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The impact of interdependent cross-age peer tutoring on social and mathematics self- concepts

Mirjan Zeneli¹, Peter Tymms² and David Bolden³

^{1,2,3}Durham University, United Kingdom

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ABSTRACT

This paper adds to the limited body of literature and concentrates on investigating the impact of a new peer tutoring framework, 'Interdependent Cross Age-Peer Tutoring' (ICAT), on the socio-academic process of learning of self-concepts. ICAT is informed by Social Interdependence Theory, a socio-psychological perspective which aims to make cross-age peer tutoring more cooperative. The intervention took place in 2013 with three schools in England: Two of the schools adopted a pre-post-test quasi experimental design and one school (school C) adopted a single group design. In school A Year 8 students tutored Year 6 (n=201), in school B Year 9 students tutored Year 7 (n=115), and in school C Year 10 students tutored Year 8 (n=102). ICAT was applied once a week for a period of 35-40 minutes across six weeks, covering school-planned mathematic topics. For school A, which implemented ICAT according to programme specifications, some positive and significant effect sizes were observed.

Keywords:

Social Interdependent Cross-Age Peer Tutoring, Mathematics Self-Concept, Social Interdependence, Cooperative Learning.

1. Introduction

Peer tutoring is a form of peer learning intervention which takes place in an academic context, it can be one-to-one or one-to-many (Topping & Ehly, 1998). It has been applied to improve the self-concept of children within various core curriculum areas such as literacy (Gisbert & Font, 2008; Miller, Topping, & Thurston, 2010; Sporer, & Brunstein, 2009; Thurston, Duran, Cunningham, Blanch, & Topping, 2009; Tymms, Merrell, Thurston, Andor, Topping & Miller, 2011; Yarrow & Topping, 2001) or mathematics (Bar-El & Raviv, 1982; Fantuzzo, King, & Heller, 1992; Ginsburg-Block, & Fantuzzo 1998; Sharpley, Irvine, & Sharpley 1983; Tymms, et al, 2011). The method has been reported in several meta-analyses to be an effective education intervention in improving not only academic performance (Zeneli, Thurston & Roseth, 2016), but also in improving students' academic and social self-concepts (Cohen, Kulik & Kulik, 1982; Leung, Marsh, Craven, Yeung & Abduljabbar, 2013).

A meta-analysis has also shown that peer tutoring interventions in which students are interdependent by goals and rewards, as set by students themselves, and informative/autonomous structures have high effect sizes for self-concept variables (Ginsburg-Block, et al., 2006).

Some of the most common peer tutoring interventions are: Class-wide peer tutoring (CWPT) (Delequari, Greenwood, Streeton & Hall 1983), reciprocal peer tutoring (RPT) (Fantuzzo, King, & Heller 1992), paired

¹ Corresponding author's address: Leazes Road, Durham University, Durham, United Kingdom, DH1 1TA

Telephone: (0044) 078 078 55353

Fax: +00 44 (0) 191 334 8311

e-mail: mirjan.zeneli@durham.ac.uk

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assisted learning (PALS) (Mathes & Simon, 1997; Fuchs, Fuchs, Karns, Hamlett, Katzarokt & Dudka, 1998; Fuchs, S.L, Fuchs, D, Kazdan, Allen, 1999), and cross-age peer tutoring (Fitz-Gibbon, 1990; 'Author, Date').

Interventions such as CWPT, RPT and PALS have been applied to a same-age context. All have a reciprocal dimension, and all consist of goal and reward interdependence elements as well as a structured format. The interventions differ mainly in how the pairs are created, who sets the goals and rewards, and the interactions of the tutee with the tutor.

Most peer tutoring interventions have to date concentrated on exploring the impact of the intervention on performance improvement as opposed to investigating wider process of learning variables such as social or academic attitudes. It is the aim of this paper to concentrate on investigating the impact of peer tutoring on such process of learning variables.

2. Significance for this study

There are strong theoretical and empirical claims that cross-age peer tutoring improves process of learning elements related to social and academic attitudes. These claims have emerged from various theories such as: Role Theory (Sarbin, 1976), Social Constructivism (Topping & Ehly 1998) and the broader framework of Social Interdependence Theory (Johnson, D.W., & Johnson, R., T, 1987; 1989; Roseth, Johnson, D,W., & Johnson, R.T., 2008). With social interdependence perspectives incorporating elements from both Role Theory and Social Constructivism, while emphasising positive interdependence with the purpose of enhancing process of learning elements, such as cooperation within a group.

Past research has already investigated the impact of peer tutoring on socio-psychological process of learning characteristics related to self-perceptions. However, this paper is still significant for at least three reasons:

Firstly, the peer tutoring intervention adopted here combines characteristics that have been identified as effective in terms of improving both, performance as well as attitude elements. Specifically, 'Interdependent Cross-Age Peer Tutoring' (ICAT) is the first method to adopt a cross-age peer tutoring intervention influenced by social interdependence concepts, which aims to improve broader aspects of learning as opposed to only performance. Many interdependent elements such as goal interdependence or informative/autonomous structure have to date only been applied in a reciprocal, same-age as opposed to a cross age context (Author, Date). Therefore the impact of ICAT on broader process of learning elements is not yet known.

Secondly, the paper contributes to what is called 'secondary analyses' or process of learning analyses in peer learning. It provides additional views on the wider influence of peer tutoring, which can then further strengthen debates and inform academics, policy-makers and teachers. The majority of studies which have investigated the impact of peer tutoring on attitude variables have either concentrated on its impact on academic or social aspects, as opposed to both.

Finally, one of the most established relationships in education is the reciprocal relationship of subject-specific academic self-concept and academic performance (Marsh W., & O'Mara 2008). Therefore, if researchers are able to identify interventions which have an impact on such self-concept variables, then this can aid the understanding of how specifically peer tutoring improves academic performance.

3. Aim and research questions

The aim of this research was to investigate the impact of ICAT on a range of attitude variables, both social as well as academic. Specifically the research answered these five questions:

- 1) Does ICAT improve mathematics self-concept?
- 2) Does ICAT improve mathematics intrinsic motivation?
- 3) Does ICAT improve how students perceive their level of choice when doing mathematics?
- 4) Does ICAT improve how students relate to people in mathematics classes?
- 5) Does ICAT improve social self-concept?

4. Method

4.1 Participants

A total 550 students from three schools across England participated in the study; two schools in the North East of England and one in the South East. For an expected effect size of 0.55, which is the average effect size found in peer tutoring interventions in mathematics (Zeneli, 2015), a significance level of 0.05 (one tailed t-test), and a power of 0.8, the total sample requirement for each school is 84, or 42 per each group.

