

# Utilizing Mathematical Thinking in Addressing Primary Students' Adjustment to a New School Environment at an International School

Stefanos Gialamas, Alessandra Sax

American Community Schools of Athens, Athens, Greece

## Email address:

[gialamas@acs.gr](mailto:gialamas@acs.gr) (S. Gialamas), [saxlanea@acs.gr](mailto:saxlanea@acs.gr) (A. Sax)

## To cite this article:

Stefanos Gialamas, Alessandra Sax. Utilizing Mathematical Thinking in Addressing Primary Students' Adjustment to a New School Environment at an International School. *International Journal of Elementary Education*. Vol. 4, No. 3, 2015, pp. 56-64.

doi: 10.11648/j.ijeedu.20150403.13

---

**Abstract:** The effects of a peer-buddy support program on new students' adjustment in grades 3-5, to a new school environment at an international school were examined. The study was conducted at the American Community Schools of Athens (ACS- Athens). The program was named "The Owl-Buddy Peer Program" and was developed to assist and support participants of the study in adjusting to school. Research focused on determining the effectiveness of the program. Data was collected every two weeks, over a three month period; comparisons of the overall mean of the total scores of the questionnaire were analyzed. Utilization of mathematical thinking and in particular Chebyshev's (1843) theorem, allowed for the interpretation of the results and conclusions, whether the program was successful or not. Results were positive on students adjusting to the new school and also yielded more satisfaction with life in general, from the start to the end of the program.

**Keywords:** Adjustment, Peer-Buddy, Primary Students, Quantitative Analysis, School Counseling, Mathematical Thinking, International Schools

---

## 1. Introduction

The study conducted examined the attitudes and behaviors of primary school students, both native and non-native English speakers, at ACS-Athens during their first year in the new school environment. In addition, the effects of having an Owl-Buddy (peer support) were investigated. The peer buddy program included measurable components on the degree of adjustment socially, emotionally, and academically. New students' experiences were investigated in order to facilitate positive adjustment to school while having ongoing support from a returning student (i.e. provide assistance with navigating around the campus (tour/directions), assist in translation of language if needed, offer guidance in daily school routine when needed and promote socialization among peers, etc.). New students along with their assigned buddies (by counselor) also had weekly check-in meetings with their counselor, in order to monitor their progress during the Owls (new students) transition into school.

Over the years at ACS-Athens, the student population has become more and more economically, socially and culturally, serving over 65 nationalities. Students joining a new and

international school appear to have higher levels of stress adjusting to the school environment and culture of the host country (especially when there are language barriers), thus creating the need for such programs to be in. As there is lacking evidence of such programs in international primary schools, the described research aims to offer additional resources and programs for young international students, ages 6-11 in order to foster positive adjustment in new school settings.

## 2. Characteristics of the Sample

Characteristics of the sample are as follows for the participants of the Owl-Buddy Peer Program: the sample included 22 school-aged children from grades 3-5 ranging from 7- 11 years of age. Eighteen percent of the participants were in third grade, 45.45 % in the fourth grade, and 36.36 % in the fifth grade (see Appendix A). The mean age was 9.13 with a standard deviation of 1.05. Out of the twenty-two students, 15 were male and 7 female. The participants were from the USA, Greece, Cyprus, Lebanon, Israel, Austria, and Holland. Country of Origin was grouped under three labels:

Greece, USA, and Other. Participants from Greece included 45.45 %, 22.73 % from USA and 31.82 % of the participants were from other. The number of countries lived in before arriving to Greece and/or just Greece, includes one to four or more countries. Thirty-six percent of the participants had resided in one country, 18.18% resided in two countries, 22.73 % resided in three countries, 13.64 % resided in four countries, and 9.09 % resided in five or more countries. The native languages of the participants included English, Greek, Arabic, Hebrew and German. For the purposes of grouping data based on small variance in languages, language was labeled into two groups, English and Non-English. At the start of the data collection, participants had spent one month to ten years in Greece. Time was labeled into two groups, three months or less or five years and more.

### 3. Literature Review

In Abe, Talbot and Geelhoed's (1998) study, they examined the effects of a peer program on international student adjustment. The purpose of their study assessed not only the effects of a peer program on student adjustment but more specifically examined students' awareness, knowledge and use of campus resources, as well as their interactions with host students (Abe, Talbot & Geelhoed, 1998). The researchers were also interested in determining if students from non-Asian countries have higher scores on adjustment scales than students from Asian countries.

The sample of the study included 60 international university students in the U.S.A., who came from Asia, Europe, Latin America, Africa, and the Middle East. Self-report instruments were administered and analyzed. Findings of this study indicated that participants of the international peer program scored insignificantly higher than the control group on the Social Adjustment Subscale (Baker and Siryk, 1989). The researchers' findings also suggested that students' interpersonal skills were enhanced by having interactions via activities developed by the international peer program.

