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INFLUENCES OF SEATING PROPINQUITY IN ELEMENTARY CLASSROOMS ON
CHANGES IN PEER FRIENDSHIPS AND ANTIPATHIES

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Abstract

The present study examined the effects of seating propinquity in elementary classrooms on dyads characterized by unidirectional or mutual dislike. Data were analyzed from the Classroom Peer Ecologies Project, a longitudinal study investigating teacher practices, classroom peer ecologies and youth outcomes. Participants were recruited from first, third, and fifth grade classrooms. Student surveys included peer nomination items assessing feelings of liking, disliking, friendship and victimization. Teachers provided data on seating chart arrangements and these data were coded so that all dyads in each classroom were classified as adjacent (sitting next to one another) or nonadjacent. Analyses focused on peer dyads characterized by unidirectional or mutual dislike (N=521). Cross tabulations and chi square analyses were conducted with seating propinquity at wave one as the independent variable and disliking, liking, friendship, and victimization at wave two as the dependent variables. Overall results indicated no statistically significant associations between seating propinquity and any of the dependent variables. Follow-up analyses indicated that for mixed-gender dyads, seating propinquity was associated with a statistically significant increase in liking. No statistically significant effects were observed for boy-boy or girl-girl dyads. The discussion of this study focuses on the implications of the results, the limitations of the study, and future directions in exploring the influence of seating propinquity on antipathy dyads in elementary classrooms.

Table of Contents

Introduction.....	1
Research on Antipathy Relationships in Elementary Aged Children.....	2
Definitions of Disliking relationships.....	2
Origins of Antipathy Relationships.....	3
Characteristics of Antipathy Relationships.....	4
Consequences of Antipathy Relationships.....	6
Summary and Future Directions.....	7
Research on the Role of Propinquity.....	7
Propinquity and Positive Relationships.....	8
Propinquity and Reading Groups	9
Seating Arrangements and Classroom Management	11
Present Study.....	13
Hypotheses.....	13
Method.....	14
Classroom Peer Ecologies Project.....	14
Measures.....	15
Analysis.....	18
Results.....	19
Hypothesis I: Seating Propinquity, Disliking and Liking.....	19
Hypothesis II: Seating Propinquity and Friendship.....	20
Hypothesis III: Seating Propinquity and Victimization.....	21
Hypothesis IV: Seating Propinquity and Gender Differences	21
Discussion.....	28
Seating Propinquity and Disliking and Liking.....	28

Seating Propinquity and Friendship.....	30
Seating Propinquity and Victimization.....	31
Gender Composition Differences.....	32
Limitations.....	33
Future Directions.....	35
Conclusion.....	35
References.....	37

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Influences of Seating Proximity in Elementary Classrooms on Changes in Peer Friendships and Antipathies

Friendships play an influential role in children's behavior and development (Newcomb and Bagwell, 1995). A substantial amount of empirical evidence supports the claim that friendships, which are defined as dyadic relationships characterized by mutual positive regard, are developmentally significant (Gottman, 1983). Beginning in the 1970's, researchers have examined the quality, length, depth, and effect of these positive relationships (Hartup & Stevens, 1997). Yet as children develop, their interactions with others, whether positive or negative, play an important role in the formation of their beliefs, values, and behaviors (Barry & Wentzel, 2006). Much less research focuses on the role of relationships characterized by dislike, but these relationships have received increased attention beginning in the mid-1990's (Card, 2011).

Negative relationships in children are often characterized by mutual antipathy, aggression, animosity, and enmity. More formally defined, "mutual antipathies" include peer relationships in which two children identify one another as someone they "dislike" or "like the least" (Abecassis, Hartup, Haselager, Scholte, & Van Lieshout, 2002). Peer relationships characterized by mutual antipathy or dislike are not uncommon in middle childhood. Across studies, the prevalence of mutual antipathies in elementary school aged children range from 30% to 65% (Hartup, 2003; Abecassis et al., 2002). Much of the past research concentrates on the prevalence, origins, characteristics, and developmental consequences of mutual antipathies. Little research focuses on how these antipathies may develop and evolve in elementary classrooms.

The current study will examine the development of feelings of disliking and friendship in peer antipathies by investigating how these relationships may change due to seating proximity

in elementary classrooms. The study will analyze longitudinal data from the Classroom Peer Ecologies Project to examine associations among seating chart propinquity and relationship patterns among students in first, third and fifth grade elementary classrooms. More specifically in dyads containing some ‘dislike’ (unidirectional or mutual), I will examine whether sitting directly adjacent to one another leads to changes in levels of disliking, liking, friendship, and victimization.

Research on Antipathy Relationships in Elementary Aged Children

Interpersonal relationships at all stages of human development can be described in terms of feelings of “liking” or “disliking” the other individual. Disliking in some cases may lead to mutual antipathy, or a relationship based on shared feelings of dislike where both individuals involved may perceive the other as a direct threat to their goals and social status (Hartup & Abecassis, 2002). Although research on antipathies is limited compared to the literature on friendships and positive relationships, it is important to look to the available research to form a better understanding of what is known of antipathies. This current review of the literature will examine the definitions, origins, characteristics, and consequences of antipathy relationships in early to middle childhood.

Definitions of Disliking relationships

In conceptualizing childhood disliking relationships some researchers use terms such as “mutual antipathies”, “enemies”, and “animosities” interchangeably while others use these same terms to differentiate between various types of dislike relationships (Hartup, 2003). The meaning of these terms essentially stems from the different measurement tools utilized. For instance, some studies define mutual antipathies through the identification of classmates whom children “do not like at all” (Guroglu, Haselager, van Lieshout & Scholte, 2009; Abecassis et al., 2002)

while others define antipathies through reciprocal nominations such as “someone you don’t like” or someone “you don’t want to play with” (Hartup, 2003). Likewise studies often differ in the amount of nominations they require or permit. Some studies may ask participants to rate each classmate on a Likert scale with the lowest rating being ‘someone that we like a whole lot less than others’ and the highest rating being ‘someone we like most of all’ (Erath, Pettit, Dodge, & Bates, 2009). Some studies allow participants to nominate as many or as few peers as they wish (Guroglu et al., 2009), while others may require participants to provide 3 to 5 peer nominations (Abecassis et al., 2002). Based on what is asked of the participants and how the children interpret the questions, responses may differ and therefore, produce a wide range of possible conflicting results. It is important to examine and compare studies with a critical eye, knowing that there may be several sources for inconsistencies.