School A involved Year 8 tutoring Year 6, with ages ranging from 9-13 in this school. For school B Year 9 tutored Year 7, with an age range of 11-16 for the entire school. And school C Year 10 tutoring Year 8, consisted of an age range from 11-19.

There were in total 24 teachers who participated in the project, with an age range of 25-56, and a teacher experience range of to3-25 years.

4.2 Design

Schools A and B adopted a pre/post-test quasi experimental design and school C adopted a pre/post-test single group design.

Table one presents the design and the data collected and table three presents the gender composition of each group:

Table 1. Design and data collected

Schools	Length & control groups.	Attitude Data
A	Six weeks, pre-post-test quasi experimental design.	Pre-post, for all Year 6s and Year 8s.
B	Six weeks, pre/post-test quasi experimental design.	Pre-post, for all Year 9s and Year 7s.
C	Six weeks, pre-post-test single group design.	Pre-post, for peer tutoring Year 10s and Year 8s.

In school A the control group consisted of 8 free school meal students (FSM), and 6 for the peer tutoring group. For school B, the control group contained 17 FSM students, and the peer tutoring group 15 students, while for or school C, the single group design, there were 19 FSM students. In other words, for schools A and B, which adopted a quasi-design, the groups within each school were approximately balanced in terms of FSM students.

4.3 Intervention Procedures

Materials/exercises. The topics were chosen and created by the school personnel and the researchers to reflect their lessons, with the control group concentrating on the same topic as the intervention group.

Table two below provides a list of topics covered by each school during the 6 weeks project.

Table 2. Topics by schools

School A	School B	School C
Number patterns and sequence	Mean, median, range, mode	Measurements
Fractions	Data interpretation and representation	Probability
Understanding measures	Factors, multiply, fractions	Transformation
Properties of shape	Sequences	Enlargements
Data interpretation and representation	Mental methods, multiply/divide	Area
Written methods	Equations	Equations

Organisation. All school participating in the programme agreed to 35-40 minutes of ICAT for a period of six weeks, and an additional 45 minutes of student training. The project commenced during the last term of the 2012-3 school year. The short questionnaires were administered and collected by the teachers.

Consent. An opt-out ethics consent form was presented to students and their parents. Teachers who did not wish to participate in the ICAT intervention were given the choice to serve in the control group. Ethical approval was gained from Durham University. Also, USB sticks with the ICAT framework were provided to each school for future professional developments, and the schools were assured that if they required any future assistance help would be provided.

Pair and Class set up. The pairings of the students were conducted by the mathematics head teachers within each school in the following way: The highest performer of the older age male students paired with the highest performer of the younger male age, and so on down the line, the same for the girls. Same sex pairings were carried out, considering that same sex grouping provide higher effect sizes (Rohrbeck, et al., 2003). The two year age gap is consistent with past cross age peer tutoring interventions (Topping, et al, 2003; Tymms, et al, 2011), and recommended by many experts in peer tutoring (Thurston, 2014; Tymms & Merrell, 2015). The pairs then worked together for the six week duration of the project.

4.4 Teacher and Student Training

Training was conducted in a top-down small group cascade model: The researcher trained head teachers and facilitators, who trained the teachers, and the teacher trained the students. Training was provided to mathematics head teachers and in-house facilitators in these areas:

Theory. This section covered the logic behind peer tutoring and the body of literature which aims to explain its functioning.

Practicing ICAT. Teachers and facilitators engaged in individual role-play on the ICAT framework.

How to conduct training of the teachers and the students to cover on both academic and social communication skills: The trained staff were advised to carry out role play with the teachers and the students for both: the academic framework and interpersonal communication skills, such as providing praise accurately and synchronising the tone of voice with the body language and the context overall.

Teachers and students received one full session of 45 minutes on the ICAT and interpersonal communication skills. It is argued that training of the students is essential in the success of peer tutoring (Harrison & Cohen, 1971; Barron & Foot, 1991; Leung, 2014).

4.5 ICAT intervention framework

The ICAT framework, to which the students worked, consisted of four parts, together creating an informative/autonomous structure with the tutor providing implicit and explicit help:

In the first part, 'Goal', the students set an academic goal in pairs. This is a number threshold which becomes the performance goal they wish to achieve in a turn-taking test at the end.

During the second part, 'Practice-Test' the tutor prompts the tutee to answer various mathematics questions from very easy to very challenging. New mathematics concepts are introduced at this stage and maximum interaction is expected.

In the third part, 'Connect', the tutee is prompted by the tutor to connect/link the new concepts to previous mathematics concepts (Mevarech & Kramarski, 1997) as well as to real life events (Tymms, et al, 2011). This part was aimed to help students improve cognitive and meta-cognitive engagement in mathematics. During the second and the third stages the tutor is asked to provide implicit and then explicit help to the tutee, rather than show the answer to the tutee, similar to RPT interventions (Fantuzzo & Ginzburg-Block, 1998).

The final part, 'Turn-Taking Test', requires the pairs to take turns to complete the exercises in order to determine whether they have achieved their self-set performance goals. The tutor then marks the exercise, the tutee adds up the points and together the pair check if they have achieved their goal. The point score handed

to the students for each correct exercise in the turn-taking test, is intentionally generous, therefore enhancing the chances for the pair to meet their goal and consequently improve their mathematics self-concept.

4.6 Instruments

The questionnaire contained five sub-scales:

The mathematics self-concept sub-scale was adopted from Marsh’s ‘Academic Self-Description Questionnaire 1’ (ASDQ-1) (1990). Four items were chosen from this sub-scale. Three sub-scales were adopted and modified from Ryan and Deci’s (2012) ‘Intrinsic Motivation Instrument’ (IMI) (IMI website): a) mathematics intrinsic motivation (enjoyment), with three items, b) relating to people in mathematics classes, with four items, and c) choice of how to do mathematics in class, consisting of three items. Finally, the social self-concept scale was a researcher-adapted instrument, inspired by Harter (1985), consisting of three items.

Consent was obtained from the authors for all the instruments.

