

Perspectives About Relocation and Loneliness in Residentially Mobile Adolescents

By

Lisette Wilcox

Submitted to the graduate degree program in Psychology  
and the Graduate Faculty of the University of Kansas in partial fulfillment of the requirements  
for the degree of Master of Arts.

\_\_\_\_\_  
Chairperson, Eric M. Vernberg, PhD, ABPP

\_\_\_\_\_  
Michael C. Roberts, PhD, ABPP

\_\_\_\_\_  
Ric G. Steele, PhD, ABPP

Date defended: June 21<sup>st</sup>, 2011

The Thesis Committee for Lisette Wilcox  
certifies that this is the approved version of the following thesis:

Perspectives About Relocation and Loneliness in Residentially Mobile Adolescents

---

Chairperson, Eric M. Vernberg, PhD, ABPP

Date approved: June 21<sup>st</sup>, 2011

## Abstract

Residential relocation is a stressful event associated with negative impacts on adolescent's friendships; however, this is may be temporary. The current study categorized adolescent-identified benefits and struggles of moving and examined reports of loneliness in 136 relocated adolescents (ages 12-14) at three time points over the year following moving. Results of benefits and struggles coding indicate that adolescents tend to identify the same aspects of moving as both benefits and struggles, most commonly making new friends, and these benefits and struggles are largely consistent over time. Results of cluster analyses using self-reported loneliness indicate two groups of relocated adolescents: those with higher and those with lower levels of post-move loneliness. Feelings of loneliness declined over the course of the year for both groups. Comparison of benefits and struggles for adolescents in high and low loneliness groups indicated few differences in these perceptions. Implications for parents, teachers, and clinicians are discussed.

## Perspectives About Relocation and Loneliness in Residentially Mobile Adolescents

Residential relocation is a major life event experienced by children and adolescents. Between 2008 and 2009, according to a survey conducted by the U.S. Census Bureau, approximately 37 million individuals moved, including over 10 million children (U.S. Census Bureau, 2009). Residential relocation can be conceived as a somewhat ambiguous and idiosyncratic transition that precipitates a number of changes in important aspects of a child's life, including leaving familiar schools and neighborhoods, moving away from friends, entering new schools, and establishing new social relationships (Vernberg & Field, 1990). For adolescents in particular, residential relocation may present additional challenges during an already tumultuous developmental period. Existing peer relationships are disrupted at a time when adolescents are becoming more independent from families and reliant on friendship networks. Not surprisingly, adolescents consider moving to be a stressful life event (Raviv, Keinan, Abazon, & Raviv, 1990). The current study has two primary goals. First, this study seeks to better understand which aspects of moving are experienced by adolescents as stressful and which are viewed as beneficial over the year following a move. Second, it also explores feelings of loneliness and social dissatisfaction during this period in an effort to determine whether variation in loneliness is linked to systematic differences in perceived benefits and struggles. While an additional literature on residential instability and highly mobile populations exists, the present study and literature review focuses primarily on recent intercommunity residential relocation that also requires entering a new school system.

### **Perspectives About Moves**

Some research (although a surprisingly small amount) has examined adolescents' perspectives about relocation, with an emphasis on describing and categorizing the most

salient struggles associated with moving. Prior research suggests that for the majority of children and adolescents the worst part of moving is leaving old friends or making new friends (Norford & Medway, 2002; Puskar & Ladely, 1992; Vernberg & Randall, 1997). In order to understand the range of possible difficulties associated with moving, a small pilot study using the current dataset of adolescents (Abwender, Vernberg, Beery, & Ewell, 1991) asked participants to list the struggles they had with moving at the beginning of the school year. While the majority of adolescents (55%) identified making friends as the biggest struggle, participants also indicated that academics (33%), leaving friends (21%), and personal safety (12%) were areas of concern immediately after the move. However, each of these studies primarily focused on identifying sources of stress associated with moving at a single timepoint, rather than examining how these struggles change as adolescents adjust to their new home and community. Since moving merely denotes the onset of the relocation process, and we know that adolescents adjust gradually after moving (Puskar & Ladely, 1992; Vernberg, Greenhoot, & Biggs, 2006), these past studies that attempted to categorize adolescents' moving struggles address only a small portion of the moving process.

In addition, very few prior studies have identified the positive aspects of moving. Similar to research on the negative aspects of moving, no known prior studies have examined the relationship between identified benefits of moving and post-move adjustment. Research in other fields of life event stress, such as pediatric illness or trauma, have examined concepts of hope and optimism in the face of adversity, such as post-traumatic growth (Linley & Joseph, 2004) and benefit finding (Helgeson, Reynolds, & Tomich, 2006). These fields of research have attempted to determine whether youth are able to identify positive results of stressful events and whether the ability to identify positive factors is related to psychological

adjustment. Although residential relocation is different type of event than those examined by the trauma and pediatric illness literatures, there may be a similar connection between perceiving some positive aspects of the experience and psychological adjustment.

Researchers have theorized that families may move with the intention of choosing a better or safer neighborhood, or providing their children with access to improved resources, like education (Scanlon & Devine, 2001). Since adolescents consider moving to be stressful, it is possible that successfully coping with difficulties related to moving may provide a sense of personal mastery and the opportunity for personal growth. Therefore, it is possible that individuals who identify better access to resources may have a more positive post-move adjustment.

To our knowledge, only one prior study based on a subset of the current sample has asked adolescents to identify both positive outcomes, or benefits, and negative outcomes, or struggles, of moving and related those moving perspectives to outcomes. In a qualitative study of Spanish-speaking adolescent immigrants, Pavon (1998) formed individual narratives describing subjects' relocation experiences and post-move adjustment. These narratives were grouped into positive, neutral, and negative experiences groups using Q-sort methodology. Adolescents generally identified learning a new language (English) and making friends as the most significant post-move struggles, however adolescents whose narratives indicated a positive moving experience reported fewer struggles in general than those whose experience was more negative. This positive experiences group also indicated that making new friends was a benefit of moving, in addition to learning a new language and liking their new school. Those who had more negative experiences generally only identified learning a new language and their new school as benefits of moving. These findings indicate that those with more

positive post-move adjustment may identify different benefits and struggles of moving, compared to those with poorer post-move adjustment. However, this sample was limited to a small group ( $n = 20$ ) whose moving experience (immigrating to a new country and learning a new language) does not represent the wide range of adolescent residential relocations available for the current study. It is possible that individuals who move within the same country identify different benefits and struggles of moving than those who move from another country. Therefore, additional research is necessary to determine whether these associations between post-move adjustment and self-identified benefits and struggles remain in other groups of relocating adolescents.