Nevertheless, students from Asian countries scored significantly lower on all SACQ scales except for one factor on the Personal-Emotional Adjustment scale, thus confirming that students from Asian countries struggle with adjusting to life in the U.S.A. during their college years (Abe, Talbot & Geelhoed, 1998). Again, collectivistic cultural references may inhibit social connectedness in an individualistic society as the U.S.A.

Limitations to this study were related to the small sample size and nonrandom selection of sample, as voluntary participants may be more socially equipped. The SACQ (Baker & Siryk, 1989) that was utilized was not normed for international students, thus limiting the generalizability of the researchers' findings. Implications of the above outlined study offer valuable resources for peer programs to utilize and positively influence other areas of adjustment on overall well-being and academic success in international educational settings (Abe, Talbot & Geelhoed, 1998). Although research on the effects of peer programs is limited and targeted for

university level students; extending such peer programs to international Elementary, Middle, and High School students could facilitate the process of adjustment during earlier developmental periods of life, that in turn could better equip the individual student to endure future transitions, change, and educational opportunities in host cultures.

Stainback et al., (1992) suggested that some educators have employed peer-support committees to promote friendships in order to address difficulties with social classroom interaction problems. Members of these committees ensure that all students are valued and accepted as integral members of the class. Additionally, the committee develops strategies for promoting friendships in the classroom and engages students in all academic and social aspects of school. Peer buddy programs also aid in promoting friendships and social interactions in school. Selected peers assist partners by acquainting them with the school environment and extracurricular activities (English, Goldstein, Shafer & Kaczmarek, 1997). School practices that foster positive adjustment or holistic health in children (social, emotional, physical, and cognitive balance) offer them opportunities to develop positive relations to others and instill competence in their learning and abilities to be self-directed and independent. These practices are associated with positive school attitudes and overall healthy functioning both in school and society (Baker, Dilly, Auperlee & Patil, 2003). Keup (2006) suggested that the more friendly the educational climate and welcoming of new students, the easier student adjustment can be. Additionally, Gloria and Ho (2003) posited that strong social support within the educational system such as social relationships and peer relations are predictors of student success.

### 4. Utilization of Mathematical Thinking

Mathematical thinking is a process through which a mathematical point of view is developed. It is a process that can be used in the execution of projects as it helps to quantify and critically assess the componential situations. These components are: 1) the resources of mathematical knowledge and skills that the individual brings to the task, 2) the heuristic strategies that that the individual can use in solving problems, 3) the monitoring and control that the individual exerts on the problem solving process to guide it in productive directions and 4) the beliefs that the individual holds about mathematics, which enable or disable problem solving attempts.

Mathematics is often perceived at best as a "tool" and less as a thinking process; nevertheless, the authors used this process to design a tool for collecting, analyzing, and classifying data and finally to draw a meaningful conclusion. In the described research, the mathematical thinking process was utilized in specific areas such as interpreting data, or in how the Owl Buddy Program at ACS-Athens was developed and measured. By utilizing mathematical thinking, the authors adhered to adaptive reasoning, which is defined as the following: "the capacity for logical thoughts, reflection,

explanations and justifications" (National Research Council, pg. 116, 2001). It can also be referred to as a person who thinks logically about relationships among concepts and situations, considers alternatives, reasons correctly and justifies their conclusion (National Research Council, 2001).

The authors determined the significant elements of this research which are: a) an understanding of new student's adaptation to school (ACS-Athens), b) the development of a program to assist new students in adjusting and c) the measurements used to validate the program. Furthermore, in order to utilize adaptive reasoning, the following questions were posed: a) what do new students need in order to adapt to the new environment? And b) how can adaptation be measured in the new school environment? With this in mind, a program has been developed together with a tool that measures its success. The tool (the distributed questionnaire described in the methodology and instrumentation discussion) further utilized a mathematical instrument such as Chebyshev's (1843) theorem, to determine its validity and reliability.

The authors therefore utilized the following mathematical approach: 1) created questions of the survey instrument that yielded quantitative responses, 2) assigned numerical values to questions, 3) collected the quantitative responses, 4) grouped the responses of the reported domains (1-5), as described below in the methodology and instrumentation discussion, 5) analyzed the results with mathematical tools (i.e. Chebyshev's (1843) theorem) where the mean, standard deviation, and correlation coefficient were utilized to observe normal bell curve distributions among all five data collection session (MSLSS1-5) and for each of the five domains: School, Friends, Self, Family, and Environment and 6) drew conclusions.