Exploratory and confirmatory factor analyses were conducted with the instruments, to re-test for reliability. It was predicted that apart from two sub-scales, mathematics intrinsic motivation and mathematic self-concept which are similar in nature, the remaining sub-scales would not strongly correlate with one another, however each item would relate strongly to their sub-scale. The analyses were conducted by AMOS 20 and diagram outputs showed that the model was mostly confirmed. Table 3 on the next page presents the model indices on various age groups:

Table 3. Instrument development and CFA coefficients by year and school

	Assumptions			CMIN			CFI	TLI	RMSEA
	Nor-mality	DF	N	Chi	Default Model	Independent Model			
Tutees:									
Pre-test year 6 (First model development)	Yes	219	101	345.702 p<.001	1.579	6.813	.91	.90	.08
CFA: Confirming the Model									
Pre-test Year 6 (Final model 17 items)	Yes	109	101	131.964 p=.067	1.21	7.40	.97	.97	.05
Post-test Year 6	Yes	109	99	165.558 p<.001	1.519	8.769	.95	.93	.07
Pre-test Year 7	Yes	109	66	149.793 p=.006	1.374	4.955	.92	.91	.08
Post-test Year 7	Yes	109	66	182.470 p<.001	1.674	6.521	.90	.88	.10
Pre-test Year 8	Yes	109	43	139.954 p=.024	1.284	4.798	.94	.93	.08
Post-test Year 8	Yes	109	44	162.029 p=.001	1.487	4.893	.90	.88	.11

Tutors:									
Pre-test	Yes	109	117	130.005	1.193	7.140	.98	.97	.04
Year 8				p=.083					
Post-test	Yes	109	116	129.497	1.188	8.072	.98	.97	.04
Year 8				P=.088					
Pre-test	Yes	109	68	170.449	1.564	4.915	.89	.86	.09
Year 9				p<.001					
Post-test	Yes	109	57	155.634	1.428	5.236	.92	.90	.09
Year 9				p=.002					
Pre-test	Yes	109	72	149.780	1.374	5.181	.93	.91	.07
year 10				p=.006					
Post-test	Yes	109	65	188.933	1.733	6.420	.89	.87	.11
Year 10				p<.001					

4.7 Analysis

Performance was analysed by using SPSS 20:

Analysis of Covariance (ANCOVA) was used for schools A and B, which adopted the pre/post-test quasi experimental designs, since the design controls for pre-test score differences. For the single group design, school C, a dependent t-test was applied.

For the quasi-experimental designs, schools A and B, the effect size was calculated by using Cohen’s d technique with the square root of the MSerror as the denominator. For school C, Hedge’s g pooled standard deviation was used to calculate the effect size, since the design in this school differed from schools A and B.

5. Findings

5.1 Attrition rate and implementation

Table four reports the attrition rates by data collection type. As can be seen, school B’s control group and school C in general showed a large attrition rate, in total ranging from 25-43%.

Detailed implementation data are reported in a separate study currently in the publication process. However, classroom and student pair observation as well as analysis of ICAT lesson materials of the six weeks’ materials indicated that school A implemented ICAT better than schools C and D, and school C implemented it better than school B.

Table 4. Attrition rate % for each data collection type by group and school for the tutees and tutors

Schools	Year	Groups	Attitude questionnaires %*
School A	8	Peer Tutoring	6 missing 6/54=11%
		Control	3 missing 3/62=5%
	6	Peer Tutoring	8 missing 8/54=15%
		Control	10 missing 10/58=17%
School B	9	Peer Tutoring	8 missing 8/36=22%
		Control	17 missing 17/42=40%
	7	Peer Tutoring	2 missing 2/36=6%
		Control	11missing 11/39=28%
School C	10	Peer Tutoring	20 missing 20/80=25%
	8	Peer Tutoring	32 missing 32/74=43%

5.2 Regression to the mean

Also, a point to discuss is the regression to the mean concept. The phenomenon could be a problem when conducting quasi-experimental designs. It emerges when the groups, intervention or control, fall at the extreme end of the entire samples' mean during the pre-test, and then adjusts itself during the post-test. This leads to the groups not being equal on pre-test scores. This situation is usually eliminated by strict randomisation or performance matching. Hence, it is generally the case that the control or the intervention group result in bias due to chance (Trochim, 2012).

Trochim (2012) suggests that one way to establish whether there was a regression to the mean is to look at the relationship of the pre-test and the post-test scores for each group, intervention and control, and see if the students who scored high in the pre-test also scored high in the post-test, hence establishing that the results were not by chance. The formula for measuring the amount of regression to the mean is $100(1-r)$, where r is the correlation. The higher the correlation, the lower the percentage of the regression to the mean (Trochim, 2012).

Regression to the mean analyses were undertaken for all self-concept variables in the project, performance and attitude variables, for both schools A and B. Most variables showed a 20-30% regression to the mean, however, since this phenomenon appeared for both groups in all variables, control and intervention groups, the threat to inflating the effect size is extremely small, as regression to the mean for any variable has cancelled itself out, and therefore poses no danger to the results.

5.3 Statistical requirements

Statistical requirement investigations for ANCOVAS were also conducted, and many of the variables showed violated statistical assumptions. However, since the sample size for the schools was higher than 30 participants, the violated assumptions should not have majorly implicated the final results (Howell, 2010).

5.4 Attitude Variables

Regarding pre-test group difference, as can be seen from table five some of the variables were not equal, especially for mathematics self-concept Years 6, 8 and 9 students, as well as variable choice for Years 8 and 9 students, all of which were significant at ($p<.05$). This further justifies the need to use ANCOVA as a statistical test for analysing the data.

Table 5. Pre-test score differences by variables and schools

Student Attitude	Pre-test mean peer tutoring	Std.Dev	n	Pre-test mean control	Std. Dev	n	Sig two tailed
School A Year 6 (Tutees)							
Mathematics self-concept	17.91	5.02	46	19.81	4.09	48	.047
Mathematics enjoyment	11.85	4.89	46	13.60	4.79	48	ns
Relating to people in mathematics classes	19.15	5.61	46	20.29	4.25	48	ns
Social self-concept	14.41	4.66	46	14.35	3.84	48	ns
Choice	11.20	4.6	46	10.83	4.60	48	ns
School B Year 7 (Tutees)							
Mathematics self-concept	16.65	5.37	34	16.36	5.96	28	ns
Mathematics enjoyment	10.21	4.73	34	10.42	5.55	28	ns
Relating to people in Mathematics classes	17.62	4.58	34	19.04	5.44	28	ns
Social self-concept	13.09	3.5	34	14.04	3.99	28	ns
Choice	12.94	4.19	34	12.14	4.61	28	ns
School A Year 8 (Tutors)							
Mathematics self-concept	19.65	3.8	48	17.75	4.13	59	.016
Mathematics enjoyment	13.58	4.88	48	12.32	3.80	59	ns
Relating to people in mathematics classes	19.25	3.91	48	18.64	5.06	59	ns
Social self-concept	13.81	4.12	48	14.54	4.33	59	ns
Choice	12.77	2.77	48	10.67	3.99	59	.003
School B Year 9 (Tutors)							
Mathematics self-concept	18.00	3.24	28	16.20	2.46	25	.029
Mathematics enjoyment	11.14	5.13	28	9.28	3.93	25	ns
Relating to people in mathematics classes	18.17	4.97	28	14.28	3.72	25	.002
Social self-concept	14.16	3.82	28	13.96	3.95	25	ns
Choice	13.04	4.30	28	10.88	3.10	25	.043

Tables 6 and 7 report the effect sizes and the significance level for each variable and school:

School A - Attitude findings are reported for both tutee and tutor, with the effect sizes being higher for the tutors:

Year 6 (tutees). - There was no significant main effect for the Year 6 students on; a) mathematics self-concept, b) mathematics intrinsic motivation, c) relating to people in mathematics classes, and d) social self-concept.