### **Residential Relocation and Social Relationships**

Because adolescence is a period of increased independence from parents and reliance on friends, the impact of relocation on peer relations and social cognitions during this developmental period has drawn attention in the residential relocation literature (Vernberg, Ewell, Beery, & Abwender, 1994). There is some evidence that adolescents who relocate struggle with difficulties in their peer relationships post move. Sociometric research has found that adolescents who moved within the last two years have, on average, smaller peer networks, are less likely to report having a best friend at school, and are less likely to be nominated by a peer as a best friend (South & Haynie, 2004). Additionally, the quality of their friendships may be different from residentially stable peers. Recently relocated adolescents engage in less sharing and self-disclosure with peers and experience a period of decreased intimacy and companionship with close friends (Hendershott, 1989; Vernberg, 1990a). Although these decreases in intimacy and companionship appear to dissipate over the course of the school year for adolescents who begin the year in a new school (Vernberg et al.,

2006), the impact of this period of diminished friendships on self perceptions is not well understood. Some research has found that relocated adolescents have higher levels of depressive symptoms (Hendershott, 1989), but those with close friendships are less likely to have increased depression (Hendershott, 1989; Vernberg, 1990b). In total, it appears that social adjustment is negatively affected by mobility, at least in the short term, and an adolescent's success in social adjustment following relocation can have an impact on psychological adjustment.

Additionally, research has suggested that relocation may differentially affect adolescent boys and girls. Boys tend to report more social problems post-move, including increased risk for peer victimization (Vernberg, 1990a). Furthermore, in comparison to recently relocated adolescent girls, boys have lower levels of friendship intimacy, even when considering pre-move intimacy levels (Vernberg et al., 1994). Although post-move friendship intimacy levels gradually rise, adolescent boys show slower increases in friendship intimacy than girls (Vernberg, Beery, Ewell, & Abwender, 1993). Consistent with the notion that there are significant differences in adolescent's same-sex friendships (Rose & Rudolph, 2006), this research suggests that boys and girls have different processes for social adjustment, post-move.

### **Loneliness**

Based on past research (e.g., Norford & Medway, 2002; South & Haynie, 2004; Vernberg, 1990a; Vernberg et al., 2006), it appears that children and adolescents who move have less closeness and companionship in their friendships, at least temporarily, smaller friendship networks, and express concerns over the difficulty of leaving old friends and making new friends. Although these findings indicate that relocated adolescents struggle



socially, it is not clear whether relocated adolescents report subjective feelings of social dissatisfaction and loneliness. Loneliness is generally defined as the unpleasant subjective experience of dissatisfaction with the number of personal relationships or the level of intimacy of personal relationships (Civitci & Civitci, 2009). Subjective feelings of loneliness may increase during adolescence (Brennan, 1982; Perlman & Landolt, 1999) and boys report higher levels of loneliness than girls (Koenig & Abrams, 1999; Mahon, Yarcheski, Yarcheski, Cannella, & Hanks, 2006). During this developmental period, loneliness is a predictor of life satisfaction and sense of community belongingness (Chipuer, Bramston, & Pretty, 2003), and both of these aspects of well-being may be challenged by residential relocation.

Surprisingly, although parents, teachers, and scholars make reference to loneliness as an expected consequence of moving (Medway, 2002), and moving as a cause of temporary loneliness (Koenig & Abrams, 1999), little research has been conducted on the prevalence of loneliness in recently relocated adolescents. The search terms “relocation and adolescence,” “relocation and loneliness,” “geographic mobility and loneliness,” and “geographic mobility and adolescence” were entered into PsychINFO, and results were examined to identify studies of loneliness in recently relocation adolescents, while excluding studies of adults and highly mobile populations (e.g., military families). The results of this literature review yielded very few studies which met the search criteria. First, in a small study of 14 adolescent girls, Puskar and Ladely (1992) found that adolescents self reported initially reacting to the move with feelings of loneliness, and 6 months post-move one-half of the adolescents continued to report significant feelings of loneliness. Additionally, Hendershott’s (1989) study of mobility and depression assessed loneliness via a single item on an adolescent-report depression measure. While the author noted that relocated, in comparison to residentially stable, adolescents were

more likely to endorse feeling lonely, statistics for this item were not reported. While very few relocation studies have examined loneliness, Rokach and colleagues have examined residential relocation as one factor that can contribute to loneliness in children, adolescents, and adults (Rokach & Neto, 2005; Rokach, Orzeck, Moya, & Exposito, 2002). In a measure of factors contributing to loneliness, Rokach and colleagues found that moving away from family and friends were two contributing factors to loneliness (Rokach et al., 2002), however these results have not been specifically examined in a sample of relocated individuals. Moreover, these researchers failed to assess for the frequency, recency, or distance of the move. Clearly, additional research with relocated adolescents and reliable and valid measures is needed to explore the prevalence of loneliness in relocated youth. Because loneliness is a measure of subject feeling of belonging and social satisfaction, this construct could be an important part of post-move adjustment. Moreover, loneliness is an inner state reflecting satisfaction with social relationships, which is different from other previously measures aspects of post-move social relationships, such as social network size (South & Haynie, 2004), friendship intimacy and companionship (Vernberg, 1990a; Vernberg et al., 2006), or peer nomination (South & Haynie, 2004).

### **Research Questions and Hypotheses**

Residential relocation is a life stressor for adolescents (Raviv et al., 1990) and puts youth at risk for a number of problems, such as short term social isolation. Prior work has attempted to identify which aspects of the move are stressful, however research has generally focused on negative aspects of moving and has failed to focus on adolescent-reported loneliness. While moving is a stressful event for adolescents, it is also a fairly common event and the majority of adolescents adapt without significant or life-long negative impairments.

Moreover, moving may actually confer benefits on the adolescent, such as the experience of mastery over a challenging situation or increased access to resources (Weber & Weber, 2005).

The present study aims to integrate these findings in the existing literature while filling gaps in the field's understanding of what adolescents view as struggles and benefits over the year following a move, post-move adjustment, and possible feelings of loneliness. This study first categorized adolescent reported benefits and struggles of moving and assessed whether these benefits and struggles change over the year following a move. The study also examined relocated adolescents' feelings of loneliness as they adjust to their new home and school. Because some research indicates that adolescents recover socially over time while others continue to struggle (e.g., Vernberg et al., 2006), this study utilized cluster analysis for loneliness, an exploratory method of data analysis that identifies groups of individuals with different patterns of adjustment over time (Steele & Aylward, 2007). Due to the research suggesting that boys have a more difficult social adjustment post-move (e.g., Vernberg et al., 1994) and may experience more loneliness during adolescence (Mahon et al., 2006), gender was examined as a factor in all analyses. To understand the impact of these perspectives on social relationships, the association between the categories and post-move loneliness was examined.

### **Method**

Data for the current study were collected as part of a larger study on early adolescent experiences with residential relocation. Although portions of the this dataset have been presented before (i.e., Abwender et al., 1991; Pavon, 1998; Vernberg et al., 1993; Vernberg et al., 1994; Vernberg et al., 2006), this study examined loneliness, a previously unexamined

construct, and adolescent perspectives on benefits and struggles, which has been examined in only limited subsets of these data (Abwender et al., 1991; Pavon, 1998).