## 5. Methodology and Instrumentation

The methods that were carried out for the program evaluation were quantitative based, and a survey instrument was used to collect and analyze data. The survey responses were coded appropriately for applying statistical analysis. The students were asked to complete a questionnaire/survey which was a modified version of Heubner's (2001) Multidimensional Student's Life Satisfaction Scale (MSLSS). Students took part in group meetings with the school counselor and/or assistant to the counselor.

The major dimensions addressed on the questionnaire were in reference to the attitudes and behaviors of the new students (grades 3-5) in the Owl Buddy Peer Program and their overall adjustment to school. Specifically, the MSLSS provided a sketch of children's life satisfaction in specific areas. These domains include five groupings: 1) school, 2) family, 3) friends, 4) living environment, and 5) sense of self.

The MSLSS also provided reliability alpha coefficients within the range of .70s to low .90s and revealed a replicable factor structure indicating the meaningfulness of the five dimensions for research purposes. Based on forty questions that Heubner (2001) posited on his scale, for purposes of the

research to be conducted, 20% of the scale was modified to meet the specific needs of new students enrolled at ACS-Athens. As all hypotheses in the presented study were independent of one another, an alpha level of .05 was retained for all analyses with a 95% confidence interval of the difference (Cone & Foster, 2006).

Furthermore, Chebyshev's (1843) theorem was utilized to interpret the normal or non normal distribution of the students' responses to questions on the survey in order to determine scatter values or sets of values with a homogeneous distribution. Each of the questions among the five domains of the MSLSS were grouped accordingly and analyzed by each specific category of questions for the chosen appropriate statistical analyses.

The recording of data, was collected by utilizing both structured and Likert-type questions (including scaled items) on the survey. Demographics were also included in the survey, so that the student's age, gender, level of education, country of origin, number of countries lived in, time spent in Greece, and the child's native language can be examined.

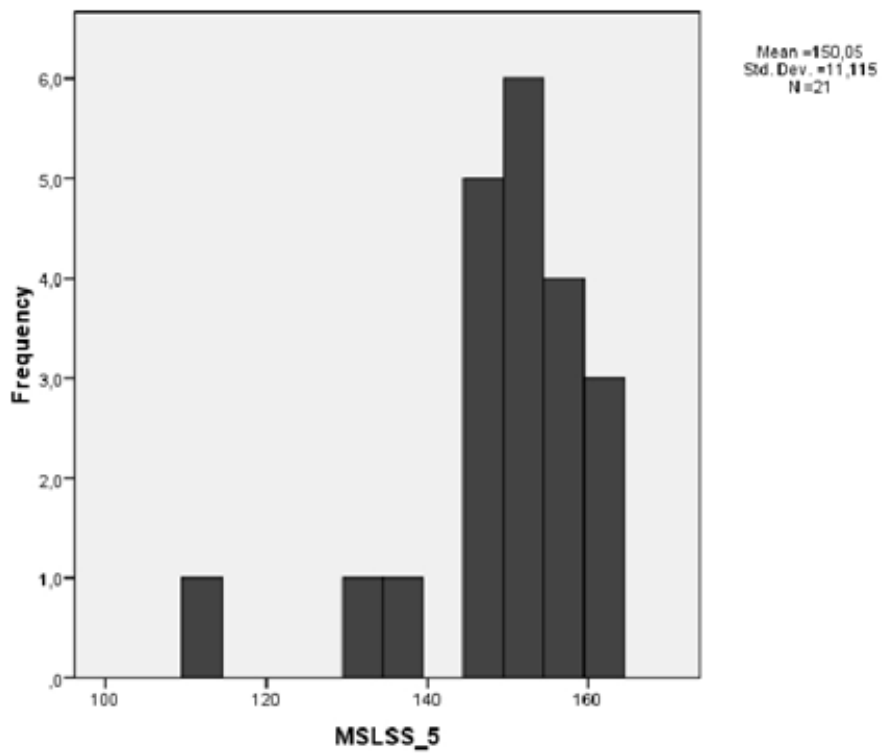
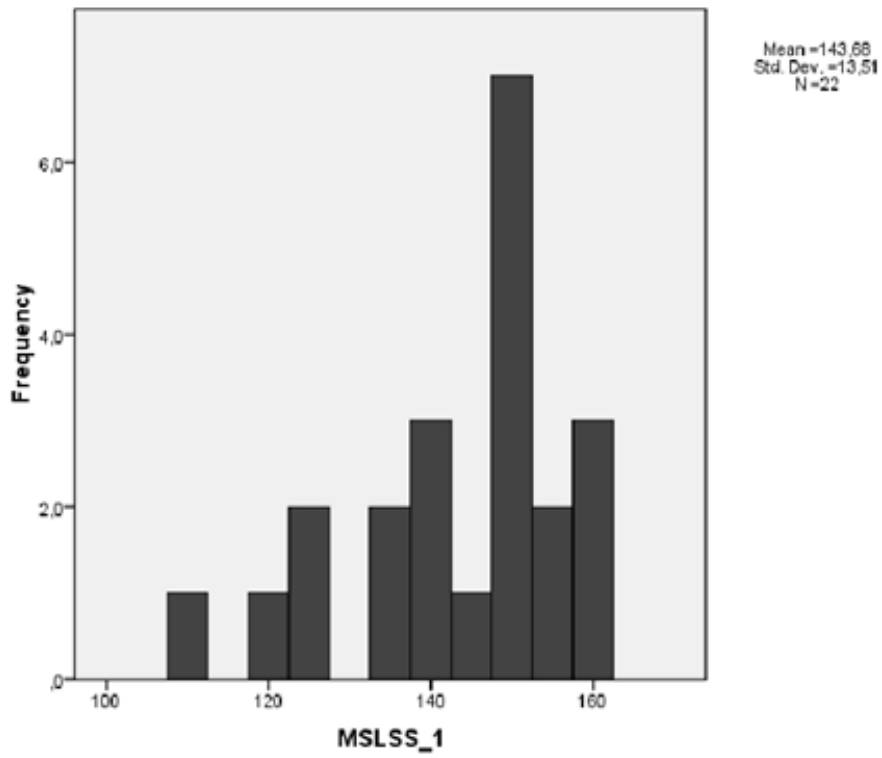
## 6. Results