There was, however, a significant main effect on the level of choice perceived in mathematics classes for the Year 6 students, $F(1, 93)=7.37$, significant at ($p=.008$), effect size 0.56. Year 6 peer tutoring students gained significantly more scores in choice of how to do mathematics in class (Mean 12.09) relative to the control group (mean 10.07), $Mse=13.01$ with mean difference=2.02.

Year 8 (tutors). - There was no significant main effect for how Year 8 students related to people in mathematics classes or choice of how mathematics was conducted in class.

There was a significant main effect on mathematics self-concept for the Year 8 students, $F(1, 106)=11.89$, significant at ($p=.001$), effect size 0.69. The treatment group gained higher mathematics self-concept scores (mean 19.75) than the control group (mean 17.48), $Mse=10.97$, mean difference=2.28.

There was also a significant main effect for treatment on mathematic enjoyment for the Year 8 students, $F(1, 106)=7.12$, significant at ($p=.009$), effect size 0.49. The treatment group gaining significantly higher mathematic enjoyment scores (mean 13.49) than the control group (mean 11.69), $Mse=11.86$ mean difference=1.80.

Finally, there was a significant main effect for the social self-concept of the Year 8 students, $F(1, 106)=5.72$, significant at ($p=.05$), effect size 0.48; with the treatment group having gained a significantly higher social self-concept score (mean 14.73) than the control group (mean 13.20), $Mse=10.78$, mean difference=1.53.

School B: For the Year 9 student tutoring a Year 7 student, none of the attitude variables were statistically significant for the tutors or the tutees. Overall most of the effect sizes were positive.

Table 6. *School A and B effect sizes*

Student Attitude	Peer Tutoring Est. Mean	Std. Error	Control Est. Mean	Std. Error	MSE	ANCOVA Effect Sizes	t-test Effect Sizes
School A Year 6 (Tutees)							
Mathematics self-concept	19.36	.495	19.70	.49	11.05	-0.10	-0.11
Mathematics enjoyment	13.30	.402	12.3	.39	7.32	0.35	0.33
Relating to people in Mathematics classes	19.77	.578	19.45	.57	15.30	0.08	0.09
Social self-concept	14.20	.42	14.36	.41	8.16	-0.06	-0.00
Choice	12.10	.53	10.07	.52	13.01	0.56*	0.56*
School B Year 7 (Tutees)							
Mathematics self-concept	17.69	.70	16.49	.77	16.51	0.29	0.32
Mathematics enjoyment	11.51	.81	10.46	.89	22.32	0.22	0.09
Relating to people in Mathematics classes	18.94	.85	18.65	.94	24.30	0.06	0.09
Social self-concept	14.22	.53	13.98	.58	9.47	0.08	0.02
Choice	12.05	.70	12.69	.78	16.75	-0.16	-0.02
School A Year 8 (Tutors)							
Mathematics self-concept	19.75	.49	17.47	.44	10.97	0.69*	0.69*
Mathematics enjoyment	13.49	.50	11.69	.45	11.86	0.52*	0.49*
Relating to people in Mathematics classes	18.85	.59	18.14	.53	16.58	0.17	0.20
Social self-concept	14.733	.48	13.20	.43	10.78	0.47*	0.48*
Choice	11.130	.50	10.95	.44	10.99	0.05	0.09
School B Year 9 (Tutors)							
Mathematics self-concept	16.48	.42	16.54	.44	4.62	-0.03	0.00
Mathematics enjoyment	10.89	.68	10.08	.72	12.61	0.23	0.15
Relating to people in Mathematics classes	17.15	.75	18.39	.80	14.40	-0.33	-0.22
Social self-concept	14.21	.49	12.84	.51	6.61	0.53	0.54
Choice	12.93	.69	12.68	.73	12.66	0.07	-0.04

Table 7. School C effect sizes

Attitude	Pre-test Mean	Std.	n	Post-test Mean	Std.	n	Effect size
<i>Year 8 Attitude (tutees)</i>							
Mathematics self-concept	16.31	5.54	42	16.29	5.70	42	-0.00
Enjoyment	10.98	5.29	42	10.69	5.00	42	-0.05
Relating to people in Mathematics classes	18.31	5.10	42	17.21	6.25	42	-0.19
Social self-concept	14.98	4.23	42	13.93	4.42	42	-0.24
Choice	11.31	4.89	42	11.38	5.73	42	0.01
<i>Year 10 Attitude (tutors)</i>							
Mathematics self-concept	15.33	4.96	60	16.23	5.10	60	0.18
Enjoyment	9.33	3.95	60	10.35	4.74	60	0.23
Relating to people in Mathematics classes	15.98	4.74	60	16.08	5.94	60	0.02
Social self-concept	12.42	4.28	60	12.67	3.94	60	0.06
Choice	10.85	4.32	60	11.58	4.54	60	0.16

School C: Also, for the Year 10 student tutoring a Year 8 student none of the attitude variables were statistically significant for the tutors or the tutees of school C. Most of the tutee effect sizes were negative although very low, while for the tutors they were positive.

6. Discussion

Overall the tutors seemed to have gained more than the tutees in terms of attitude, especially for school A and C, with school A showing significant effect sizes for three out of five tutors' attitude variables: Mathematics self-concepts, mathematics enjoyment, and social self-concept. The only other attitude variables that was significant was that of school A's choice of how mathematics was done in schools (locus of control) for the tutees.