### **Participants**

In order to recruit participants for the current study, the local school system, Miami-Dade County Public Schools, provided names and addresses of seventh and eighth grade students who were newly enrolled in the school district. Students from this list were randomly selected and sent letters to recruit participants, and project staff followed up with phone calls to determine participant eligibility and further explain the study. Participants were eligible for the study if they had moved into a new home from outside Dade County within 2 months of beginning the school year, and had never been diagnosed with mental retardation or a pervasive developmental disorder. Approximately 50% of those contacted by phone were eligible for participation and enrolled in the study.

A total of 229 recently relocated adolescents and their parent(s) participated in the study, however only participants with completed interviews at Time 1 (T1), Time 2 (T2), and Time 3 (T3) were included in benefits and struggles analyses ( $n = 136$ ), and only those who completed the survey at each time point were included in loneliness cluster analyses ( $n = 132$ ). Participants' ages ranged from 12 to 14 years old ( $M = 13.2$ ), with roughly equivalent numbers of boys and girls (60 and 76, respectively). The sample was ethnically diverse and representative of the larger community: Miami-Dade County, Florida (54.9% White; 29.3% Hispanic-American; 13.5% African-American; 2.3% Asian-American). Socioeconomic status was measured using Hollingshead's Four Factor Index of Socioeconomic Status and this factor indicated that the sample was primarily middle class ( $M = 49.92$ ,  $SD = 11.19$ ). The majority of the sample moved from another state in the U.S. ( $n = 84$ ; 61.8%), but about a third

moved to Florida from another country ( $n = 42$ ; 30.9%). The remainder moved from another part of Florida ( $n = 10$ ; 7.4%). Since kindergarten, adolescents in the research sample moved an average of 2.88 times ( $SD = 1.63$ ), with range of 1-9 moves.

## **Procedures**

Adolescents participated with a parent in three in-home interviews over 8 months. The first interview (T1) occurred in September, soon after the start of the academic year, and the two subsequent interviews took place in November (T2) and April (T3). Interview sessions lasted approximately 2 hours each. This study was reviewed and approved by the local university Institutional Review Board. Adolescents were compensated \$10.00 for participating in each interview session.

Interviewees were given the option of completing the interviews and questionnaires in English or Spanish. Responses given in Spanish were initially translated by a fourth year undergraduate Spanish major, and then checked by a fluent Spanish-speaking graduate student. All adolescent participants completed assent forms and mothers completed parental consent. A total of 12 adolescents completed the interview in Spanish at T1, three completed in Spanish at T2, and two at T3.

## **Measures**

**Time 1 (T1) interview.** Adolescents were individually interviewed at each timepoint to provide information about their perspectives about the move. At T1, adolescents answered a series of open ended questions regarding their initial impression of the move, including: *What have been the biggest benefits of the move?, What have been the biggest struggles?.* Responses to these two questions were systematically coded to develop categories of adolescent-identified benefits and struggles.

**Time 2 (T2) and time 3 (T3) interviews.** Adolescents were asked the same questions from T1 regarding their current impressions of the benefits and struggles of moving.

**Loneliness.** Adolescent participants completed 6 items from the Loneliness and Social Dissatisfaction Questionnaire (LSDQ; Asher, Hymel, & Renshaw, 1984) to assess for subjective feelings of insufficient social relationships. Individuals indicated to what degree each item describes how they feel on a five-point Likert scale (from “always true” to “not true at all”). The full LSDQ consists of 16 items. In the current study, only 6 items representing loneliness and social dissatisfaction were used due to time constraints and possible scores ranged from 6 to 30, with higher scores indicating greater feelings of loneliness (see Appendix A for specific questions). These 6 LSDQ items were selected due to their relatively higher factor loadings on the construct of loneliness (item-to-total score correlations: 0.63-0.73; Asher et al., 1984). In prior research, the LSDQ has been found to have high internal consistency (Cronbach’s alpha = .90) and internal reliability (Spearman-Brown reliability coefficient = .91; Guttman split-half reliability coefficient = .91). In past research with adolescents, popular adolescents’ responses (total mean = 28.0; item mean = 1.7) yielded significantly lower scores than rejected adolescents’ responses (total mean = 35.3; item mean = 2.2), indicating that the LSDQ scale reliably differentiates groups of adolescents (Parkhurst & Asher, 1992). Internal consistency for the current sample was high (Cronbach’s alpha = .87). This questionnaire was administered during T1, T2, and T3 and was embedded in a questionnaire assessing social anxiety (La Greca, 1998).

### **Overview of Data Analysis**

**Benefits and struggles coding.** Responses to the open-ended interview questions were coded and categorized by three independent coders, using an iterative process that is

similar to that used in focus group research (e.g., Krueger, 1994; Steele et al., 2011). Initial categories were formed based on prior research and were systematically modified by the coding team as the responses were reviewed, to accommodate emerging themes that more accurately reflected the participants responses.

Coders initially independently reviewed 10 percent of the responses to identify segments which represent individual themes. For example, if an adolescent listed “better education, better schools, closer to family” as the benefits of moving, the coders identified how many separate ideas are represented by this statement, probably two ideas. The results of this independent coding were discussed as a team to begin the process of discussing what constitutes a separate idea and begin the coding process.

To code responses into thematic categories, expected themes for each question were identified based on prior research, similar to the top down content analysis used in the qualitative analysis of focus group transcripts (Krueger, 1994; Smith, 2008). For the struggles, these themes were based on a pilot study using a subset of the sample for the current project that examined struggles in children who moved (Abwender et al., 1991). Notably, these struggles also overlapped with prior research, addressed in the literature review, on adolescents’ perspectives about moving and adolescent identified struggles associated with relocation. For the benefits, themes were based on Pavon’s (1998) study using this dataset, however since little prior research has been conducted on positive aspects of moving, fewer initial categories were created. See Appendix B for a list of the initial benefits and struggle categories.

Next, the current data were reviewed to modify initial categories and identify emergent themes (Smith, 2008). The coders each reviewed 10 percent of the responses,

stratified over T1, T2, and T3. Each individual case was reviewed by all three coders and if coders came across a response that did not fit into one of the existing thematic categories, this response was marked as “other.” After coding the first 10 percent of data, the coders met to discuss coding discrepancies, review the current themes, modify thematic descriptions, and add consistently identified themes from the “other” category. This process was repeated until all of the data were reviewed and categories were modified based on the existing dataset. After creating these categories, coders’ independent ratings of 45% of the dataset were used to calculate Kappa coefficients for each benefit or struggle category, and categories with poor agreement were modified or removed. Three categories with poor agreement or very few occurrences (fewer than 3% of responses) were removed or combined with other categories: personal safety, general change (as both a benefit and struggle), teasing (which was combined with the struggle making new friends/relationships/people), and culture (which was combined with the benefit learning a new language). After removing these categories there was substantial agreement between the raters for 10 benefit categories and 11 struggle categories, where  $Kappa = .63-1.00$ . After eliminating or changing categories based on inter-rater reliability calculations, each coder individually coded responses for one third of the remaining dataset. These data, in addition to the 45% analyzed for reliability coding, were used as the adolescent-identified benefits and struggles for subsequent analyses.