Origins of Antipathy Relationships

Hartup and Stevens (1997) reasoned that friendships develop on the basis of reciprocated attraction and feelings of equality. Similar to the origins of friendships, it is understood that antipathy relationships develop due to feelings of aversion. Studies suggest that engagement in aggressiveness, rule-breaking behavior, and participation in other non-normative activities may result in peer disapproval and feelings of dislike towards these individuals (Hayes, Gershman, & Bolin, 1980). As a result, children may perceive these individuals as different from themselves. It is noted from early research that children are more likely to dislike individuals whom they perceive to be different from themselves (Rosenbaum, 1986). In a study of 2,394 early adolescents from fourth to sixth grade classrooms, more than two thirds of the mutual dislike dyads included different types of antagonists (e.g., a withdrawn youth and an antisocial youth), and the individuals involved in these antipathies were found to have greater individual

differences compared to “neutral peers” (Guroglu et al., 2009). Casper and Card (2010) also suggested that antipathy relationships may form due to reasons such as competition for limited resources, and broken friendships.

Characteristics of Antipathy Relationships

Behavioral nature of antipathy relationships. Feelings of dislike may cause children involved in antipathies to act in a very specific way towards those individuals that may further the disliking nature of the relationship. Research suggests, however, that the specific behaviors and dynamics of antagonistic relationships may vary. For example, some mutual antipathies may be associated with avoidance and withdrawn behaviors, often making it difficult for researchers to study and observe the dynamics of these relationships (Hartup, Laursen, Stewart, & Eastenson, 1988). Other dislike or enemy relationships may consist of conflict, hostility, and unpleasantness and may exacerbate aggressive encounters and exchanges (Erath, Pettit, Dodge, & Bates, 2009). Dislike relationships may also be expressed in the form of bully-victim interactions (Card & Hodges, 2007).

Researchers have speculated that the variance in the aggressive and negative behaviors reported within an antipathy relationship may be associated with factors such as the relational history of the individuals involved in the dyad (Parker & Gamm, 2003). Parker and Gamm provide evidence that both boys and girls with enemies are selectively cruel toward their enemies and that girls are additionally jealous and relationally aggressive in these relationships.

Stability. The stability of antipathy relationships refers to the long term persistence of such dislike over time. Although few studies have examined the stability of antipathy relationships over an extended period of time, it is important to review the present literature in order to gain insight into how and why feelings of dislike may change.

In a study observing adolescent antipathies in Chile and the US, only 2% and 21% of antipathies still persisted after a one year period (Berger, Rodkin & Dijkstra, 2011). A similar study conducted by Rodkin, Pearl, Farmer & VanAcker (2003) yielded comparable results that suggested that among fourth graders, only 17% of antipathy relationships recognized in the fall remained in the spring. Although antipathy relationships may be unstable over time, individual involvement in antipathies may be more persistent. Berger et al. (2011) found that of adolescents who had peer antipathies approximately 32% of Chilean adolescents and 72% of US adolescents were more likely to be involved in other antipathies over time.

Gender. In a meta-analytic review of the current literature on mutual antipathy relationships, Card (2010) found that in 13 studies comprising of 9976 participants, a small but consistent gender difference was found. Boys were reported to have more antipathy relationships than girls. Moreover in examining the literature that focused on the prevalence of same sex antipathies versus mixed sex antipathies, Card found that both relationships were equally prevalent, however; same sex antipathy relationships were more common in childhood while mixed sex antipathy relationships were more prevalent in adolescence. In a similar examination of mixed gender antipathy relationships, Hartup & Abecassis (2002) found that boys who had two or more mixed gender antipathy relationships were the most social and least withdrawn while girls who had two or more mixed gender antipathy relationships were more withdrawn, socially ineffective, and not very aggressive or prosocial. Both of these recent studies suggest that antipathy relationships may form, develop, and be experienced differently based on the gender of the participants.

Consequences of Antipathy Relationships

In his meta-analytic review, Card (2010) also examined eight facets of psychological, academic, and social adjustment in children fewer than 18 years involved in antipathy relationships. Results indicated that childhood antipathies may be associated with maladjustment but these associations ranged from moderate to weak. More specifically, Card found that antipathy relationships were moderately associated with externalizing behavior problems including aggression and peer rejection, while associations with peer victimization ranged from moderate to weak. Furthermore, antipathy relationships were weakly associated with internalizing problems, low prosocial behavior, low academic achievement, low positive peer regard, and fewer friendships.

In addition, Card and Hodges (2007) conducted a study on the association of peer antipathies and victimization. Consistent with similar past studies (Abecassis et al., 2002; Parker & Gamm, 2003), results indicated a positive correlation between involvement in childhood antipathies and victimization. Card and Hodges further expanded on these consistencies to suggest that victimization is often captured in unilateral dislike and bully–victim relationships. They concluded that approximately 35 percent of mutual antipathies reported involved the victimization of a child. Children were more likely to be victimized by their mutual antipathy when the other individual was characterized as aggressive, physically strong, non-victimized, and exhibiting low levels of internalizing problems.

Although there are some consistencies in the research examining the consequences of peer dislike relationships, there are also inconsistencies. For instances, some studies suggest little developmental significance associated with dislike relationships in elementary aged children (Pope, 2003). In particular, some past studies suggest that mutual antipathies are not

connected with changes in aggression, popularity, and prosocial behavior (Rodkin, Pearl, Farmer & VanAcker, 2003; Parker & Gamm, 2003; Pope, 2003). These inconsistencies may be due to differences in measurement tools and samples. It is important for researchers to further examine the consequences associated with antipathy relationships in order to clarify these existing discrepancies.

Summary and Future Directions

From the emerging literature on mutual antipathies in childhood and adolescence, it is clear that these relationships are not uncommon and are in need of further exploration. The bulk of the present research focuses on the origins, characteristics, and consequences of these relationships. These areas of study are essential in better understanding negative childhood relationships and directing further research. There is very little present research, however, on how antipathy relationships emerge and further develop in specific social contexts. The investigation of the emergence of these relationships in childhood and the contributing and protective factors may not only lead to a better understanding of the dynamics of mutual antipathies but also to theory and strategies that may help teachers manage and promote positive relationships within the classroom. To explore the question of emergence and development in peer antipathy relationships, it is important to examine the role of propinquity.