The results have been drawn from the data collection and analyses that were conducted at the American Community Schools of Athens, Greece, in the Elementary School during the first trimester of 2012, on the effects of the Owl-Buddy Peer Program on international primary students' adjustment. Data was collected every two weeks, based on Heubner's (2001) Multidimensional Student Life Satisfaction Scale (MSLSS). Each of the questions among the five domains of the MSLSS were grouped accordingly and analyzed by each specific category of questions for the chosen appropriate statistical analyses across all five data collection sessions.

The overall mean of the total scores of the questionnaire were analyzed throughout the data collection (see Figures 1-3). Paired samples T-tests and One-way ANOVA tests were carried out between the first and the fifth distribution of the MSLSS (Heubner, 2001) in order to observe any differences in the means of student's total scores throughout the implementation of the Owl-Buddy Peer Program. Chebyshev's Theorem (1843) was also utilized in order to observe if the sample represented normal bell curve distributions. These analyses were carried out for all domains on the questionnaire by analytically interpreting each of the five domains of the MSLSS across all five data collection periods (see further details in discussion on Chebyshev's analysis).

The mean for MSLSS 1 was 143.68 with a standard deviation of 13.510. The Mean for MSLSS5 was 150.05 with a standard deviation of 11.115. The combined mean for MSLSS1 and MSLSS5 was -6.286 with a standard deviation of 8.967. The significance of a two-tailed t-test indicated  $p < .05$  (see Table 1). In another paired T-test between MSLSS1 and MSLSS4, the mean for MSLSS1 was 143.68 with a standard deviation of 13.510, and the mean for MSLSS4 was 148.32 with a standard deviation of 11.503.

The combined mean for MSLSS1 and MSLSS4 was -4.636 with a standard deviation of 9.649.



Figures 1 & 2. Total Scores of All Participants of the Owl-Buddy Peer Program for MSLSS1 & MSLSS5.