What explains the findings on significant variables? One element which can shed light on the findings in terms of explaining why there were significant effect sizes for school A, is that school A implemented ICAT better than schools B and C. As mentioned, detailed implementation data are reported in a separate study currently in the publication process. The findings are also congruent with past research on the impact of peer tutoring on mathematics attitudes (Topping, et al 2003; Tymms, et al, 2011) and social attitudes (Ginzburg-Block, et al, 2006) or the impact of peer tutoring on the locus of control/perception of choice of how mathematics is conducted in the classroom (Winter, 1988).

Another element to consider is that the findings could have been biased by the Hawthorne effect (Slavin & Madden, 2008), specifically the students simply perceiving benefits due to the fact that they undertook an intervention as opposed to the workings of the intervention itself. A common phenomenon with short trials.

What explains the insignificant findings for most variables? The first issue to consider when discussing this question is that the intervention was too short, and therefore it is possible that a longer time frame was required to make any change to the students' attitude.

Secondly, although not reported here, the implementation analysis of the classroom observation, pair observation and ICAT lesson material observation, showed that schools B and C did not fully incorporate some of the main elements of the ICAT framework, specifically students setting goals. Consequently there was not enough goal interdependence to keep students engaged in their learning activities.

Also, for school B the sample size for the groups was not large enough, compared to schools A and B.

Finally, the instruments used here were too broad, and considering that the students concentrated on only 6 topics, it would have been better if the attitude questions were specified or worded in such a way that they measured topics and interactions that emerged during the six weeks.

What explains the findings that the tutor gained more than the tutee? The findings that the tutors usually gain more from peer tutoring than the tutees in mathematics are consistent with previous research (Tymms, et al, 2011). This is probably due to the fact that in a peer tutoring situation the tutors seem to slightly dominate the interactions (Hausmann, Chi & Roy 2004). This is especially the case when cooperative elements have not been properly implemented at the pair and classroom level.

Limitations. In terms of limitations it is necessary to point out that the findings from this research cannot be generalizable for a variety of reasons: First the sample in this study was neither randomly selected nor randomly allocated, therefore generating great internal and external validity issues. Also, as already mentioned, the study was very short and therefore the influence of the Hawthorne effect is unknown.

How can ICAT be better tested? A clustered (at the school level) randomly allocated controlled trial across two years, with a large sample size of schools also being randomly selected from the population, would be the way forward to assess the impact of ICAT on attitude variables. The length of two years would counter Hawthorne effect concerns (Clark & Sugrue, 1991), and randomisation would ensure group equalisation in unknown characteristics (Holland, 1986).

Future research would also benefit from developing a model to explain how attitude variable improvements deriving from ICAT link to or predict academic performance. Such investigation would shed more light on how peer tutoring works, and be used to persuade teachers, academics and policymakers.

How can ICAT be improved? Another way to improve cross age peer tutoring is to add to the existing ICAT structure the choice of reward interdependence; so that students can have a choice whether they would like a reward or not, and if so what reward they would like. The reward can vary from acknowledgment in the form of applause in front of the classroom, a certificate or other examples that can be covered by the individual school's resources, as is the case with reciprocal-same age peer tutoring interventions.

Also, ICAT can be applied to different contexts, such as science education, since the framework is extremely flexible. For example, in the second stage of ICAT the teachers can have a set of science concepts ranging in the level of difficulty and the students have to solve them or develop definitions, and in the third stage, connect section, the students can link the concepts to previous science knowledge or apply the concepts to real life situations.

As illustrated in this study, when implemented correctly, as in school A, ICAT can have a positive impact on broader social-psychological process of learning elements such as academic attitude, locus of control and social self-concept. Therefore we highly recommend ICAT to teachers who need to improve students' psychological aspects of learning as well as social se

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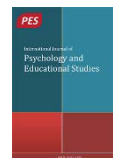
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Individual Variables, Attitudes towards English and Being a Teacher: A study on Prospective Teachers of English

Berna Gryay¹

¹Dokuz Eyll University, English Language Teaching Department, Turkey

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ABSTRACT

The achievement in learning a foreign language depends not only on cognitive factors such as intelligence, aptitude etc., but also on affective factors such as attitude and motivation. As the main branch of prospective teachers of English is teaching a language, their attitudes towards English and towards being a teacher are of vital importance in their future careers. The purpose of this descriptive study is to determine whether the attitudes of the students of English Language Teaching Department towards English affect their attitudes towards being a teacher of English and whether the students' attitudes indicate significant differences with regard to individual variables such as gender, class, the types of High Schools from which they have graduated, their socio-economic background, and whether there is a teacher in their family. The sample group of the study were composed 540 prospective English teachers of the first, second, third and fourth year students of the Department of English Language Teaching at Buca Faculty of Education at Dokuz Eyll University, İzmir. For data collection, personal information sheet, the scale for attitudes towards English developed by Altunay (2002) (Alpha Reliability Coefficient: 0.96) and the scale for attitudes towards Being a Teacher developed by Semerci (1999) (Alpha Reliability Coefficient: 0.68) were used. The results indicate that the more positive the students' attitudes towards English are, the more positive the students' attitudes towards teaching profession are. Furthermore, when attitudes towards English and towards being a teacher are compared," it is indicated that the students' attitudes towards English are a little bit higher.

Keywords:

Attitudes towards English and towards being a teacher, individual variables, gender

1.Introduction

1.1. The Definition of Attitude

In Gardner's words, attitude is "an evaluative reaction to some referent or attitude object, inferred on the basis of the individual's beliefs or opinions about the referent". Attitudes are constructs, discoverable in statements of belief or opinions (Gardner, 1985:9). According to Azjen attitude is the individual's positive or negative evaluation of performing the particular behaviour of interest" (cited in Chambers, 1999).

Gardner suggests that there are various ways of classifying attitudes towards second language. Attitudes can be classified along a dimension of specificity/generality. For instance attitudes toward French are more definite than attitudes towards foreign languages. Attitudes can also be classified according to their relevance to achievement (Gardner, 1985: 40-41).

People have attitudes in order to

¹ Corresponding author's address: Buca Eđitim Fakltesi Uđur Mumcu Cad. 135. Sk. No:5 35150 Buca-İZMİR

Telephone: +90 0232 3012182

Fax: +90 232 420 48 95

e-mail: berna.yavuz@deu.edu.tr

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1. help them understand the world around them, by organizing and simplifying a very complex input from their environment,
2. protect their self-esteem, by making it possible for them to avoid unpleasant truths about themselves,
3. help them adjust in a complex world, by making it more likely that they will react so as to maximize their rewards from the environment; and
4. allow them to express their fundamental values (Triandis, 1971:4).