Research on the Role of Propinquity

Hartup and Abecassis (2002) simply state that friendship begins with propinquity. It is clear that children cannot become friends if they never meet. McPherson, Smith-Lovin & Cook (2001) discuss this issue in relation to the phenomenon of homophily, in which interaction and contact between similar individuals occur at a higher frequency than contact among dissimilar individuals. Shared geographic space or proximity is one of the most basic causes of homophily.

Bronfenbrenner discussed a similar phenomenon through his ecological systems theory which supports the idea that over the lifespan, human development occurs through complex reciprocal interactions between an individual and the “persons, objects, and symbols in its immediate external environment” (Santrock, 2008). These interactions, known as proximal processes, become significant when they occur on a daily basis over an extended period of time.

From a Bronfenbrenner perspective, examination of the proximal processes of an elementary aged child may include several different interactions within an elementary classroom setting such as interactions between the child and teacher, child and close friends, and child and seating group members. Many of these interactions such as peer interactions between friends or other classmates at recess may be outside the realm of teacher control. Yet, certain peer interactions such as interactions between the child and seating group members may be effectively managed and controlled by the teacher through seating chart arrangements and decisions of who sits next to whom.

To further understand propinquity and its relation to antipathies and classroom environments, it is important to examine past research on the influences of propinquity in positive relationships, reading and math groups within the classroom, and the importance of seating arrangements and classroom management.

Propinquity and Positive Relationships

In investigating the influences of propinquity on positive relationships, several researchers focused on the association between proximity and increased communication and interactions. In a study on the proximal effects on communication in a large organization conducted by Monge and Kriste (1980), people who were more proximal to each other in terms of workspace, communicated more than individuals who were more distal. These individuals

also enjoyed communicating more with individuals to whom they were more proximate compared to those to whom they were more distal. This association, however, was small and may suggest the presence of other variables that may influence individual preferences.

The concept of connecting more easily with others who are in near propinquity was studied in a variety of social situations including dorm halls and street arrangements. In all of these settings, propinquity led to the formation of friendships and the strengthening of weak social ties (McPherson, Smith-Loving & Cook, 2001).

Propinquity and Reading Groups

There is little research specifically examining the effects of propinquity on peer relationships within classroom seating groups. Hallinan and Sorensen (1985), however, explored a similar principle of influence on peer relationships and friendships: the effects of participation and membership in the same ability reading and mathematics group. Hallinan and Sorensen hypothesized that grouping students based on ability for daily lessons would affect student's friendships and relationships in a positive way. In other words over time, membership in the same ability group may overlap with membership in friendship groups and thus, an individual may be more likely to choose a classmate who belongs to the same ability group as a close friend.

This particular phenomenon was investigated and measured by analyzing longitudinal data collected from 1,477 students in 48 classrooms throughout 10 elementary schools in northern California. Hallinan and Sorensen collected information on peer friendships through student questionnaires which asked the students to circle phrases such as "Best friend", "Friend", "Know", "Don't know", or "My name" next to each name on the classroom roster. Students were encouraged to choose as few or many friends as they felt they had (there was no requirement,

limit or restrictions on the number of friends each student could choose). Furthermore, researchers collected information on both reading and mathematics ability groups six times throughout a school year. Teachers provided the names of students in each group, the level and ability of each group as well as how each group was determined.

Hallinan and Sorensen found that the amount of best friend relationships within an ability group increased throughout the school year. In addition, the number of best friend selections within an ability group compared to the number of outside ability group selections also increased. These findings may suggest that over time ability groups may become more cohesive and even enjoyable to members. Hallinan and Sorensen also found that throughout the school year, membership within ability groups also overlapped with membership in friendship groups or cliques. Based on these results, researchers further predicted that friendships in ability groups developed and became stronger through positive interaction and common activities. Although students were in the required reading groups for approximately 30 minutes per day, they actually spent the majority of the day together including time in math groups, or other activities and seatwork. The propinquity effects imposed by the ability groups limited peer interactions with members outside of their ability groups.

The data also suggests that friendship formation in ability groups were greater when the size of the groups were larger. This may allow students to form friendships with even more peers within a group based on increased interaction. Although Hallinan and Sorensen's study supports the effects of propinquity on friendships within classrooms, it is important to further examine the similarities of the students in each group based on ability, which may have also played a role in furthering friendship, positive interactions, and mutual liking among the students.

Seating Arrangements and Classroom Management

In a literature review of evidence-based practices in classroom management, Simonsen, Fairbanks, Briesch, Myers, and Sugai (2008) argued that classroom management involves the physical arrangement of classrooms, the structure of classroom environments, instructional management, and procedures intended to increase appropriate behavior, and decrease inappropriate behavior. By implementing a variety of evidence based practices in each of these areas, teachers may be able to actively manage their classrooms. One significant area of classroom management involves the structure of the classroom. Overall, classrooms with more structure have shown to encourage appropriate academic and social behaviors. Classrooms with high levels of structure often increase task involvement, sociable peer interactions, helpful and attentive behaviors, and decrease aggression (Simonsen et al., 2008). An important aspect of classroom structure is the physical structure and arrangement of the classroom which includes the layout, design, appearance, and the location of materials, and children within the classroom.

Seating arrangements are an important aspect of the physical structure of the classroom in that it dictates student behaviors, habits, and interactions during the class period. According to a study on desk arrangements and the effects on student behaviors conducted by Rosenfield, Lambert, & Black (1985), the arrangement of desks within a classroom significantly affects student behavior compared to factors such as student ability and interest. Rosenfield and colleagues found that in fifth and sixth grade classrooms, the arrangement of desks in clusters and circles positively promoted on task student participation.

Hallinan (1979) conducted a similar study observing the influence of structural dynamics on characteristics of children's friendships within fifth to eighth grade classrooms. In the study, Hallinan distinguished between open classroom arrangements, where students were allowed to

choose their own seating groups, and traditional classrooms, where students were assigned to seats based on teacher choice. Hallinan found that open classrooms contained more social isolates and children had fewer best friends and cross-sex friendships compared to more traditional classrooms. This may suggest that in open classrooms children may pick seats based on reciprocal friendships and avoid individuals whom they dislike or may be dissimilar to. As a result, fewer friendships developed.