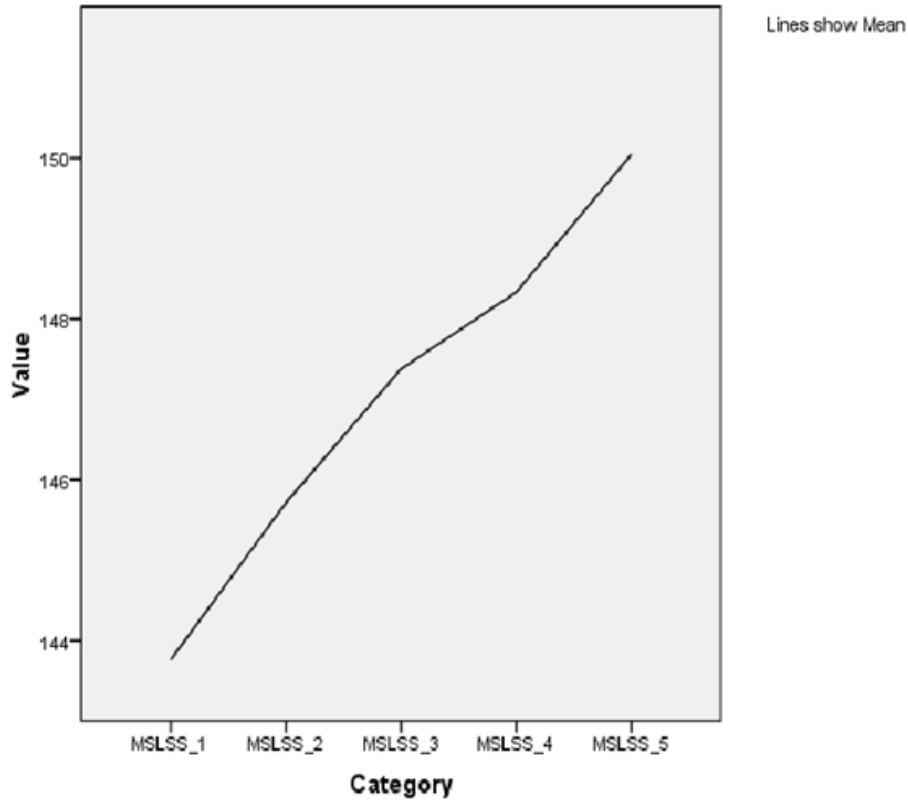


Figure 3. Means for All Data Collection Sessions MSLSS1-5.

The significance of a two-tailed t-test indicated .035  $p < .05$ . Additionally, Paired Samples Tests were conducted to observe paired differences between all 10 pairs of total scores. MSLSS1 and 2, MSLSS1 and 3, MSLSS1 and 4, MSLSS 1 and 5, MSLSS2 and 3, MSLSS2 and 4, MSLSS2 and 5, MSLSS3 and 4, MSLSS3 and 5 and MSLSS4 and 5. Other than the significance among MSLSS1 and 4 and MSLSS1 and 5 as noted above, MSLSS2 and 5, indicated .009 significance, as well as MSLSS3 and 5, .031 significance,  $p < .05$  for both. The effect of age on students' adjustment was illustrated by carrying out Pearson Correlations for Age of the participants, MSLSS1 and Age and MSLSS5. For MSLSS5 and Age, significance yielded .034,  $p < .05$ , illustrating that as time passed by and students matured, students not only became more familiar with the MSLSS, but more adjusted to school as well.

the effects of a peer program facilitate the adjustment of primary students, at an international school in Greece?" Results indicated that new students at ACS-Athens in grades 3-5 rated their life satisfaction with school, friends, family, sense of self, and environment more positively, as the peer-buddy program was continuously implemented throughout the data collection period for the presented study, thus following similar aspects of Abe, Talbo and Geelhoed's (1998) findings on peer support. Although individual hypotheses were rejected, the results pertaining to the adjustment of new students in an international school and how their satisfaction with lives was rated, based on Heubner's (2001) MSLSS, yielded more and more satisfaction with life as the peer-buddy support was offered to them visa-vie the Owl-Buddy Peer Program from the start to the end of the program.

Overall, returning to the original research question, "Do

Table 1. Paired samples T-test between MSLSS1 and MSLSS5 - SIGNIFICANT Paired Sample Statistics.

	Mean	N	Std. Deviation	Std. Error Mean				
Pair 1 MSLSS_1	143,68	21	13,51	3,020				
MSLSS_5	150,05	21	11,115	2,426				
Paired Samples Correlations								
Pair 1 MSLSS_1 & MSLSS_5		N	Correlation	Sig.				
		21	,763	,000				
Paired Samples Test								
Paired Differences								
95% Confidence Interval of the Sig.								
Std.	Std. Error		Difference	t	df (2-tailed)			
Mean	Deviation	Mean	Lower	Upper				
Pair 1 MSLSS_1 - MSLSS_5	-6,286	8,967	1,957	-10,368	-2,204	-3,212	20	,004
t(20) = -3,212, p<.05								

Chebyshev's Analysis: See Tables 2 and 3.

Due to the small sample size, the following discussion on the analysis of Chebyshev's theorem, the mean, standard deviation, and correlation coefficient were utilized to observe

normal bell curve distributions among all five data collection session (MSLSS1-5) and for each of the five domains: School, Friends, Self, Family, and Environment.