**Loneliness cluster analysis.** Cluster analyses were used to assess whether adolescents could be grouped based on loneliness over the course of the first academic year post-move. Cluster analysis is an exploratory method of data analysis that identifies distinct patterns present in data, such as patterns of responding over time or mean-level differences, and forms groups based on these patterns (Steele & Aylward, 2007). This method is



particularly well-suited to exploring patterns of responses on variables that have not been thoroughly examined in previous research. This study utilized a two-step process recommended by Milligan (1980) for examining loneliness over the course of the year. In the first step, hierarchical clustering is used to generate possible clusters, and in the second step non-hierarchical clustering is used to confirm the clusters.

Hierarchical clustering begins with each case representing its own cluster, and each successive step combines two of these clusters. Therefore, this method yields a range of possible clusters. Standardized data ( $z$  score) were analyzed using centroid clustering and squared Euclidean distance methods. Centroid clustering is a method that is recommended for non-normally distributed data (Henry, Tolan, & Gorman-Smith, 2005) and tends to be less impacted by outliers (Hair & Black, 2000). The Kolmogorov-Smirnov test was used to assess the distribution of loneliness and results indicated that the distribution was negatively skewed at each time point (T1:  $Z = 1.36, p = .05$ ; T2:  $Z = 1.52, p = .020$ ; T3:  $Z = 1.93, p = .001$ ); thus, centroid clustering was selected for this dataset. In centroid clustering, each participant is added to a cluster based on their scores' distance from the cluster centroid, or the mean of the cluster variable. Each time a new participant is added to a cluster, a new centroid is calculated, which then affects which cases will be added in the subsequent steps (Hair & Black, 2000). Currently, there is no standard, agreed upon, objective procedure for selecting the correct number of clusters. One method is to examine the percent change in the agglomeration coefficient between each step in the clustering process. When there is a large change in the agglomeration coefficient, this indicates that two heterogeneous groups have been combined, and thus two dissimilar clusters have been combined. However, in addition

to examining agglomeration coefficients, researchers also use theoretical conceptualizations to determine the most interpretable or useful set of clusters (Hair & Black, 2000).

After a set of clusters are identified via hierarchical clustering, non-hierarchical (k-means) clustering is conducted to confirm the clusters. Unlike hierarchical clustering, k-means clustering begins with all of the cases in a single cluster and then divides the data at each successive step. Prior to conducting the clustering procedure, the researcher specifies the number of clusters and provides means on which to base the beginning cluster, although these means will likely change as more cases are added to each cluster (Hair & Black, 2000).

## **Results**

### **Benefits and Struggles**

Results of the coding process indicated eleven categories of moving struggles and ten different benefits of moving. Frequency of each of these benefits and struggles at each time point for the total sample, and for boys and girls, are listed in Tables 1-2. The most commonly identified benefit of moving was making new friends (44% - 57% of participants, varying by time point), followed by attending their new school (22% - 25%), while the most commonly identified struggle associated with moving was making friends and interpersonal relationships (29% - 36%), followed by attending their new school (20% - 26%).

Cochran Q tests were conducted to determine whether the proportion of adolescents noting specific benefits and struggles varied over the three time points. Due to the large number of benefit and struggle categories, and the exploratory nature of these analyses, alpha corrections were not conducted for the omnibus Cochran Q test, despite the large number of analyses conducted. Although this may result in an increase in Type 1 error, this decision was made to have sufficient power to conduct these exploratory analyses.

Table 1

*Participants Endorsing Each Benefit at Each Timepoint*

Benefit Category	<u>T1 (%)</u>			<u>T2 (%)</u>			<u>T3 (%)</u>		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Learning a new language/Culture	7.2	3.2	10.5	5.8	3.2	7.9	7.2	3.2	10.5
New School	24.6	25.8	23.7	24.6	25.6	23.7	21.7	27.4	17.1
Making New Friends	43.5	33.9	51.3	56.5	43.5	67.1	52.2	53.2	51.3
Weather	9.4	12.9	6.6	16.7	24.2	10.5	10.1	8.1	11.8
Family	6.5	4.8	7.9	7.2	4.8	9.2	5.8	4.8	6.6
Recreation	21.7	30.6	14.5	18.1	22.6	14.5	28.3	29.0	27.6
Personal Growth	5.1	6.5	3.9	2.2	3.2	1.3	4.3	6.5	2.6
House and Neighborhood	13.8	19.4	9.2	12.3	14.5	10.5	17.4	27.4	9.2
Finances	2.9	6.5	NA	1.4	NA	2.6	4.3	4.8	3.9
No Benefits	3.6	6.5	1.3	2.2	1.6	2.6	2.9	3.2	2.6
Uncodable	4.3	NA	7.9	6.5	9.7	3.9	3.6	4.8	2.6
Other	3.6	3.2	3.9	5.1	3.2	6.6	4.3	1.6	6.6

*Note.* Percentage totals for each column equal more than 100 because participants identified more than one benefit. N = 136 for All, n = 60 for boys, n = 76 for girls.

Table 2

*Participants Endorsing Each Struggle at Each Timepoint*

Struggle Category	<u>T1(%)</u>			<u>T2(%)</u>			<u>T3(%)</u>		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Leaving Friends	12.3	11.3	13.2	10.9	4.8	15.8	8.7	6.5	10.5
Leaving Relatives	3.6	1.6	5.3	4.3	1.6	6.6	5.8	1.6	9.2
Missing Familiar Settings/Activities	5.8	3.2	7.9	4.3	6.5	2.6	2.4	1.6	9.2
New house/Setting up new house	10.1	11.3	9.2	9.4	9.7	9.2	9.4	11.3	7.9
Language Change	5.1	6.5	3.9	3.6	3.2	3.9	4.3	3.2	5.3
Orientation to community	8.0	9.7	6.6	9.4	6.5	11.8	10.1	12.9	7.9
Making friends/relationships/people	29.0	29.0	28.9	36.2	38.7	34.2	34.8	35.5	34.2
New school	26.1	24.2	27.6	21.0	24.2	18.4	20.3	22.6	18.4
Changes in family relationships	5.8	3.2	7.9	6.5	4.8	7.9	6.5	4.8	7.9
Weather	1.4	3.2	NA	1.4	1.6	1.3	5.1	4.8	5.3
No Struggles	11.6	11.3	11.8	14.5	14.5	14.5	13.8	16.1	11.8
Uncodable	1.4	1.6	1.3	0.7	1.6	NA	1.4	NA	2.6
Other	3.6	1.6	5.3	3.6	NA	6.6	0.9	1.6	2.6

*Note.* Percentage totals for each column equal more than 100 because participants identified more than one struggle. N = 136 for All, n = 60 for boys, n = 76 for girls.