1.2. Factors Affecting Attitude

Attitudes are formed as a result of learning and experiences which develop in a certain period of time. Since attitudes are bound to an individual's set of values, there are several factors which have an influence upon the construction or changes in the pre-existing attitudes of people. These factors can be summarized as motivation, aptitude, intelligence, background of the individuals and their curiosity for learning. However, among these variables, motivation is considered to be one of the most important factors as it determines the extent of the learner's active participation towards learning (Ngeow and Yeok-Hwa, 1998).

1.3. The Significance of Attitude towards Second Language Learning and Towards Being a Teacher

Attitude has been regarded as one of the most significant factors that affect the achievement in the teaching career and in the foreign language learning process; therefore, it has been investigated by many researchers. With regards to its importance in foreign language teaching Chambers (1999: 25) argues that:

Pupils do not come to the foreign languages classroom as *tabulae rasae*. They bring with them certain attitudes born of conversations shared with family and friends, the media and personal experience of the target language community.

Altunay (2004 b) advocates that foreign language teaching is a complex process in which cognitive, affective and psychomotor processes are active. Studies related to how foreign languages are acquired and the factors affecting second language acquisition are pervading. Research on students' attitudes toward language learning is important mainly for two reasons. First, as Kaballa and Crowley (1985) suggest attitudes toward learning are believed to influence behaviors such as watching movies or reading books in foreign language (cited in Weinburgh, 1998). Second, there is a relationship between attitudes and achievement. For instance, in a study carried out by Altunay (2004a) on 2065 English Language preparatory class students, the results indicated that there is a significant positive correlation between students' achievement in English exams and their attitudes towards English. Likewise, in İnal, Evin and Saracaloğlu's study (2005) it was found that the students with more positive attitudes were much more successful in foreign language learning. Schibeci and Riley (1986) argue that there is support for the proposition that attitudes influence achievement, rather than achievement influencing attitudes (cited in Weinburgh, 1998).

Krashen states that attitudes and motivation have two functions in second language acquisition. Firstly, they encourage intake. "Attitudinal factors are simply factors that encourage acquirers to communicate with speakers of the target language, and thereby obtain the necessary input, or intake, for language acquisition." Secondly, with the help of positive attitudes and high motivation students will use the language heard for acquisition. For Krashen (1981:21); "Simply hearing a second language with understanding appears to be necessary but is not sufficient for acquisition to take place. The acquirer must not only understand the input but must also, in a sense, be open to it".

Attitude is also of vital importance for being an effective and successful teacher. An effective teacher should not only be a specialist of his field and methodology but also be tolerant, devoted and hard-working. To this end, the attitudes of the teacher towards teaching profession gain great amount of importance and becomes a subject to be investigated for several researchers (Akboy&Semercioğlu, 1991; Er&Öztekin, 2011; Kesercioğlu, T. & Serin, O. & Serin, U. & Balım, G. 2000; Koydemir, 1994; Serin, O.& Saracaloğlu, A.& Serin, U. & Kesercioğlu, T. 2004; Sönmez, 1989; Yavuz, 2004). On the condition that prospective teachers have positive attitudes towards their profession, when they become teachers, they behave well to their students, they think creatively and they can motivate their students (Çeliköz & Çetin, 2004).

In the first dimension of the study, the attitudes of the students towards English have been analyzed. As the main branch of prospective teachers of English is teaching a language, their opinion of English is of vital importance.

The second dimension of this research is based upon the analysis of the attitudes of teachers of English towards being a teacher. In the 21st century, Turkey has to solve its problems related to effective teacher education. To this end, one of the most important affective factors of the prospective teachers; their attitudes towards teaching profession, should be analyzed. Their attitudes are very significant since these will affect their students directly during the teaching period. For that reason, teachers' attitudes towards their profession should be analyzed and negative ones should be diminished. The attitudes of "Prospective Teachers" depend on the following variables such as education, occupational expectations, characteristics of the individuals and moral values. In Turkey prospective teachers are selected without considering their attitudes towards teaching profession, their interests and their individual characteristics. This fact has had a negative influence on the quality of the education system and thus on the future generations. Furthermore, since the attitudes of the teachers affect their students, the education faculties should help the development of positive attitudes towards teaching profession. This study aims to assist the improvement of the teacher quality by measuring the prospective teachers' attitudes towards their specialized area and towards teaching profession.

2. The Study

2.1. The Purpose of the Study

The purpose of this study is to investigate the relationship between the attitudes of the students of English Language Teaching Department toward "English" and toward "Being a Teacher". This study also intends to understand to what extent attitudes of students towards English and towards being a teacher are related to their gender, their economic condition, types of High Schools from which they have graduated and whether there is a teacher in their family.

2.2. Methodology

This research is a survey-type descriptive study. The universe of the research is composed of all students, namely; the freshmen, sophomores, juniors and seniors of Department of English Language Teaching of Buca Faculty of Education at Dokuz Eylül University in the spring term of 2003-2004 academic years. The sample of the research is the same as the universe. However, the students who have not marked certain items in the "Personal Information Form" and the students who have marked more than one choice either in the questionnaire or in the personal information form have been disregarded and their responses have been eliminated. Because of this, they have been removed from the sample group. After these processes, the sample of the research is composed of 540 students. The distribution of the students included in the sample with regard to gender is shown in table 1.

Table 1. The Distribution of the Students in the Sample with regard to Gender

Gender	N	\bar{X}	SD	DF	t	p	SIG.
Female	406	52.73	4.10	538	1.671	.711	p>.05
Male	134	53.44	4.75				

In this research, the data have been obtained as a result of administration of the two attitude scales. The first of these attitude scales is towards English and towards exams, lesson programme and physical conditions (Altunay, 2002). The findings of the pilot administration revealed that the correlations of Alpha Reliability Coefficients were as follows:

- Attitude towards English: 0.96 Lesson Programme: 0.82
- Examinations: 0.83 Physical Conditions: 0.62

This questionnaire which was developed by Altunay (2002) consists of five parts. The first part which is called "Personal Information Form" is composed of four questions related to the students themselves aiming to collect information about their gender, class, the high school they graduated from, the economic condition of

their parents and the profession of their parents (whether there is a teacher in their family). In the second part of this questionnaire there are seventeen statements to determine the attitudes of the students towards English. The third part includes eighteen statements which aim to gather information about the students' attitudes towards their lesson programme. The fourth part consists of fifteen statements related to the students' attitudes towards the examinations at their department. The last part of the questionnaire which is composed of seven statements aims to find out the attitudes of the students towards the physical conditions of the school.

The latter attitude scale which was developed by Semerci (1999) is towards being a teacher. The Alpha Reliability Coefficients of this thirty-statement-scale were 0.68.