Furthermore, Hallinan suggested that in a traditional classroom setting, assigning students to groups or seating arrangements allowed for more proximal student interaction. Through interaction in these proximal groups, students may get to know each other better and form relationships that may have not formed by choice. Proximity may have contributed to the development of cross-sex friendship as well as increased the amount of friendships formed between students. Therefore in traditional classrooms, students may be friends with students who are similar to them in interests and characteristics as well as with students who are proximal to them in seating arrangements.

It is important to gain further insight into antipathy peer interactions in order to actively manage peer and classroom ecologies during early and middle childhood (Snyder, Schrepferman, Oeser, Patterson, Stoolmiller, Johnson & Snyder, 2005). Since children usually sit in assigned seating arrangements for most of the school day it is important to view these peer interactions in this context. By monitoring and organizing seating arrangements in a more directed way, peer interactions may be managed to promote positive development. Specifically in terms of antipathy relationships, it is important to study how proximity may further conflict and hostility or lead to more common understanding and less feelings of dislike. Through this type of research, teachers

can be further informed on how to manage and possibly decrease antipathy and hostile relationships within the classroom.

The Present Study

This present study will focus on four hypotheses concerning propinquity in seating arrangements and changes in disliking, liking, friendship and victimization, and gender differences among these relationships.

Hypotheses

Hypothesis I: Propinquity at wave one will be associated with less disliking and more liking in antipathy dyads at the wave two assessment. In other words, in dyads where there is some level of dislike, proximity may lead to getting to know the other person better, mutual understanding, and more positive relationships.

Hypothesis II: There will be an increased likelihood of friendship nominations among those peer antipathy dyads seated adjacent to one another compared to those who are not in proximal seating arrangements. These friendships may form due to increased communication and interactions between the two individuals.

Hypothesis III: Seating proximity will be associated with a decrease in victimization of the pair.

Hypothesis IV: It is hypothesized that among both boys, both girls, and mixed gender dyads, proximity may have an equal effect on dislike, like, friendship, and victimization. There may be more same sex antipathies present compared to mixed gender antipathies due to the age of the middle childhood sample.

Method

Classroom Peer Ecologies Project

The Classroom Peer Ecologies Project is an ongoing longitudinal study of teaching practices, classroom peer ecologies and youth outcomes (Gest & Rodkin, 2011). The project involves collection of data on teaching practices and behaviors, peer characteristics, behaviors, and interactions within the classroom, as well as seating chart arrangements and classroom dynamics in first, third and fifth grade classrooms. The present study involved data collected in one year of this multi-year study. Data were obtained on two occasions: wave one (September-October) and wave two (November-December).

In the overall study, participants were recruited from rural communities in Pennsylvania and urban communities in Illinois. However, the present study only examines data from a rural sample in Pennsylvania. The communities are located in a county with a population of 135,000 and are approximately 97% Caucasian. Participants were recruited from two similar school districts that enrolled about 12,882 youth in four elementary schools with a total of 11 classrooms per grade level. Approximately 21% to 35% of the students were classified as economically disadvantaged.

At the participating schools, all first, third, and fifth grade teachers were invited to participate in the Classroom Peer Ecologies study. Forty one of the forty two teachers, in the overall study, agreed to participate by signing an informed consent form. All children in the classrooms of teachers that agreed to participate were then invited to partake in the study through a parental informed consent form that was sent home with each student. A classroom pizza party was offered to any classroom in which 90% of the children returned a parent signed consent form, regardless of whether the parent agreed or declined to participate in the study. For year

two of the study, approximately 76% of eligible students in Pennsylvania classrooms participated during the first assessment while 81% of eligible students participated during the second assessment (Gest & Rodkin, 2011).

At each wave of the study, teachers completed a survey and students who agreed to participate also completed questionnaires in the form of individual interviews (1st Grade) or group administered paper and pencil surveys (3rd and 5th Grades). Students further consented to participation before the surveys were administered through oral consent (1st Grade) or written consent (3rd and 5th Grade).

Data from year two of the study was collected from 23 Pennsylvania classrooms; however, data from only 15 classrooms will be analyzed. The present study's sample consists of 521 antipathy dyads, which varied in gender composition (19.1% were boy-boy pairs, 63.6% were mixed gender pairs, 17.2% were girl-girl pairs) and grade level (25.8% 1st grade, 56.1% 3rd grade, 18.2% 5th grade).

Measures

Propinquity (Wave 1). Seating propinquity was established during the first wave of assessment. Teachers were first asked if they used a seating chart in their classroom. If teachers responded by circling "Yes" then they were asked to report the type of seating arrangement used: Rows, Table (Number of seats per table=___), Groups of desks (Number of desks per group=___), or Other (Please specify:___). Teachers were then asked to provide the names of students in each numbered seating group, row, or table.

To determine seating propinquity a coding schema was developed. The coding schema classified classmates who were adjacent or in the same seating group as the target child. Classmates who were identified as adjacent to the target child were coded as a one while

classmates who were in the same seating group as the target child but were not adjacent were coded as a two. All other classmates who were beyond adjacency or were in the same seating group as the target child were coded as a three. The target child was always coded as a zero in reference to themselves.

Guidelines were outlined for each arrangement provided by the teacher. In classrooms with groups or tables of four or less students, all students within a table or group as the same as the target child were coded as a one and all other peers outside the group were coded as a three. If a group or table had more than four students, then peers within a group were coded as a two and all other peers outside the group were coded as a three. In classrooms with rows, students adjacent to the target child received a one for distance while all other students received a three. For a rectangle, square or u-shaped seating arrangements, students adjacent to the target child within their given row received a distance of one while all other students received a three.

For the purpose of this study, propinquity was defined during wave one as adjacency, a distance of one, or occupancy in the same seating group, a distance of two. Non proximal seating partners were defined when a child received a distance of three in reference to the target child.

Disliking and liking (Wave 2). Disliking and liking were measured through the student surveys. Children were asked to nominate classmates as “These are the kids I would like most to play with” and “These are the kids I would like least to play with”. Below each nomination question, a list of names of classmates was provided, separated into two columns: one for boys and one for girls. Students were instructed to circle the names of classmates that they thought fit the description, as few or as many as they wished. Dislike was defined when at least one participant in a dyad indicated the other as “These are the kids I would like least to play with”.

Liking was defined when at least one participant in a dyad indicated the other as “These are the kids I would like most to play with”.

Friendship (Wave 2). Friendship levels were also measured at the second assessment through the student surveys. Friendship was defined when at least one individual in a dyad nominated the other as a friend for the question: “Who are your friends?” If neither participants in a dyad nominated the other as a friend then that dyad was defined as a “No” for friendship.