**Table 2.** Mean and Standard Deviation of Domains.

<b>Descriptive Statistics:</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
MSLSS_1_Friends	22	36,77	3,491
MSLSS_1_Self	22	24,45	3,363
MSLSS_1_School	22	50,18	5,893
MSLSS_1_Family	22	17,73	2,622
MSLSS_1_Environment	22	14,36	1,761
MSLSS_2_Friends	22	35,50	4,945
MSLSS_2_Self	22	25,59	2,649
MSLSS_2_School	22	50,86	4,960
MSLSS_2_Family	22	18,14	1,833
MSLSS_2_Environment	22	14,64	1,529
MSLSS_3_Friends	22	36,73	4,154
MSLSS_3_Self	22	25,95	2,681
MSLSS_3_School	22	51,23	6,517
MSLSS_3_Family	22	18,09	2,045
MSLSS_3_Environment	22	14,91	1,306
MSLSS_4_Friends	22	36,86	4,155
MSLSS_4_Self	22	25,91	2,724
MSLSS_4_School	22	51,86	4,814
MSLSS_4_Family	22	18,59	2,261
MSLSS_4_Environment	22	15,09	1,065
MSLSS_5_Friends	21	37,57	3,763
MSLSS_5_Self	21	26,19	2,542
MSLSS_5_School	21	52,71	3,989
MSLSS_5_Family	21	18,29	2,239
MSLSS_5_Environment	21	15,29	1,189
Valid N (listwise)	21		

**Table 3.** Variables with Standard Deviation and Correlation Coefficient.

<b>Variable</b>	<b>Values within 1 standard deviation (68%)</b>	<b>Values within 2 Standard deviations (95%)</b>	<b>N above the mean</b>	<b>Correlation coefficient</b>
MSLSS1_Friends	18	22	13	0.094
MSLSS2_Friends	19	22	12	0.130
MSLSS3_Friends	20	19	15	0.113
MSLSS4_Friends	20	21	16	0.113
MSLSS5_Friends	19	20	13	0.100
MSLSS1_Self	13	21	12	0.137
MSLSS2_Self	20	21	13	0.103
MSLSS3_Self	18	21	15	0.103
MSLSS4_Self	19	21	14	0.105
MSLSS5_Self	18	19	14	0.097
MSLSS1_School	17	21	13	0.117
MSLSS2_School	15	17	15	0.097
MSLSS3_School	20	21	13	0.127
MSLSS4_School	19	20	15	0.093
MSLSS5_School	20	20	13	0.075
MSLSS1_Family	18	21	15	0.147
MSLSS2_Family	10	21	11	0.101
MSLSS3_Family	16	21	12	0.113
MSLSS4_Family	19	21	15	0.121
MSLSS5_Family	17	20	12	0.122
MSLSS1_Environment	18	21	13	0.122
MSLSS2_Environment	18	21	12	0.104
MSLSS3_Environment	19	21	16	0.087
MSLSS4_Environment	17	22	10	0.070
MSLSS5_Environment	18	20	13	0.077

### 6.1. MSLSS1 Friends

According to Chebyshev's Theorem (1843), for this domain, 18 participants (68%) should have responded between 33-40, one standard deviation from the mean and 22 participants (95%) between 29-40, two standard deviations from the mean, in order to have a bell shaped curve in the data, otherwise called a normal are stated to indicate the bell curve of each normal data distribution discussed.

The mean (36.77), standard deviation (3.491) and rho (0.094) were utilized to calculate for the appropriate statistics, which are essential values to calculate for a normal bell curve distribution. The actual number of participants that responded under this domain was 19, between 33-40, and 22 between 29-40. Participants' responses shifted to the right of the mean of 36. The rho = 0.094 indicated that almost all of the responses were close to 36 which is reflective of the students' satisfaction with this component of the first survey instrumentation for the Owl-Buddy Program.

### 6.2. MSLSS2 Friends

For this domain, 19 participants (68%) should have responded between 30-40, one standard deviation from the mean and 22 participants (95%) between 25-40, two standard deviations from the mean. The mean (35.50), standard deviation (4.945) and rho (0.130) were utilized to calculate for the appropriate statistics. The actual number of participants that responded under this domain was 20, between 30-40, and 21 between 25-40. Participants' responses shifted to the right of the mean of 35. The rho = 0.130 indicated that almost all of the responses were close to 35 which is reflective of the students' satisfaction with this component of the second survey instrumentation.

### 6.3. MSLSS3 Friends

For this domain, 20 participants (68%) should have responded between 32-40, one standard deviation from the mean and 19 participants (95%) between 25-40, two standard deviations from the mean. The mean (36.73), standard deviation (4.154) and rho (0.113) were utilized to calculate for the appropriate statistics. The actual number of participants that responded under this domain was 19, between 32-40, and 20 between 28-40. Participants' responses shifted to the right of the mean of 36. The rho = 0.113 indicated that almost all of the responses were close to 36, which is reflective of the students' satisfaction with this component of the third survey instrumentation.

### 6.4. MSLSS4 Friends

For this domain, 20 participants (68%) should have responded between 32-40, one standard deviation from the mean and 21 participants (95%) between 28-40, two standard deviations from the mean. The mean (36.86), standard deviation (4.155) and rho (0.113) were utilized to calculate for the appropriate statistics. The actual number of

participants that responded under this domain was 20, between 32-40, and 21 between 28-40. Participants' responses shifted to the right of the mean of 36. The rho = 0.113 indicated that almost all of the responses were close to 35, which is reflective of the students' satisfaction with this component of the fourth survey instrumentation.

