)	-.01 (.03)	.09 (.03)	.02 (.03)	.04 (.04)	-.03 (.03)
Young	.21 (.04)	-.11 (.03)	.26 (.04)	-.07 (.04)	.08 (.04)	.14 (.04)

Table 14.

Means and Standard Deviations for Relationship Quality and Significant Individual Characteristics

Relation- ship Quality	Individual Characteristics						
	Defiant <i>M(SD)</i>	Peer Acceptance <i>M(SD)</i>	Aggressive/ Coercive <i>M(SD)</i>	Positive Mood <i>M(SD)</i>	Socially Aware <i>M(SD)</i>	Social Cognition <i>M(SD)</i>	Negative Emotion <i>M(SD)</i>
Recip. Dislike	.14 (.11)	-.17 (.09)	.32 (.12)	-.13 (.11)	.08 (.13)	-.11 (.11)	.16 (.11)
Non-recip. Dislike	-.13 (.05)	-.17 (.04)	.33 (.05)	-.01 (.05)	.05 (.06)	-.02 (.05)	.17 (.05)
Control	.02 (.03)	-.07 (.02)	.09 (.03)	-.09 (.03)	.09 (.03)	.08 (.03)	.05 (.03)
Non-recip. Like	-.09 (.03)	.03 (.02)	.03 (.03)	-.01 (.03)	.03 (.03)	.18 (.03)	-.06 (.03)
Recip. Like	-.08 (.04)	.12 (.03)	.08 (.05)	.09 (.04)	.07 (.05)	.25 (.04)	-.06 (.04)
Non-recip. Like/Dislike	.07 (.05)	-.11 (.04)	.21 (.06)	.00 (.06)	.01 (.06)	.12 (.06)	.07 (.06)

Table 15.

Means and Standard Deviations for Dyad Sex x Dyad Age and Significant Individual Characteristics

Dyad Sex	Dyad Age	Individual Characteristics	
		Aggressive/Coercive <i>M (SD)</i>	Negative Emotion <i>M (SD)</i>
Male	Old	.40 (.05)	.10 (.05)
	Young	.39 (.07)	.20 (.06)
Female	Old	-.16 (.07)	-.08 (.07)
	Young	.08 (.09)	.01 (.08)
Mixed	Old	.03 (.04)	-.10 (.04)
	Young	.32 (.05)	.19 (.05)

Table 16.

Means and Standard Deviations for Dyad Sex x Relationship Quality and Significant Individual Characteristics

Dyad Sex	Relationship Quality	Individual Characteristic
		Aggressive/Coercive
Male	Reciprocated Dislike	.68 (.19)
	Non-reciprocated Dislike	.54 (.08)
	Control	.21 (.05)
	Non-reciprocated Like	.23 (.06)
	Reciprocated Like	.28 (.08)
	Non-reciprocated Like/Dislike	.43 (.09)
Female	Reciprocated Dislike	-.22 (.26)
	Non-reciprocated Dislike	.12 (.13)
	Control	-.01 (.07)
	Non-reciprocated Like	-.09 (.06)
	Reciprocated Like	.05 (.07)
	Non-reciprocated Like/Dislike	-.07 (.12)
Mixed	Reciprocated Dislike	.50 (.13)
	Non-reciprocated Dislike	.34 (.05)
	Control	.08 (.04)
	Non-reciprocated Like	-.05 (.05)
	Reciprocated Like	-.09 (.09)
	Non-reciprocated Like/Dislike	.28 (.09)

Table 17.

Analysis of Variance for Dyad Sex, Dyad Age, and Relationship Quality on Positive Affect ($N = 1550$)

Source	<i>df</i>	<i>F</i>
Dyad Sex	2	.12
Dyad Age	1	5.54*
Relationship Quality	5	2.63*
Dyad Sex x Dyad Age	2	.13
Dyad Sex x Relationship Quality	10	.73
Dyad Age x Relationship Quality	5	1.27
Dyad Sex x Dyad Age x Relationship Quality	10	.80
Error	1514	(61.01)

Note. Values enclosed in parentheses represent mean square errors.

* $p < .05$

Table 18.

Means and Standard Deviations for Dyad Age, Dyad Sex, and Relationship Quality on Positive Affect ($N = 1550$)

Relationship Quality	Sex							
	Male		Female		Mixed			
	Old <i>M</i> (<i>SD</i>)	Young <i>M</i> (<i>SD</i>)	Old <i>M</i> (<i>SD</i>)	Young <i>M</i> (<i>SD</i>)	Old <i>M</i> (<i>SD</i>)	Young <i>M</i> (<i>SD</i>)	Old <i>M</i> (<i>SD</i>)	Young <i>M</i> (<i>SD</i>)
	Age		Age		Age		Age	
Recip. Dislike	6.29 (4.27)	8.00 (6.68)	11.50 (6.46)	5.50 (6.36)	5.78 (4.97)	8.00 (7.19)	7.00 (5.60)	
Non-recip. Dislike	8.40 (7.30)	5.24 (4.81)	10.88 (12.61)	6.93 (7.50)	9.90 (8.51)	6.07 (6.76)	8.01 (7.85)	
Control	9.53 (8.19)	7.46 (7.24)	9.64 (7.48)	9.10 (8.63)	9.02 (7.67)	7.16 (6.80)	8.43 (7.54)	
Non-recip. Like	9.22 (7.46)	8.08 (7.21)	9.47 (7.76)	8.33 (8.84)	12.39 (8.94)	7.85 (7.69)	9.38 (8.18)	
Recip. Like	11.50 (9.50)	9.58 (7.52)	11.85 (9.26)	7.86 (7.09)	11.83 (10.29)	10.46 (8.35)	10.54 (8.73)	
Non-recip. Like/Dislike	8.82 (8.65)	8.77 (6.39)	4.70 (4.06)	9.25 (7.51)	8.63 (8.39)	7.53 (6.75)	8.27 (7.49)	
Total	9.52 (8.15)	7.72 (6.94)	9.91 (8.20)	8.29 (8.02)	9.94 (8.38)	7.48 (7.23)	8.84 (7.91)	