In both of the attitude scales a five-point Likert-Type Scale was used to determine the level of the students' agreement or disagreement on the items. These items are both in affirmative and negative forms and they are presented randomly in order to enable the students to be honest. Besides, for avoiding possible misunderstandings the questionnaire was prepared in the students' mother tongue.

The obtained data were analysed by using SPSS 11.0 Statistics Programme. In the analysis of the data, Frequency, Mean, Percentage and Standard Deviation have been used to describe and express the data. When the two groups were compared and contrasted t-test was used. In the comparison of more than two groups, the Analysis of Variance was used. Finally, Scheffé test was used to determine the origin of the differences between groups.

3. Results

3.1. Results Related to the Attitudes towards English

On the basis of the research results, the attitude of the male students towards English was found to be very close to that of the female students. Namely, the mean scores of the male students (53.44) are only a little bit higher than that of the female students (52.73). In other words, there was not any significant difference between gender and the attitudes of the students.

This finding contradicts to the assumption that female students are more successful in foreign language learning within the limits of this study. For instance, Gardner and Lambert (1972) investigated the relationship between gender and attitude towards learning French, taking their sample group from the American high school students in the state of Maine. It was found out that the positive attitudes and motivation to learn the foreign language of the girls was higher than that of the boys. Burstall (1975) also analyzed the relationship between gender and attitudes towards French. The sample of the research comprised 6000 eight-year-old primary school students in England. The findings revealed that the girls had much more positive attitudes toward learning French than the boys did (cited in Çakıcı, 2001). Spolsky (1989) conducted a research in order to find out the attitudes of the students learning Hebrew as a second language in Israel. It was found out that the attitudes of the girls toward learning Hebrew, Israelis and Israel culture were much more positive than that of the boys. Saracaloğlu (1992) conducted a research on the students of English Language and Literature, German Language and Literature, History, Geography, Psychology, Astronomy, Chemistry and Biology Departments at Ege University and analyzed their attitudes towards foreign language. The results of this research also denote that the attitudes of female students towards foreign language learning were much more positive. Koydemir (1994), in her MA Thesis, compared the attitudes of the students in Dokuz Eylül University Buca Faculty of Education, Department of German Language Teaching and Ege University Faculty of Literature, Department of German Language and Literature. Although neither boys nor girls had positive attitudes towards learning German and their programmes, it was concluded that the girls in the sample group exhibit less negative attitudes towards learning German. Kızıltepe (1998) also investigated the relationship between the students' attitudes towards learning a foreign language and their gender. At the end of this study, the female students were found to have a much more positive attitude towards learning English when compared to the male students (cited in Tonbul, 2001). Another study which was carried out with high school students also states that female students have much more positive attitudes towards English as a foreign language (İnal et. al. 2005)

Similar to the findings of this research, there are cases contradictory to most of the former studies in literature. In these cases, either there is no significant difference between gender and attitude or the boys' attitudes toward foreign language are found to be more positive. A case that illustrates this is the research of the Oxford Project for Diversification of First Language Teaching (OXPROD), which aimed to find out the difficulties of students learning French, German or Spanish as their foreign language. The findings of data analysis indicated that male students have more positive attitudes towards learning a foreign language than do girls (Filmer-Sankey, 1993). Another example of this kind of study was carried out by Çakıcı (2001). She investigated the attitudes of the university students towards English within the scope of common compulsory courses. The findings of this study revealed that there was not any significant difference between gender and the attitudes of the students.

The results of this research also denote that there is not a significant difference between the attitudes of the students towards English and the type of high school from which they have graduated. The findings show that the Vocational High School graduates have the highest mean (54.27), whereas, the lowest mean (51.50) belongs to the graduates of Private Schools. Anatolian High School graduates are found to have the second highest mean score. Contrary to the researcher's expectations, the lowest mean belongs to the graduates of Private High Schools. The graduates of these schools are believed to be proficient in English and accordingly have positive attitudes towards it. Thus, the findings of this study showing that they have the least positive attitude towards English may be explained by their boredom of this language during the long years of education.

Çakıcı (2001) in her MA Thesis also investigated the attitudes of the university students towards English and found out that there is a significant difference between their attitudes and the types of High School from which they have graduated. The findings revealed that the Anatolian High School graduates have the lowest mean score, while the graduates of the State High School have the highest mean score.

Another finding of the research indicates that there is a significant difference (Table 2) between the students' attitudes towards English and the class they are in.

Table 2. The Relationship between the Students' Attitudes towards English and the Class they are in (The Results of Variance Analysis)

Source of Variance	SS	DF	MS	F	p
Between Groups	226.173	3	75.391		
Within Groups	9644.736	536	17.994	4.190	.006*
TOTAL	9870.909	539			

*p<.01

The highest mean and the most positive attitudes towards English belong to seniors as shown in Table 3. On the other hand, freshmen have the lowest mean and the least positive attitudes towards English. This finding of the research may be the result of the difficulties that freshmen come face to face. As they have just started a new life leaving their families behind, the first grade the students have several problems. They have to deal with difficulties related to residence, money and adaptation to the different atmosphere of the university. However, seniors have the highest mean and the most positive attitudes towards English. This result may result from the fact that these students have already adopted themselves to their department and its main subject; "English". After long years of education they start to see "English" as the main part of their future job, thus they ignore the negative sides.

Table 3. The Relationship between the Students' Attitudes towards English and the Class they are in

CLASS	n	\bar{X}	sd
Freshmen	110	51.92	3.30
Sophomores	113	53.49	4.25
Juniors	150	52.53	4.32

Seniors

167

53.50

4.67

The findings also indicate that the students' economic situation has a direct effect on their attitudes towards English and towards their departments (Table 4).

Table 4. Students' Attitudes towards English with regard to their Economic Condition (The Results of Variance Analysis)

Source of Variance	SS	DF	MS	F	p
Between Groups	225.459	3	75.153		
Within Groups	9.445.450	536	17.995	4.176	0.006*
TOTAL	9.870.909	539			

*p<.01

The most positive attitude towards English belongs to the students whose parents have more than 1.000 TL monthly income (Table 5). Since these students do not have any financial problems, they can easily reach the course materials and other necessary resources whenever they want. What is more, they have a better educational background; they are generally graduates of Private Schools where they have an intensive education of English or they have got the chance of joining different courses. Consequently, the students with the highest income have much more positive attitudes toward English. On the other end of the spectrum, the students whose parents have less than 300 TL monthly income have the least positive attitudes toward English. This can be the result of the limited educational opportunities of the family due to their financial problems.