Only one benefit, making new friends, changed in frequency between T1, T2, and T3 ( $Q = 6.38, p = .041$ ; Table 3). Follow up pairwise comparisons with adjusted significance levels indicated that this benefit was more commonly identified at T2 than T1 ( $Q = -.130, p = .039$ ). Additional Cochran Q tests were conducted for boys and girls separately, to see whether there were any trends in benefits or struggles across time within each gender. For benefits, results indicate that the frequency of making new friends changed significantly over time for both boys and girls ( $Q = 6.35, p = .042$ ;  $Q = 6.40, p = .041$ , respectively), the frequency of the category weather changed significantly for boys only ( $Q = 7.90, p = .019$ ), and recreation changed significantly for girls ( $Q = 7.692, p = .021$ ). Follow up analyses indicated that more boys endorsed making new friends as a benefit at T3 than T1 ( $Q = -.194, p = .035$ ) and endorsed weather as a benefit more often at T2 than T3 ( $Q = -.161, p = .019$ ). Surprisingly, the follow up analyses for the benefit making new friends were nonsignificant for girls, likely because of the alpha correction. Girls were more likely to endorse recreation as a benefit at T3 than at T1 or T2 ( $Q = -.132, p = .049$ , for both comparisons). Participant endorsement of struggles did not change over the three time points for girls or boys.

### **Cluster Analysis of Loneliness**

Hierarchical cluster analyses were run using centroid clustering and squared Euclidian distance, to detect patterns of adolescent-reported loneliness over the course of the school year. Results for 2-6 clusters were requested, based on the assumption that more than six clusters would yield uninterpretable results. Percent change in agglomeration coefficients are presented in Table 4, and these results show a significant change in the agglomeration

Table 3

*Cochran Comparisons of Frequency of Each Benefit/Struggle Across Timepoints*

Benefit/Struggle Category	Boys	Girls	Cluster 1	Cluster 2	Total Sample
Benefit- New Language/Culture	0.00	.80	.89	.50	.57
Benefits- New School	.061	1.67	1.14	1.18	.51
Benefits- Making New Friends	6.35*	6.40 *	6.50*	2.27	.638*
Benefits- Weather	7.90*	1.73	1.41	7.75*	5.20
Benefits- Family	0.00	.462	0.00	.20	.32
Benefits- Recreation	1.24	7.69*	2.00	4.13	5.03
Benefits- Personal Growth	1.14	1.20	3.00	.33	2.17
Benefits- House and Neighborhood	3.38	.111	.52	5.16	1.67
Benefits- Finances	3.71	3.50	4.22	1.00	2.18
Benefits- No Benefits	2.00	.67	.75	0.00	.60
Struggles- Leaving Friends	2.60	1.14	1.60	3.00	1.23
Struggles- Leaving Relatives	0.00	1.75	.29	.67	1.27
Struggles- Missing Familiar Setting/Activities	2.33	3.50	.86	.60	.44
Struggles- New House/Setting up new house	.13	.13	.105	.55	.07
Struggles- Language Change	2.00	.33	.50	.67	.60
Struggles- Orientation to Community	1.60	1.37	.23	1.14	.41

Struggles- Making Friends/Relationships/People	1.65	.68	1.27	1.87	2.07
Struggles- New School	.07	2.58	3.41	2.00	1.70
Struggles- Change in Family Relationships	.33	0.00	.80	.67	.10
Struggles- Weather	1.20	5.20	2.33	.350	5.00
Struggles- No Struggles	.70	.35	.74	1.00	.61

Table 4

*Agglomeration Coefficients and Percentage of Change Across Steps in Cluster Analysis*

Number of clusters	Agglomeration coefficient	Change in coefficient (%)
6	2.928	-2.6%
5	3.320	13.4%
4	4.513	36.0%
3	4.988	10.5%
2	5.496	10.18%
1	6.152	11.9%

coefficient between five clusters and four clusters, indicating that five clusters is a more accurate representation of the data. However, upon examining these five clusters three of the clusters appeared uninterpretable due to their small size (fewer than five cases).

Consequently, the two cluster model appeared to yield the most interpretable results, with one cluster of 88 participants and another of 44 participants. Chi-square analyses indicated that these clusters did not significantly differ on gender ( $\chi^2(1, N = 132) = .138, p = .711$ ).

In order to confirm the results of the hierarchical cluster analysis, a k-means cluster analysis was conducted using the means of each cluster, at each time point, as the initial seeds. Similar to the hierarchical cluster analysis, data were clustered based on z-scores of loneliness at each time point. The resulting two clusters appeared to be very similar to the clusters derived from centroid methods. When comparing the centroid and k-means clusters, 128 of the 132 cases (97.0%) were classified into the same clusters regardless of the method used.

To better understand how the cluster analysis groups differed on loneliness, a two-way repeated-measures ANOVA was conducted using loneliness as a dependent variable, cluster group and gender as between subject independent variables, and time as a within subject variable. Gender was included in these analyses since boys report more loneliness in adolescence (Mahon et al., 2006) and report more social problems post-move (e.g., Vernberg et al., 1993). Results yielded significant main effects for time ( $F(2, 256) = 16.312, p = .000, \eta^2_{\text{partial}} = .113$ ) and cluster group ( $F(1, 128) = 241.310, p = .000, \eta^2_{\text{partial}} = .653$ ), where Cluster 1 had a significantly lower mean than Cluster 2. These two clusters will therefore be referred to as Low Loneliness Cluster and High Loneliness Cluster. To follow up on the main



effect for time pairwise comparisons of means at each time point, with Bonferroni corrections, indicated that loneliness significantly decreased over time (see Tables 5-6). The main effect for gender and the interaction effects were nonsignificant.

In order to examine these clusters in relation to the adolescent-identified benefits and struggles, chi-square analyses were conducted to compare the two cluster groups, while Cochran analyses were run separately for the two clusters to determine whether adolescents identified categories with different frequencies over time (see Table 3 for Cochran analyses; see tables 7-8 for frequency and percentages of each category). Results of chi-square analyses indicated that adolescents in the low loneliness group were more likely to identify weather as a benefit at T3 ( $\chi^2(1, N = 132) = 4.834, p = .034$ ) and less likely to identify their house and neighborhood as a benefit at T3 ( $\chi^2(1, N = 132) = 8.250, p = .007$ ). Those in the high loneliness group were more likely to identify leaving friends as a struggle at T1 ( $\chi^2(1, N = 132) = 5.705, p = .026$ ) and making friends as a struggle at T3 ( $\chi^2(1, N = 132) = 5.964, p = .020$ ). Finally, the low loneliness cluster was more likely to say that there were no struggles associated with moving at T2 ( $\chi^2(1, N = 132) = 4.632, p = .033$ ). Results of Cochran Q analyses indicated that participants in Low Loneliness Cluster identified the benefit of making new friends at different frequencies between time points ( $Q = 6.50, p = .039$ ). Follow-up analyses with adjusted significance level indicated that participants in Low Loneliness Cluster identified making new friends as a benefit at time 2 more frequently than Time 1 ( $Q = -0.170; p = .033$ ). Participants in High Loneliness Cluster identified weather as a benefit at different frequencies between time points as well ( $Q = 7.75, p = .021$ ), and follow-up analyses

Table 5

*Pairwise Comparison of Loneliness at Each Timepoint*

Loneliness Timepoint		Mean Difference	Standard Error	<i>p</i>	95% CI	
					LL	UL
Time 1	Time 2	.924	.344	.025	.090	1.758
Time 2	Time 3	1.015	.306	.004	.272	1.759
Time 1	Time 3	-1.939	.366	.000	-2.827	-1.051

Note. Bonferroni adjustment for multiple comparisons.