Victimization (Wave 2). Victimization was measured at wave two of the study through the student survey question, “These kids are always getting picked on, being made fun of, called bad names, even hit or pushed”. Victimization was defined as a “Yes” when at least one individual in the dyad nominated the other as a victim within the classroom. If neither participants in the dyad classified the other as a victim then victimization was defined as a “No” at wave two.

Gender composition. Gender was measured at the first assessment of the study in the student survey. Dyads were coded as a zero if it consisted of two boys, a one if it consisted of a boy and a girl and a two if it consisted of two girls.

Disliking dyads at Wave 1. Dislike dyads were determined from the wave one data. “Dislike dyads” were defined as those in which neither participant indicated the other as “like most” and at least one participant indicated the other as “like least”. Including the restriction of having neither participants indicate the other as “like most” helped to avoid discrepancies in student responses as well as further specified the definition of dislike. Due to the generally low base rate of disliking nominations, dislike dyads only required one participant in the dyad to express feelings of dislike toward the other: dislike was not necessarily mutual or reciprocated.

Analysis

Four sets of different analyses were performed to test hypotheses. Each analysis was based on the same set of ‘dislike dyads’ at the wave one assessments and the same set of seating charts obtained at wave one. Analyses were conducted through cross tabulations and chi square tests.

Hypothesis I. To determine if propinquity at wave one influenced disliking and liking at wave two, two separate chi square tests were conducted. The first analysis was conducted to assess levels of disliking and consisted of a cross tabulation and chi square test with seating propinquity observed at wave one as the independent variable and disliking or “like least” observed at wave two as the dependent variable. To assess levels of liking, a parallel chi square test was conducted with seating propinquity at wave one as the independent variable and like or “like most” at wave two as the dependent variable. For the dislike analysis, I focused on the percentages of proximal and non-proximal dyads that did not indicate “like least” during the second assessment. For the like analysis, I focused on the percentages of proximal and non-proximal dyads that indicated “like most” during the second assessment.

Hypothesis II. To determine if seating propinquity would increase the likelihood of friendship in a dislike dyad, another chi square analysis was computed with seating propinquity at wave one as the independent variable and friendship at wave two as the dependent variable.

Hypothesis III. To determine if propinquity played a role in the victimization observed at wave two, a chi square test was conducted with seating propinquity at wave one as the independent variable and victimization at the second assessment as the dependent variable.

Hypothesis IV. The original sample of disliking dyads was separated by gender composition: boy-boy, boy-girl, and girl-girl. To examine the association between seating

propinquity at wave one and changes in dislike, like, friendship, and victimization at wave two among gender and same vs. mixed sex dyads, the above cross tabulations and chi square tables were constructed for each gender composition category.

Results

Hypothesis I: Seating Propinquity, Disliking and Liking

Disliking. As displayed in Table 1, most dyads did not seat adjacent to one another at wave one: only 62 of the 521 dyads (12%) sat adjacent to each other at wave 1; whereas 459 out of the 521 dyads (88%) did not sit adjacent to each other. Overall, 60.5% (315/521) of the dyads characterized disliking at wave 1 continued to be characterized by at least some disliking at wave 2. Disliking at wave 2 was 53.2% for dyads that were seated adjacent to each other at wave 1, compared to 61.4% for non-adjacent dyads. This difference was in the expected direction but it was not statistically significant, $\chi^2(1) = 1.54, p = .21$.

Table 1

Test of Hypothesis 1: Dislike at Wave 2 as a function of Seating Proximity at Wave 1

Wave 2 Like Least	Seating Propinquity at Wave 1		Total
	No	Yes	
<i>No</i>			
Observed Count	117	29	206
Column %	38.6%	46.8%	39.5%
<i>Yes</i>			
Observed Count	282	33	315
Column %	61.4%	53.2%	60.5%
Total	459	62	521

$\chi^2(1) = 1.54, p = .21$

Liking. At wave two, only a small portion of dyads, 24.8%, indicated the other as “like most”. As displayed in the third row of Table 2, 24.0% of non-adjacent dyads nominated the other for “like most” compared to 30.6% of dyads who were adjacent. As with the findings for

disliking, this effect was in the expected direction but it was not statistically significant, $\chi^2(1) = 1.31, p = .25$.

Table 2

Test of Hypothesis 1: Like at Wave 2 as a function of Seating Proximity at Wave 1

Wave 2 Like Most	Seating Propinquity at Wave 1		Total
	No	Yes	
<i>No</i>			
Observed Count	349	43	392
Column %	76.0%	69.4%	75.2%
<i>Yes</i>			
Observed Count	110	19	129
Column %	24.0%	30.6%	24.8%
Total	459	62	521

$\chi^2(1) = 1.31, p = .25$

Hypothesis II: Seating Propinquity and Friendship

As shown in Table 3, 64.1% of disliking dyads did not indicate friendship at wave two. The rates of wave 2 friendships for non-adjacent dyads (35.5%) and adjacent dyads (38.7%) were very similar. This difference was not statistically significant, $\chi^2(1) = .24, p = .62$.

Table 3

Test of Hypothesis 2: Friendship at Wave 2 as a function of Seating Proximity at Wave 1

Wave 2 Friendship	Seating Propinquity at Wave 1		Total
	No	Yes	
<i>No</i>			
Observed Count	296	38	334
Column %	64.5%	61.3%	64.1%
<i>Yes</i>			
Observed Count	163	24	187
Column %	35.5%	38.7%	35.9%
Total	459	62	521

$\chi^2(1) = .24, p = .62$

Hypothesis III: Seating Propinquity and Victimization

The majority of dyads, 414 or 79.5% did not contain a victim at wave two. Among those who were proximal, approximately 82.3% exhibited no indication of victimization. Among those who were not proximal in seating arrangements, 79.1% of antipathy dyads exhibited no indication of victimization. These differences by seating proximity were not statistically significant, $\chi^2(1) = .34, p = .56$.

Table 4

Test of Hypothesis 3: Victimization at Wave 2 as a function of Seating Proximity at Wave 1

Wave 2 Victimization	Seating Propinquity at Wave 1		Total
	No	Yes	
<i>No</i>			
Observed Count	363	51	414
Column %	79.1%	82.3%	79.5%
<i>Yes</i>			
Observed Count	96	11	107
Column %	20.9%	17.7%	20.5%
Total	459	62	521

$\chi^2(1) = .34, p = .56$

Hypothesis IV: Seating Propinquity and Gender Differences

Out of the sample of 521 dyads, 19.1% were boy-boy, 63.6% were boy-girl and 17.2% were girl-girl pairs.