### 6.5. MSLSS5 Friends

For this domain, 19 participants (68%) should have responded between 33-40, one standard deviation from the mean and 20 participants (95%) between 30-40, two standard deviations from the mean. The mean (37.57), standard deviation (3.763) and rho (0.100) were utilized to calculate for the appropriate statistics. The actual number of participants that responded under this domain was 20, between 33-40, and 20 between 30-40. Participants' response shifted to the right of the mean of 37. The rho = 0.100 indicated that almost all of the responses were close to 37, which is reflective of the students' satisfaction with this component of the fifth survey instrumentation.

For the domain of Friends, values of all means indicated a successful component of the survey of students' satisfaction from the first measurement to the last measurement with a significant increase from 36 to 37 out of the total score of 40. Thus, 92.5% of students rated positively their satisfaction with their peers at school. Therefore, most students who have the opportunity to take part in a peer buddy program will give responses at 90% or above, as good scores were reported from the beginning of the data collection to the end with consistency on all five means, resulting with the best score at the end of the data collection. This was informative to the researcher, as it implied that the students are rating satisfaction with their lives on this domain as being better.

Similar thinking, in regards to the other domains (i.e. school, self, family and environment) statistical variables are provided for the analyses of data collection across MSLSS 1st-5th sessions for the remaining four domains. The results are as follows:

MSLSS1 School: M= 50.18, SD=5.893, rho= 0.117  
 MSLSS2 School: M=18.14, SD=1.83, rho=0.101  
 MSLSS3 School: M=51.23, SD 6.51, rho =0.127  
 MSLSS4 School: M=51.86, SD 4.814, rho=0.093  
 MSLSS5 School: M= 52.71, SD 3.89 and rho 0.075  
 MSLSS1 Self: M=24.45, SD=3.36, rho=0.137  
 MSLSS2 Self: M= 25.59, SD= 2.649, rho =0.103  
 MSLSS3 Self: M =25.95, SD=2.681, rho =0.103  
 MSLSS4 Self: M =25.91, SD=2.724, rho 0.105  
 MSLSS5 Self: M=26.19, SD=2.542, rho 0.097  
 MSLSS1 Family: M=17.73, SD=2.622, rho=0.147  
 MSLSS2Family: M=18.14, SD=1.83, rho=0.101  
 MSLSS3 Family: M=18.09, SD=2.04, rho=0.113  
 MSLSS4 Family: M=18.59, SD=2.261, rho=0.121  
 MSLSS5 Family: M=18.29, SD=2.239, rho =0.122  
 MSLSS1 Environment: M=14.36, SD=1.761, rho= 0.077  
 MSLSS2 Environment: M= 14.64, SD=1.529, rho=0.104  
 MSLSS3 Environment: M=14.91, SD=1.306, rho=0.087

MSLSS4 Environment:  $M=15.09$ ,  $SD=1.065$ ,  $\rho=0.070$

MSLSS5 Environment:  $M=15.29$ ,  $SD=1.189$ ,  $\rho=0.077$

The outcome of researching the above domains were equally successful as described in detail under the domain of Friends.

## 7. Limitations and Delimitations of the Study

As the sample in the proposed study was provided from the students enrolled at the American Community Schools of Athens, Greece (in grades 3-5), it can be referred to as a convenience sample, thus causing limitations for the generalizability of the program results to be representative across a variety of individuals, settings, and outcomes.

Limits in time related to external factors, pertained to the scheduling of individual and group sessions of a large number students, in order for the interviews to be carried out. Nevertheless, although the sample was convenient with possible threats to external validity, it included approximately 30 subjects meeting the required sample size. Delimitations from the proposed research were college and university students and immigrant populations for the purpose of examining thoroughly primary students of the above stated age group.

## 8. Conclusions

Findings of this research justifies the success of the Owl-Buddy Peer Program at ACS-Athens, which is line with the findings of Abe, Talbot, and Geelhoed, who examined the effects of a peer program on international students' adjustment (Abe, Talbot & Geelhoed, 1998).

Independent of the specific variables analyzed in this study, the peer-buddy program is successful in its parts and its entirety regardless of student differences in country of origin, native language, age, etc. Students thus rated their satisfaction with life across the five domains: friends, school, family, self, and living environment as being better and better from the start to completion of this research over five data collection periods.