Table 6

*Means (Standard Deviations) of Loneliness at Each Assessment, By Cluster*

	Low Loneliness	High Loneliness
Time 1	11.44 (3.32)	17.60 (3.34)
Time 2	10.37 (2.70)	16.82 (2.72)
Time 3	9.69 (2.95)	15.47 (2.97)

Table 7

*Endorsements of Each Benefits at Each Timepoint, By Loneliness Cluster*

Benefit Category	<u>T1 (%)</u>		<u>T2 (%)</u>		<u>T3 (%)</u>	
	Low	High	Low	High	Low	High
Learning a new language/culture	6.8	6.8	4.5	4.5	6.8	6.8
New School	27.3	18.2	21.6	27.3	27.7	20.5
Making New Friends	44.3	38.6	61.4	50.0	52.3	50.0
Weather	12.5	4.5	18.2	15.9	14.8	2.3
Family	4.5	9.1	4.5	11.4	4.5	9.1
Recreation	21.6	25.0	20.5	13.6	28.4	27.3
Personal Growth	4.5	6.8	1.1	4.5	4.5	4.5
House and Neighborhood	13.6	15.9	10.2	15.9	11.4	31.8
Finances	3.4	2.3	1.1	2.3	6.8	NA
No Benefits	4.5	2.3	2.3	2.3	3.4	2.3
Uncodable	3.4	6.8	5.7	9.1	2.3	6.8
Other	2.3	6.8	4.5	6.8	2.3	9.1

*Note.* Percentage totals for each column equal more than 100 because participants identified more than one benefit. n = 88 for Low Loneliness Cluster, n = 44 for High Loneliness Cluster.

Table 8

*Endorsements of Each Struggles at Each Timepoint, By Cluster*

Struggle Category	<u>T1 (%)</u>		<u>T2</u>		<u>T3</u>	
	Low	High	Low	High	Low	High
Leaving Friends	8.0	22.7	10.2	13.6	5.7	11.4
Leaving Relatives	3.4	4.5	3.4	6.8	4.5	6.8
Missing Familiar Setting/Activity	2.3	11.4	3.4	6.8	4.5	9.1
New house/setting up new house	9.1	13.6	9.1	11.4	10.2	9.1
Language Change	1.1	6.8	2.3	6.8	2.3	9.1
Orientation to community	11.4	2.3	10.2	6.8	12.5	6.8
Making friends/relationships /people	27.3	36.4	34.1	40.9	28.4	50.0
New school	29.5	18.2	18.2	25.0	23.9	13.6
Changes in family relationships	5.7	6.8	5.7	9.1	3.4	11.4
Weather	2.3	NA	1.1	2.3	4.5	6.8
No Struggles	13.6	6.8	18.2	4.5	17.0	9.1
Uncodable	2.3	NA	1.1	NA	2.3	NA
Other	3.4	4.5	2.3	6.8	3.4	NA

*Note.* Percentage totals for each column equal more than 100 because participants identified more than one struggle. n = 88 for Low Loneliness Cluster, n = 44 for High Loneliness Cluster.

Table 9

*Type of Move Endorsed by Participants in Each Cluster*

Cluster	Within U.S. (%)	From Another Country (%)	Total
Low Loneliness	68 (77.3)	20 (22.7)	88
High Loneliness	24 (54.5)	20 (45.5)	44
Total	92 (69.7)	40 (30.3)	132

indicated that they were significantly more likely to report weather as a benefit at Time 2 than Time 3 ( $Q = -.136; p = .028$ ).

Finally, these two clusters varied on the proportion of individuals who moved within the US versus to the US from another country, ( $\chi^2 (1, N = 132) = 7.174, p = .009$ ). Table 9 presents the frequencies of each type of move for each cluster.

### **Discussion**

In order to better understand the process of adolescent relocation, the current study obtained adolescent reports of the benefits and struggles of moving, and self reports of loneliness and social dissatisfaction from recently relocated adolescents over the course of the year in their new school. The goals of the study were twofold: first, to categorize qualitative reports of the benefits and struggles of moving, and determine whether the frequency of these benefits and struggles change over time or vary by gender. Second, the study sought to determine whether adolescent reports of loneliness could be used to empirically derive clusters of individuals with different post-move adjustments, and whether individuals in these clusters differed on gender or identified benefits or struggles.

Results indicate that many adolescents identify similar benefits and struggles of moving, and the frequency of these benefits and struggles are largely consistent over time. For example, making new friends is both the most commonly identified benefit *and* the most commonly identified struggle of moving. Similar to past research (Norford & Medway, 2002; Puskar & Ladely, 1992; Vernberg & Randall, 1997), the most commonly identified struggle associated with moving was making friends and establishing interpersonal relationships. This remained the most commonly endorsed struggle across all three time points, regardless of gender or reported levels of loneliness and social dissatisfaction. Interestingly, leaving old

friends was endorsed less frequently by adolescents as a struggle associated with moving. Prior research (Norford & Medway, 2002; Puskar & Ladely, 1992) has tended to group leaving old friends and making new ones into a single negative aspect of moving. Since making new friends appears to be a more significant issue for relocated adolescents, it may be more useful for parents and teachers to help these adolescents connect with their new peers rather than focusing on maintaining relationships with old friends. Making new friends was also the most commonly identified benefit of moving. Since adolescence is a period of increasing reliance on peers for social support (Furman & Buhrmester, 1992), re-forming social support networks may be an important task for adolescents when adjusting to their new homes. Interestingly, making new friends was less frequently identified as a benefit of moving at the beginning of the year than the other time points, especially for boys. As adolescents have more time to develop friendships, this may become a more commonly identified benefit of residential relocation.

Like making new friends, attending a new school was commonly identified as both a struggle and a benefit of moving. Prior research provides some support for this mixed view of attending a new school. First, adolescents tend to struggle academically following relocation (Scanlon & Devine, 2001; Simpson & Fowler, 1994; South & Haynie, 2004). Combined with the results of the current study, this suggests that not only do adolescents struggle academically after moving, this adjustment to their new school is one of the most frequently endorsed difficulties associated with moving. On the other hand, some residential relocation researchers contend that some families move to better neighborhoods and school districts to create opportunities for their children and families (Scanlon & Devine, 2001; Weber & Weber, 2005). Indeed, many adolescents in this study noted that their new schools were more

challenging, involved better extracurricular activities, and provided more opportunities for educational development. This information, about the positives and negatives of changing schools, may be helpful for parents and teachers. Parents and teachers might be able to help adolescents adjust by providing them with details about the curriculum, structure, and rules in their new school, or discussing both the positive and negative aspects of their new academic environment.