Table 19.

Analysis of Variance for Dyad Sex, Dyad Age, and Relationship Quality on Negative Affect ($N = 1550$)

Source	<i>df</i>	<i>F</i>
Dyad Sex	2	4.29*
Dyad Age	1	2.53
Relationship Quality	5	2.94*
Dyad Sex x Dyad Age	2	4.80**
Dyad Sex x Relationship Quality	10	1.25
Dyad Age x Relationship Quality	5	1.60
Dyad Sex x Dyad Age x Relationship Quality	10	1.70~
Error	1514	(7.17)

Note. Values enclosed in parentheses represent mean square errors.

~ $p < .10$ * $p < .05$ ** $p < .01$

Table 20.

Means and Standard Deviations for Dyad Age, Dyad Sex, and Relationship Quality on Negative Affect ($N = 1550$)

Relationship Quality	Sex								
	Male				Female				
	Age		Age		Age		Age		
	Old <i>M</i> (<i>SD</i>)	Young <i>M</i> (<i>SD</i>)	Old <i>M</i> (<i>SD</i>)	Young <i>M</i> (<i>SD</i>)	Old <i>M</i> (<i>SD</i>)	Young <i>M</i> (<i>SD</i>)	Old <i>M</i> (<i>SD</i>)	Young <i>M</i> (<i>SD</i>)	Total <i>M</i> (<i>SD</i>)
Recip. Dislike	6.00 (8.10)	.75 (.96)	1.50 (1.92)	5.50 (6.36)	.89 (2.40)	.75 (1.04)	1.95 (4.17)		
Non-recip. Dislike	1.80 (3.02)	1.64 (3.35)	.63 (1.19)	2.07 (3.96)	1.54 (3.51)	.78 (1.66)	1.36 (3.00)		
Control	1.13 (2.36)	1.48 (4.25)	.51 (1.20)	.35 (.67)	1.11 (2.70)	1.29 (2.79)	1.12 (2.81)		
Non-recip. Like	1.42 (3.09)	.92 (2.10)	.81 (2.25)	.58 (1.85)	.78 (2.56)	.56 (1.81)	.83 (2.33)		
Recip. Like	1.17 (2.17)	.96 (2.22)	1.10 (3.14)	.42 (1.30)	.78 (1.44)	.97 (2.08)	.93 (2.20)		
Non-reciprocated Like/Dislike	2.62 (4.18)	.59 (1.12)	1.20 (2.25)	.38 (.62)	2.17 (3.48)	.63 (1.34)	1.46 (2.90)		
Total	1.56 (3.16)	1.20 (3.21)	.82 (2.22)	.69 (2.00)	1.19 (2.91)	.93 (2.22)	1.11 (2.71)		

Table 21.

Analysis of Variance for Dyad Sex, Dyad Age, and Relationship Quality on Positive Affect Controlling for Individual Characteristics ($N = 1550$)

Source	<i>df</i>	<i>F</i>
Dyad Sex	2	.06
Dyad Age	1	4.76*
Relationship Quality	5	2.41*
Dyad Sex x Dyad Age	2	.11
Dyad Sex x Relationship Quality	10	.72
Dyad Age x Relationship Quality	5	1.26
Dyad Sex x Dyad Age x Relationship Quality	10	.80
Dyad Positive Characteristics	1	.001
Dyad Negative Characteristics	1	1.01
Error	1512	(61.08)

Note. Values enclosed in parentheses represent mean square errors.

* $p < .05$

Table 22.

Analysis of Variance for Dyad Sex, Dyad Age, and Relationship Quality on Negative Affect Controlling for Individual Characteristics ($N = 1550$)

Source	<i>df</i>	<i>F</i>
Dyad Sex	2	2.95~
Dyad Age	1	5.79*
Relationship Quality	5	2.05~
Dyad Sex x Dyad Age	2	4.53*
Dyad Sex x Relationship Quality	10	1.35
Dyad Age x Relationship Quality	5	1.43
Dyad Sex x Dyad Age x Relationship Quality	10	1.72~
Dyad Positive Characteristics	1	.06
Dyad Negative Characteristics	1	29.18***
Error	1512	(7.01)

Note. Values enclosed in parentheses represent mean square errors.

* $p < .05$

Figure 1.

Heirarchical clustering of the average dyad individual characteristics.