## 9. Implications of Results for Professional Practice

Findings of this research support the literature in the field on peer-support and adjustment to academic environments, as well as transitions in life and adapting to a new culture and host culture. Professionals in the fields of education, school psychology, counseling psychology, and cultural psychology may benefit from this research by understanding the importance of providing young children with the necessary tools to become competent lifelong learners. The more positive children perceive their learning environment to be, the more successful adaptation will occur. How can the

model(s) followed in this research be applicable to other professions outside education and psychology? If the individual undergoing the change in life is considered in the specific context that he or she is adapting to, then the principals behind acculturation, change, and adjustment may apply to any personal and professional setting.

More specifically, if the adjustment needs of primary aged students are to be met, it is imperative that their needs are met during primary school by the appropriate school personnel. With the appropriate knowledge and skills gained through participation in a peer buddy program and support from school counselors, teachers, parents, and peers, young students will be able to transition smoothly during times of change throughout their major developmental periods in life. Reaching students on emotional, social, and academic levels are critical to overall well-being and thus allows room for continuous growth throughout the lifecycle. Training sessions can be offered to parents and teachers in order to educate them on the many positive outcomes and practical application of peer-buddy programs. If peer-buddy programs are to be carried out in a multitude of international schools, all procedures of the implementation of such programs must be consistent and follow a protocol.

As Ravens-Sieber, Freeman, Kokonyei, and Christine (2009) argued, perceived social support and academic achievement not only influence students' self-esteem, self-perception and health behaviors, they at some point affect students' present and future health and overall satisfaction with life that in turn are determinants of one's ability to adjust to new circumstances in life.

## Recommendations

The presented study contributes to the current body of research as the necessity to provide support to primary aged students is necessary for young children to be equipped with the tools to adjust to change in their lives (school and culture), which in turn assists them to adapt more positively in their adulthood. In addition to examining students' satisfaction with their lives on the five domains of the MSLSS, peer support and academic success should be further explored, as literature points to the strong relationship between the two.

Although research on the effects of peer programs is limited and targeted for university level students, extending such peer programs to international elementary, middle, and high school students could facilitate the process of adjustment during earlier developmental periods of life, which in succession better equip the individual student to endure future transitions, change, and educational opportunities in host cultures. Having a full understanding on the effects of peer support and adjustment and all its processes, improvements in theory, research, and practice can persevere (Cone and Foster, 2006).

The Owl-Buddy Peer Program can therefore be implemented in entirety or with modifications to any International School for students in grade 3-12 around the globe.



---

## References

- [1] Abe, J., Talbot, D. M., & Geelhoed, R. J. (1998). Effects of a peer program on international student adjustment. *Journal of College Student Development, 39*(6), 539-539.
- [2] Baker, J.A., Dilly, J. (2003). The developmental context of school satisfaction: Schools as psychologically healthy environments. *School Psychology Quarterly, 18*, 206-221.
- [3] Baker, R.W., & Siryk, B. (1989). *Student adaptation to college questionnaire (SACQ)*. Los Angeles: Western Psychological Services.
- [4] Chebyshev, Pafnuty Lvovich. Retrieved from <http://www-history.mcs.st-and.ac.uk/Biographies/Chebyshev.html> on July 10, 2012.
- [5] Cone, J.D., Foster, S. (2006). *Dissertations and theses from start to finish*. DC: American Psychological Association.
- [6] Doll, B. (1996). Children without friends: Implications for practice and policy. *School Psychology Review, 25*, 165-183.
- [7] English, K., Goldstein, H., Shafer, K., & Kaczmarek, L. (1997). Promoting interactions among preschoolers with and without disabilities: Effects of a buddy skills-training program. *Exceptional Children, 63*, 229-243.
- [8] Gloria, A.M., & Ho, A. (2003). Environmental, social and psychological experiences of Asia American undergraduates: Examining issues of academic persistence. *Journal of Counseling & Development, 81*(1), 93-105.
- [9] Huebner, S. (2001). *Manual for the Multidimensional Students' Life Satisfaction Scale*. University of South Carolina, Department of Psychology. Columbia: SC 29208.
- [10] Keup, J.R. (2006). Promoting new-student - success: Assessing academic development and achievement among first -year students. *New Directions for Student Services, 114*, 27-46.
- [11] National Research Council. (2001). *Adding it up: Helping children learn mathematics*. Kilpatrick, J., Swafford, J., & Findell, B. (Eds.). Mathematics Learning Study Committee, Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.
- [12] Ravens-Sieberer, U., Freeman, J., Kokonyei, G., Thomas, C. A., & Erhart, M. (2009). School as a determinant for health outcomes - a structural equation model analysis. *Health Education, 109*(4), 342-356.
- [13] Stainback, W., Stainback, S., & Willkinson, A. (1992). Encouraging peer supports and friendships. *Teaching Exceptional Children, 24* (2), 6-11.