Gender composition and disliking. Among boy-boy dyads, 41.3% of those who were not proximal at wave 1 desisted in their dislike compared to 50% of those of who were proximal. This difference was in the expected direction but due to the very small number of adjacent boy-boy dyads ($N = 8$), the difference was not statistically significant, $\chi^2(1) = .23, p = .63$. Among girl-girl dyads, 42.5% of those who were not proximal desisted in their dislike at wave 2 compared to 36.4% who were proximal. This difference was not in the expected direction, but as

with boys, the small number of adjacent girl-girl dyads ($N = 11$), results were not statistically significant $\chi^2(1) = .15, p = .70$. Among mixed gender dyads, 36.6% of non-adjacent dyads desisted in their disliking, compared to 48.8% of adjacent dyads. This difference was in the expected direction and was closer to statistical significance, $\chi^2(1) = 2.38, p = .12$.

Gender composition and liking. Among boy-boy dyads, 25.0% of the dyads that were proximal nominated the other for “like most” while approximately 29.3% of the dyads that were not proximal nominated the other for “like most”. These findings in the boy-boy dyads were not statistically significant, $\chi^2(1) = .07, p = .80$. Among girl-girl dyads, 18.2% of those who were proximal seating partners indicated liking at wave two compared to 31.3% of those who were not proximal seating partners. These results were not statistically significant, $\chi^2(1) = .79, p = .37$. In mixed gender dyads, approximately 34.9% of the dyads that were proximal seating partners indicated liking at the second assessment compared to 20.2% of those who were not proximal seating partners. This finding was in the expected direction and was statistically significant, $\chi^2(1) = 4.68, p = .03$.

Gender composition and friendship. Among boy-boy dyads, 25.0% of the proximal dyads indicated friendship while 39.1% of dyads that were not proximal indicated friendship. This result was not statistically significant, $\chi^2(1) = .62, p = .43$. Among girl-girl dyads, 36.4% of proximal seating partners indicated friendship over time while 42.5% of non-proximal seating partners indicated friendship. These results were not deemed significant, $\chi^2(1) = .15, p = .70$. Among mixed gender dyads, 41.9% of proximal dyads indicated friendship while 32.4% of non-proximal dyads indicated friendship. These results were not at a significant level, $\chi^2(1) = 1.50, p = .22$.

Gender composition and victimization. In observing boy-boy dyads, approximately 85.9% of dyads that were non-proximal did not contain victimization while 87.5% of the dyads that were proximal did not contain victimization. This finding was not significant, $\chi^2 (1) = .02$, $p = .90$. Among only girl dyads, 66.3% of those who were not proximal did not indicate victimization, while 63.6% of those who were proximal did not indicate victimization. This finding was not significant, $\chi^2 (1) = .03$, $p = .86$. Among mixed gender dyads, 80.5% of those who were not proximal in seating arrangements did not indicate victimization while 86.0% of those who were proximal did not indicate victimization. This difference is not statistically significant, $\chi^2 (1) = .76$, $p = .38$.

Table 5

Test of Hypothesis 4: Gender Differences in Dislike at Wave 2 as a function of Seating Proximity at Wave 1

Gender of Dyad	Wave 2 Like Least	Seating Proximity at Wave 1		Total	χ^2 (1)	P value	
		No	Yes				
<i>Boy-Boy</i>	<i>No</i>	Observed Count	38	4	.23	.63	
		Column %	41.3%	50%			42
	<i>Yes</i>	Observed Count	54	4			58
		Column %	58.7%	50%			58.0%
<i>Boy-Girl</i>	<i>No</i>	Observed Count	105	21	2.38	.12	
		Column %	36.6%	48.8%			126
	<i>Yes</i>	Observed Count	182	22			204
		Column %	63.4%	51.2%			61.8%
<i>Girl-Girl</i>	<i>No</i>	Observed Count	34	4	.15	.70	
		Column %	42.5%	36.4%			38
	<i>Yes</i>	Observed Count	46	7			53
		Column %	57.5%	63.6%			58.2%
Total		459	62	521			

Table 6

Test of Hypothesis 4: Gender Differences in Like at Wave 2 as a function of Seating Proximity at Wave 1

Gender of Dyad	Wave 2 Like Most	Seating Proximity at Wave 1		Total	χ^2 (1)	P value	
		No	Yes				
<i>Boy-Boy</i>	<i>No</i>	Observed Count	65	6	71	.07	.80
		Column %	70.7%	75.0%	71.0%		
	<i>Yes</i>	Observed Count	27	2	29		
		Column %	29.3%	25.0%	29.0%		
<i>Boy-Girl</i>	<i>No</i>	Observed Count	299	28	257	4.68*	.03
		Column %	79.8%	65.1%	77.9%		
	<i>Yes</i>	Observed Count	58	15	73		
		Column %	20.2%	34.9%	22.1%		
<i>Girl-Girl</i>	<i>No</i>	Observed Count	55	9	64	.79	.37
		Column %	68.8%	81.8%	70.3%		
	<i>Yes</i>	Observed Count	25	2	27		
		Column %	31.3%	18.2%	29.7%		
Total		459	62	521			

* p value < .05

Table 7

Test of Hypothesis 4: Gender Differences in Friendship at Wave 2 as a function of Seating Proximity at Wave 1

Gender of Dyad	Wave 2 Friendship	Seating Proximity at Wave 1		Total	χ^2 (1)	P value				
		No	Yes							
<i>Boy-Boy</i>	<i>No</i>	Observed Count	56	6	62	.62	.43			
		Column %	60.9%	75.0%				62.0%		
	<i>Yes</i>	Observed Count	36	2	38					
		Column %	39.1%	25.0%	38.0%					
	<i>Boy-Girl</i>	<i>No</i>	Observed Count	194	25			219	1.50	.22
			Column %	67.6%	58.1%					
<i>Yes</i>		Observed Count	93	18	111					
		Column %	32.4%	41.9%	33.6%					
<i>Girl-Girl</i>		<i>No</i>	Observed Count	46	7	53	.15	.70		
			Column %	57.5%	63.6%					
	<i>Yes</i>	Observed Count	34	4	38					
		Column %	42.5%	36.4%	41.8%					
	Total		459	62	521					