Although attending a new school appeared to be a more popular response at the first two time points, recreation was more common at the final timepoint, especially for girls. This may be because it took time for adolescents to become familiar with recreational activities in their new neighborhood. Overall, however, the frequency of particular adolescent identified benefits and struggles of moving were generally consistent over time, indicating that the same issues tend to be viewed as stressful and beneficial throughout the first year after relocation. Rather than waiting for adolescents to accept difficult aspects of the move, parents and teachers may want to begin working on problem solving around these issues soon after moving, since they may end up being consistent concerns.

To address the second goal of this study, cluster analyses were conducted based on repeated assessments of adolescents' reports of loneliness and social dissatisfaction. These analyses yielded two distinct clusters: a High Loneliness Cluster and a Low Loneliness Cluster. These two distinct clusters are especially meaningful, given that they were identified based on natural groupings within the data, as opposed to a priori assumptions of groups. If the data had been merely separated into high and low loneliness groups, the results would have ignored the fact that there were more individuals in the Low Loneliness Cluster. Moreover, when compared to Parkhurst and Asher's (1992) study of loneliness in



adolescence, the individuals in the high loneliness group appear to have somewhat higher per-item scores than rejected adolescents, while the low loneliness group's per-item scores were closer to that of popular adolescents. Thus, these two clusters appear to differentiate two distinct groups which likely also have different social statuses. Since these cluster groups are naturally found within the data, as opposed to being imposed by researchers, and these group mean's indicate relevance to high and low social statuses, these two cluster groups may yield clinical utility for identifying individuals with different social adjustments after moving.

Regardless of cluster membership, both groups' reported levels of loneliness decreased over the course of the school year. This decrease in loneliness is similar to prior research findings that adolescents' peer relationships increase in intimacy and companionship over the course of their first year, post-move (Vernberg et al., 2006). Thus, it appears that adolescents and their families should expect their friendships and feelings of loneliness to improve with time as they become more adjusted to their new home.

When examining the adolescent identified benefits and struggles of these two clusters, some interesting differences emerge. At the first assessment, more individuals in the High Loneliness Cluster endorsed leaving friends as a moving struggle. Thus, these adolescents start off the year missing their old friends more than people with lower levels of loneliness. Additionally, while making new friends was increasingly endorsed as a benefit in the Low Loneliness Cluster, this relationship was not found in the high loneliness cluster and by the end of the year, individuals in the high loneliness group were significantly more likely to identify making new friends as a struggle. Participants in the low loneliness group were also more likely to say that there were no struggles associated with moving at the second assessment. Therefore, it appears that these two clusters represent groups of adolescents with

different post-move social experiences. Interestingly, these two groups were distinct even at the beginning of the year. Thus, adolescents who report feeling more lonely and missing their old friends soon after starting school could be identified as a higher risk group for continuing to feel lonely throughout the school year.

Despite prior research showing that boys tend to experience more loneliness (Mahon et al., 2006) and have a more difficult time developing friendships after moving (e.g., Vernberg et al., 1994), these high and low loneliness groups had similar compositions of boys and girls. However, the individuals in the clusters differed on the type of move that they experienced: the high loneliness cluster included significantly more individuals who moved from another country. One might expect these adolescents to have a more difficult time adjusting to the culture of their new home and relating to their peers. Additionally, it is possible that this group is more likely to find it harder to leave old friends, since it would be more difficult to visit or call those friends again. Adolescents who move between countries may therefore be a group that is at a higher risk for experiencing loneliness after moving.

While the current study makes several significant contributions to the literature on relocation and peer relationships, it also opens the door for follow-up research in the area of loneliness and adolescent relocation. This is the first large scale study examining loneliness and relocation in adolescence, however there are questions that remain unanswered. First, although these adolescents had higher levels of loneliness at the beginning of the year, it is not known whether they experience more loneliness than residentially stable adolescents. Second, the impact of keeping in touch with old friends on loneliness and friendship-making post move is not clear from this study. With changes in technology, youth today likely have better means of keeping in touch with friends inexpensively (e.g., email, cell phones,

Facebook™), unlike when these data were collected (1989-1993), however this access may also vary depending on the family's income level. Clearly, the current study merely scratches the surface in possible research to be conducted on predictors and correlates of loneliness in residentially mobile adolescents.

Additionally, this study is useful for establishing additional knowledge about adolescents' perspectives on moving. This systematic qualitative examination of benefits and struggles of moving could be used to develop a measure of adolescent perspectives about moving, which could then be validated using quantitative methods. Additional studies should attempt to replicate the benefits and struggles identified in the current data, to determine whether any of these categories (e.g., weather) are specific to the city in which this study was conducted (Miami). Finally, future studies should also seek to replicate the Cochran analyses conducted to examine changes in these categories over time. Due to the large number of analyses conducted, it is possible that some significant Cochran results may be due to Type I error.

More practically, the results of the current study provide useful information for parents, teachers, psychologists, and school counselors when working with relocated adolescents. By disseminating this information to parents, families could feel more prepared for the range of likely responses to residential mobility. It may also be reassuring for adolescents to know that, over time, they will increasingly recognize making new friends as a benefit of moving, similar to past research showing that adolescents' friendships increase in intimacy and companionship over time (Vernberg et al., 2006). Additionally, this can help parents and clinicians better identify which adolescents are likely to continue to struggle over the course of the move, such as individuals moving from another country, those who report

missing their old friends more, or adolescents who feel significantly more lonely even at the beginning of the year. Overall, by better detailing the process of moving, then clinicians, teachers, parents, and adolescents can be better prepared for the range of possible outcomes and better determine whether an adolescent's response might signify the need for additional intervention.

## References

- Abwender, D.A., Vernberg, E. M., Beery, S.H., & Ewell, K. K. (1991, March). *Adolescents' concerns following relocation: Comparison with parents' perceptions*. Poster presented at the Annual Convention of the Southeastern Psychological Association, New Orleans.
- Asher, S.R., Hymel, S., & Renshaw, P.D. (1984). Loneliness in children. *Child Development, 55*, 1456-1464.
- Brennan, T. (1982). Loneliness at adolescence. In L.A. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research, and therapy* (pp. 269-290). New York: Wiley.
- Chipuer, H.M., Bramston, P., & Pretty, G. (2003). Determinants of subjective quality of life among rural adolescence: A developmental perspective. *Social Indicators Research, 61*, 79-95.
- Civitci, N., & Civitci, A. (2009). Self-esteem as mediator and moderator of the relationship between loneliness and life satisfaction in adolescents. *Personality and Individual Differences, 47*(8), 954-958.
- Furman, W., & Buhrmester, D. (1992). Age and sex differences in perceptions of networks of personal relationships. *Child Development, 63*(1), 103-115.
- Hair, J.F., & Black, W.C. (2000). Cluster analysis. In L.G. Grimm & P.R. Yarnold (Ed.), *Reading and understanding more multivariate statistics* (pp. 147-206). Washington, DC: American Psychological Association.
- Helgeson, V. S., Reynolds, K. A., & Tomich, P. L. (2006). A meta-analytic review of benefit finding and growth. *Journal of Consulting and Clinical Psychology, 74*(5), 797-816.