Table 8

Test of Hypothesis 4: Gender Differences in Victimization at Wave 2 as a function of Seating Proximity at Wave 1

Gender of Dyad	Wave 2 Victimization	Seating Proximity at Wave 1		Total	χ^2 (1)	P value
		No	Yes			
Boy-Boy	No				.02	.90
	Observed Count	79	7	86		
	Column %	85.9%	87.5%	86.0%		
	Yes					
Boy-Girl	No				.76	.38
	Observed Count	231	37	268		
	Column %	80.5%	86.0%	81.2%		
	Yes					
Girl-Girl	No				.03	.86
	Observed Count	53	7	60		
	Column %	66.3%	63.6%	65.9%		
	Yes					
Total		459	62	521		

Discussion

The present study examined the association between seating proximity and changes in patterns of disliking, liking, friendship and victimization among dyads characterized by some amount of disliking at the start of the school year. Results indicated that for mixed-gender “disliking dyads”, seating proximity in elementary classrooms was associated with an increase in liking over a period of 2 to 3 months. Changes in patterns of disliking and friendship were generally in the expected direction but were statistically insignificant. There were no clear trends in patterns of victimization over time. The limited number of dyads that were seated next to each other meant that there was limited statistical power to identify statistically significant patterns in the propinquity analyses. Due to the novelty of research in this area and the limitations of the present study, it is important to further explore propinquity and its effects on peer antipathies as well as consider the presence of other contributing factors that may have an impact on the progression of peer antipathies in elementary classrooms.

Seating Propinquity and Disliking and Liking

In the full sample of dyads, there was not a statistically significant association between seating propinquity and changes in liking and disliking. This was not consistent with the first hypothesis that suggested that seating adjacent or in the same seating group as a supposed antagonist would lead to less dislike and more like in the relationship. The differences observed in this study were in the expected direction but the p-values did not approach significance ($p = .21$ for disliking; $p = .25$ for liking). Past studies had found positive effects of propinquity and geographic homophily on friendship formation (Hallinan & Sorensen, 1985; Hallinan, 1979). The current non-significant findings may mean that seating propinquity is a weak influence in lessening peer antipathies. As Parker and Gamm (2003) previously speculated many factors

including the history of past negative interactions may play an important and contributing role to the progression of antipathies.

Similarly, the majority of dyads, proximal and non-proximal, continued to express some level of dislike at wave two. This may suggest that past interactions, perceptions, and understanding of antagonists may persist over time. For some dyads, overriding these previously held negative beliefs about each other may be more difficult. Geographic homophily may not be enough to settle differences and the opposite effect may even occur. For instance, increased interactions within dislike dyads may reinforce the negative aspects of the relationship. According to Parker, Rubin, Erath, Wojslawowicz, & Buskirk (2006), children in middle childhood are often more advanced in social-cognitive skills and may have an increased ability in recognizing the hostile nature of interactions and aggressive acts. Therefore, they may retaliate and respond in a negative way to the other.

In addition, other factors within a dyad's relationship may have influenced the relationship between seating proximity and dislike over time. For instances, the teacher may have placed students together because they recognized a positive change in their relationship. In return, these children may have gotten along better over time but not necessarily due to the propinquity effect. Confounding factors within a dyad such as an event that occurred prior to the participants sitting adjacent to one and another or interactions that occur outside the classroom may contribute jointly or solely to the lessening of dislike. It is important to consider other influences that may contribute to dislike in order to fully examine and interpret the effects of propinquity on dislike and like in antipathy relationships.

Seating Propinquity and Friendship

Similar to dislike, the majority of dyads, regardless of seating proximity, did not indicate friendship at wave two. Only slight differences in friendship by seating propinquity existed (38.7% for proximal dyads compared to 35.5% for non-proximal dyads). This insignificant result suggests that friendship may not easily be influenced by seating propinquity, at least among children who initially dislike each other. Negative relationships characterized by mutual antipathy, aggression, animosity, or enmity may be limited in their progression towards friendship and more positive relationships. Even if sitting next to each other may change levels of liking and disliking, the lack of friendship in some antipathies may be due to the basis of which friendship occurs. According to Guralnick, Gottman, & Hammond (1996), reciprocal friendship takes time to develop and is more cognitively and socially demanding. Friendship often depends on positive evaluations of others. The perceptions of antipathies, however, often differ from other relationships and do not consist of positive evaluations and positive interactions. Rather, antipathies are often seen as power assertive, threatening, and uncooperative. When asked how elementary school aged children would make appeals to enemies or friends, children were more likely less direct and authoritative in interacting with and persuading enemies (Hartup, 2003). Therefore, children involved in antipathies may be more cautious when interacting with each other and may take even more time in developing the trust and loyalty involved in friendships.

It may be worthwhile to observe the effects of propinquity on friendship in antipathies over a longer period of time such as the whole school year compared to two-three month periods. This may allow researchers to explore the progression of such antipathies and identify specific

characteristics and interactions that may occur within an antipathy that may further the chance of friendship.

Seating Propinquity and Victimization

The rate of victimization found within the sample of antipathy dyads was slightly lower compared to similar studies (Card & Hodges, 2007). This may be due to differences in measurement methods. For instances, the measurement of victimization for this present study was based on whether the participants in the dyad viewed the other as a victim, while other studies may have measured victimization based on whether a bully-victim relationship existed in the dyad. Overall, analyses revealed no statistically significant differences in rates of victimization for proximal versus non-proximal dyads. This does not support the third hypothesis that suggested that sitting near each other may lead to less victimization nominations of the partner.

Previous research has suggested that specific peer antipathies are often unstable but victimization is reported as a stable characteristic over time. Hodges, Boivin, Vitaro, & Bukowski (1999) reported that often the same children experience verbal and physical bullying from classmates over many years. It is believed that these children behave in a certain way that reinforces and even elicits attacks from other peers. For instance, these children may be overly sensitive and cry easily. Although seating propinquity may lessen victimization to an extent by encouraging cooperation and increasing positive interactions, there may be several other factors including the characteristics of the victim that may perpetuate victimization within a dyad. It is also important to consider the presence of other factors such as the history of past interactions within the dyad which may contribute to the continuation of victimization.

Gender Composition Differences

The analysis of antipathy dyads by gender composition suggested that mixed gender antipathies were more prevalent than antipathies in same-gender dyads. Although previous research suggests that both same sex and mixed gender antipathy relationships are common, same sex antipathies were found to be more common in early-middle childhood and mixed gender antipathies were found to be more prevalent in adolescences (Card, 2010). The majority of the dyads within this sample consisted of third graders (56.1%). The present study may suggest that mixed gender antipathies are more common in middle childhood-adolescence.

In general, the findings of the present study suggest that gender composition has an effect on the association between seating propinquity and the nature and progression of antipathy relationships. When observing the effects of seating proximity on disliking and liking over time, mixed gender antipathy dyads were more positively influenced by propinquity. Children who were involved in a mixed gender antipathy and sat next to each at the beginning of the year expressed significantly more liking towards each other compared to mixed gender dyads that were not seated adjacent to each other. Changes in disliking were also in the expected direction for mixed-gender dyads. This may suggest that mixed gender antipathies are susceptible to the propinquity effect in a classroom setting, with increased liking reflecting the fact that they may be more likely to reach a common understanding due to the increased opportunities of communication and interactions. These findings may warrant future studies focusing on the factors within mixed gender antipathy relationships that may make them more susceptible to the effects of seating proximity.

There were no reliable effects of propinquity on the relationship of boy-boy or girl-girl antipathies. These analyses were seriously limited by the small number of same-sex dyads who

were seated next to each other. However, the pattern of observed differences suggests that it may be worth exploring whether different dynamics are occurring for boy-boy and girl-girl dyads. Differences for boy-boy dyads were similar to the results for the sample as a whole and for mixed-gender dyads. In contrast, among girl-girl antipathy relationships, the opposite pattern was found across the four analyses. Girls that were seated near each other at the beginning of the school year, showed more disliking and victimization and less liking and friendship compared to girls that were not seated next to each other. Again, these differences were very small and insignificant. The small sample size of girls that were exposed to the propinquity effect (11) compared to girls that were not exposed to the propinquity effect (80) may have limited the comparisons and analyses. Future studies should further investigate this possible difference in the way girl-girl antipathy dyads respond to the propinquity effect.

Limitations

There were several limitations to this study. One main concern of the study was the sample size. The sample consisted of 521 antipathy dyads studied at two points in time separated by 2-3 months. Only 62 of the dyads were seated adjacent to one another at the first assessment. The small sample size of dyads that were seated adjacent or in the same group limited the statistical power to detect statistically significant results.

Another limitation to this study concerned the identification of disliking dyads. Unlike several studies on antipathies, this study did not define antipathy relationships through reciprocated nominations. Rather dislike was defined in a dyad when either one child nominated the other as “like least” or both children nominated each other as “like least”. Due to the lack of differentiation between these two types of negative relationships, we were not able to understand

the possible differences in the effects of propinquity between unidirectional dislike relationships and mutual dislike relationships.

Moreover, the response variables measured at the second assessment of the study (disliking, liking, friendship, and victimization) were each defined based on one question. More questions may have led to more reliable results and a better understanding of the exact changes that may have occurred in these aspects of relationships. For instances, the measures “like most” and “like least” to define liking and disliking in the second assessment may have been too extreme to measure slight changes in liking and disliking levels. Including more questions focused on liking or rating individuals on a 1-5 Likert scale for disliking and liking may have allowed for measurement and observation of smaller changes. Another limitation in terms of measurement relates to propinquity and the little information collected between the first and second assessment. Since data collection only occurred at three waves, there was no way to determine the duration of the seating arrangement at wave one. Changes in seating arrangements between wave one and wave two may have led to an underestimate of the potential impact of propinquity.

Furthermore, this study was a correlational study so causation cannot be inferred. Confounding variables such as teachers’ attitudes towards the dyads and dyad interactions outside of seating arrangements may have led to inaccurate conclusions concerning the relationship between seating propinquity and changes in disliking, liking, friendship, and victimization. For instance, teachers may have purposely not placed extreme or visible antipathy dyads next to each other in a seating arrangement due to fear of conflict and class disruption. This may have not led to a completely random sample and therefore, may have resulted in inaccurate findings.

Future Directions

Overall, the findings of the present study and analysis suggest a consistent pattern linking seating propinquity to lower levels of liking and victimization and more expression of friendship and liking. Since this study explores a new area of research, future studies should further focus on the possible role of propinquity in shaping the development of peer antipathies. Studies with larger samples of proximal dyads may be able to produce more reliable results. Furthermore through controlled experimental studies, researchers may be able gain additional insight into the possible causal effects of propinquity. By implementing a controlled study and randomly assigning antipathies to proximal or non-proximal seating arrangements, variables such as teacher's judgment in separating dyads will be controlled for.

The gender composition analysis also resulted in interesting patterns. Although there was not enough statistical power to identify significant differences between boy-boy and girl-girl dyads, the gender composition analyses suggested that differences may exist for the effects of propinquity on boy-boy and girl-girl dyads. If these differences are found to be significant in future studies it would be worthwhile to explore the specific factors of each dyad which may contribute to the differences in the propinquity effect.

Conclusion

The present study is only the beginning in the exploration of the influence of propinquity effect in elementary classes on negative peer relationships. From the analyses conducted within this study it is evident that seating propinquity may be an important factor influencing the development of antipathy relationships. Overall, seating propinquity for mixed-gender disliking dyads was associated with increases in liking. Moreover, the overall pattern of differences for mixed-gender and boy-boy dyads suggested that it is worth exploring in a larger study whether

seating propinquity may lead to less dislike and victimization and more like and friendship overtime. Therefore, it is essential to further investigate this area of study. It is anticipated that these analyses and future similar analyses may provide teachers and researchers with the foundation that could lead to evidence-based classroom management techniques that could help lessen negative peer antipathy relationships.

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Academic Activities

Mission Committee Member, Relay for Life. August 2011-Present.

Undergraduate Student Teaching Assistant, Department of Human Development and Family Studies. January 2011-May 2011.

Vice President, Human Development and Family Studies Undergraduate Student Organization. August 2010-Present.

Member, Women's Leadership Initiative. August 2010-May 2011.

Volunteer, Mount Nittany Medical Center. November 2010-May 2011.

Member, Health and Human Development Honors Society. August 2009-Present.

Member, Vole Penn State Ballet Club. August 2008-Present.

Academic Honors

Member, Phi Kappa Phi. Fall 2011-Present.

Honors Scholar, Schreyer Honors College. Fall 2009-Present.