- Hendershott, A. (1989). Residential mobility, social support, and adolescent self-concept. *Adolescence, 24*(93), 217-232.
- Henry, D. B., Tolan, P. H., & Gorman-Smith, D. (2005). Cluster analysis in family psychology research. *Journal of Family Psychology, 19*(1), 121-132.
- Koenig, L. J., & Abrams, R. F. (1999). Adolescent loneliness and adjustment: A focus on gender differences. In K.J. Rotenberg & S. Hymel (Eds.), *Loneliness in childhood and adolescence* (pp. 296–322). Cambridge: Cambridge University Press.
- Krueger, R.A. (1994). *Focus groups: A practical guide for applied research* (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage.
- La Greca, A.M. (1998). *Manual for the social anxiety scales for children and adolescents*. University of Miami, Coral Gables, FL: Author.
- Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress, 17*(1), 11–21.
- Mahon, N. E., Yarcheski, A., Yarcheski, T. J., Cannella, B. L., & Hanks, M. M. (2006). A meta-analytic study of predictors for loneliness during adolescence. *Nursing Research, 55*(5), 308-315.
- Medway, F.J. (2002). Best practices in assisting relocating families. In A. Thomas & J. Grimes(Eds.), *Best practices in school psychology IV* (pp. 1461-1471). Washington, DC: National Association of School Psychologists.
- Milligan, G. W. (1980). An examination of the effect of six types of error perturbation on fifteen clustering algorithms. *Psychometrika, 45*(3), 325–342.
- Norford, B.C., & Medway, F.J. (2002). Adolescents' mobility histories and present social adjustment. *Psychology in Schools, 39*(1), 51-62.

- Parkhurst, J. T., & Asher, S. R. (1992). Peer rejection in middle school: Subgroup differences in behavior, loneliness, and interpersonal concerns. *Developmental Psychology*, 28(2), 231-241.
- Pavon, A. (1998). *Hispanic adolescent adjustment after relocation* (Unpublished master's thesis). University of Kansas, Lawrence, KS.
- Perlman, D., & Landolt, M. A. (1999). Examination of loneliness in children-adolescents and in adults: Two solitudes or unified enterprise?. In K.J. Rotenberg & S. Hymel (Eds.), *Loneliness in childhood and adolescence* (pp. 325–347). Cambridge: Cambridge University Press.
- Puskar, K.R., & Ladely, S.J. (1992). Relocation stress in adolescent females: Depression, anxiety, and coping. *Journal of Clinical Nursing*, 1, 153-159.
- Raviv, A., Keinan, G., Abazon, Y., & Raviv, A. (1990). Moving as a stressful life event for adolescents. *Journal of Community Psychology*, 18(2), 130-140.
- Rokach, A., & Neto, F. (2005). Age, culture, and the antecedents of loneliness. *Social Behavior and Personality*, 33(5), 477–494.
- Rokach, A., Orzeck, T., Moya, M. C., & Expósito, F. (2002). Causes of loneliness in North America and Spain. *European Psychologist*, 7(1), 70-79.
- Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: Potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin*, 132(1), 98-131.
- Scanlon, E., & Devine, K. (2001). Residential mobility and youth well-being: Research, policy, practice issues. *Journal of Sociology and Social Welfare*, 28(1), 119-138.

- Simpson, G. A., & Fowler, M. G. (1994). Geographic mobility and children's emotional/behavioral adjustment and school functioning. *Pediatrics*, *93*(2), 303-309.
- Smith, J.A. (2008). *Qualitative psychology: A practical guide to research methods* (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage Publications Inc.
- South, S.J., & Haynie, D.L. (2004). Friendship networks of mobile adolescents. *Social Forces*, *83*(1), 315-350.
- Steele, R. G., & Aylward, B. S. (2007). The use of cluster analytic techniques in developmental and behavioral pediatric research. *Journal of Developmental & Behavioral Pediatrics*, *28*(4), 327-329.
- Steele, R. G., Wu, Y. P., Jensen, C. D., Pankey, S., Davis, A. M., & Aylward, B. S. (2011). School nurses' perceived barriers to discussing weight with children and their families: A qualitative approach. *Journal of School Health*, *81*(3), 128-137.
- U.S. Census Bureau. (2009). Current population survey March, 2009 [Data file]. Retrieved from <http://www.census.gov/population/www/socdemo/migrate.html#cps>
- Vernberg, E.M. (1990a). Experiences with peers following relocation during early adolescence. *American Journal of Orthopsychiatry*, *60*(3), 466-472.
- Vernberg, E.M. (1990b). Psychological adjustment and experiences with peers during early adolescence: Reciprocal, incidental, or unidirectional relationships? *Journal of Abnormal Child Psychology*, *18*(2), 187-198.
- Vernberg, E.M., Beery, S.H., Ewell, K.K., & Abwender, D.A. (1993). Parents' use of friendship facilitation strategies and formation of friendships in early adolescence: A prospective study. *Journal of Family Psychology*, *7*(3), 356-369.



- Vernberg, E.M., Ewell, K.K., Beery, S.H., & Abwender, D.A. (1994). Sophistication of adolescents' interpersonal negotiation strategies and friendship formation after relocation: A naturally occurring experiment. *Journal of Research on Adolescence*, 4(1), 5-19.
- Vernberg, E.M., & Field, T. (1990). Transitional stress in children and young adolescents moving to new environments. In S. Fisher & C.L. Cooper (Eds.), *On the move: The psychology of change and transition* (pp. 127-152). West Sussex, England: John Wiley & Sons Ltd.
- Vernberg, E.M., Greenhoot, A., & Biggs, B.K. (2006). Intercommunity relocation and adolescent friendships: Who struggles and why? *Journal of Consulting and Clinical Psychology*, 74(3) 511-523.
- Vernberg, E.M., & Randall, C.J. (1997). Homesickness after relocation during early adolescence. In M. Van Tilburg & A. Vingerhoets (Eds.), *Home is where the heart is: The psychological aspects of permanent and temporary geographical moves* (pp. 165-180). Tilburg, The Netherlands: Tilburg University Press.
- Weber, E.G., & Weber, D.K. (2005). Geographic relocation frequency, resilience, and military adolescent behavior. *Military Medicine*, 170(7), 638-642.

## Appendix A

### Measurement of Loneliness- Adolescent Report

1. I feel alone.
2. I feel left out of things.
3. I don't have anyone to play with.
4. It's hard to get other kids to like me.
5. I'm lonely.
6. It's hard for me to make friends.

## Appendix B

### Struggles & Benefits Initial Categories

#### **Struggles (from Abwender et al., 1991):**

Leaving Friends

Leaving Relatives

Missing Familiar Settings

Setting up new house

Uncertainty about new house

Personal safety/crime/drugs

Language change

Orientation to community

Making friends

Academics in new school

Change in family composition

#### **Benefits (from Pavon, 1998):**

Learning a new language

New school

Making new friends

Culture