Table 5. The Relationship between the Students' Attitudes towards English and their Economic Condition

Monthly Income	N	\bar{X}	SD
0	50	51.96	4.30
300-500 TL.	118	52.99	4.31
500 TL-1.000 TL.	266	52.58	4.23
More than 1.000 TL.	106	54.10	4.14

According to the results of the first questionnaire analysis, it is also found out that the students whose mother is a teacher have a much more positive attitude than the other students, whereas, the students who do not have any teacher in their families have the least positive attitudes toward English and their departments. However, a detailed analysis indicated that there is not a direct relationship between the students' attitudes towards English and the fact that whether there is a teacher in their family.

3.2. Results Related to the Attitudes towards Being a Teacher

According to the findings of the "Attitude Scale towards Teaching Profession", it is revealed that the attitudes of male students are more positive in comparison with that of the female students. On the other hand, a detailed analysis indicated that this finding is not statistically significant. A study which has parallel results to the findings of this research is conducted by Serin et al. (2001). They administrated the attitude scale toward teaching profession to the teachers working in primary and secondary school teachers; however, this does not indicate a significant difference. Şahin (1992), Luke and Cope (1994), Erden (1995), Saracaloğlu (2000) (cited in Serin et al., 2001) and Kesercioğlu et al. (2000) also found out that there is no significant difference between

attitudes towards being a teacher and gender. On the other hand, some other researches prove that the attitudes of the females are much more positive towards teaching profession. To exemplify, the researches conducted on university students by Aşkar and Erden (1986), Aşkar and Çelenk (1988), Saracaloğlu (1991, 1992) (cited in Serin et al., 2001) revealed that the attitudes of girls are much more positive. The fact that there is no significant relationship between teachers' attitudes towards their profession and gender may be due to the global trend that removes the gender difference in occupations.

Another finding of the research is that the attitudes of prospective teachers of English towards teaching profession do not change according to the type of high school they graduated from. However, the findings also reveal that the most positive attitudes belong to the graduates of State High Schools, whereas the graduates of Anatolian High Schools have the least positive attitudes towards teaching profession. The lowest scores of the graduates of Anatolian High Schools may be due to their high expectations in the university entrance exams; namely, they might have wanted to have a more advantageous job with a high salary, since they are quite successful students. Contrary to the researcher's expectations the graduates of Anatolian Teacher High Schools have quite low degrees in the attitude scale compared to other students. This finding draws attention to the effectiveness of this kind of high school where it is aimed to educate prospective teachers from the young ages. There are other researchers who investigated the relationship between the attitudes of students towards being a teacher and the type of high school they graduated from. Kesercioğlu et al. (2000), in their study conducted on the prospective teachers of Biology at Dokuz Eylül University, found out that there is not any significant relationship between the attitudes of the students towards teaching profession and the type of high school from which they graduated. A contradictory result is found by Bozkurt et al. (2000). They carried out a study on the prospective teachers of Dokuz Eylül University from three different departments; Counselling and Guidance, Primary School Teaching and Science. In the end, it is revealed that the types of high schools from which the students graduated influence the students' attitudes towards teaching profession to a great extent. The graduates of Anatolian High School have the most positive attitudes towards teaching profession. In accordance with this study, the graduates of Teacher High Schools have the least positive attitudes towards teaching profession.

The third research area of this study is the relationship between the attitudes of the students towards being a teacher and the class they are in. The analysis showed that the most positive attitudes belong to sophomores, whereas, freshmen have the lowest scores in the attitude scale. However, these findings are not meaningful statistically, they can be interpreted clearly. This result reveals the fact that when the students first come to the university; they deal with several problems such as accommodation, different responsibilities and adaptation to a new city and new people. On the other hand, sophomores have already dealt with this kind of troubles and are able to concentrate on their lessons and prepare themselves to their future occupation. There are other studies which support the same finding. For instance, in a study made by Kesercioğlu et al (2000), it is found out that there is not any significant difference between the attitudes of the prospective teachers of biology and the class of the students. Bozkurt et al. (2000) conducted a research aiming to investigate the effective factors in the attitude development of the prospective teachers towards being a teacher. The sample of the study consisted of 168 students at Dokuz Eylül University, Buca Faculty of Education, Departments of Counselling and Guidance, Teaching Primary School and Science. In the end it is found out that there is no meaningful relationship between the attitudes of the students towards teaching profession and their class.

The students whose parents have more than 1.000 TL monthly income have the most positive attitudes toward being a teacher; whereas, the least positive attitudes belong to the students whose parents have less than 300 TL monthly income. However, a detailed analysis reveals that there is not any significant relationship between the economic condition of the students and their attitudes toward being a teacher. A study which has parallel results to the findings of this study is conducted by Bozkurt et al. (2000) on the prospective teachers of Dokuz Eylül University from the Departments of Counselling and Guidance, Teaching Primary School and Science. The findings of this research indicated that the attitudes of the students towards teaching profession were at medium level and are not affected by the socio-economic conditions of their families.

Another research question of this study aims to find out the relationship between the students' attitudes towards being a teacher with regard to whether there is a teacher in their families. The findings revealed that the students whose mother and father are teachers have the most positive attitudes toward teaching and the students who do not have any teacher in their families have the least positive attitudes toward English and

their departments. Whereas, a detailed analysis revealed that there is not any meaningful relationship between the students' attitudes towards English and the fact that whether there is a teacher in their family. In accordance with this finding, Kesercioğlu et al. (2000) in their study conducted on the prospective teachers of biology, have found out that there is not a direct relationship between the students' attitudes towards being a teacher and whether there is a teacher in their families. Bozkurt et al. (2000) carried out a research on the students at Dokuz Eylül University, Buca Faculty of Education, Departments of Counselling and Guidance, Primary School Education and Science Education and they also revealed that there is no significant relationship between these two variables.

The primary research finding of this study is that there is a significant difference between the attitudes of the students towards English and towards being a teacher. (Table 6) This result may be due to the fact that the students with positive attitudes towards English have a desire to teach this language to their prospective students since they find their branch quite necessary and they want to make them know and like this language as much as they do.

Table 6. Correlations between Students' Attitudes towards English and the Programme, Examinations, the Physical Conditions of School and Being a Teacher

Attitude Towards	English	Lesson Programme	Examinations	Physical Conditions	Being a Teacher
English	-				
Lesson Program	0,21**	-			
Examinations	0,062	0,22**	-		
Physical Conditions	-0,003	0,090*	-0,147**	-	
Being a teacher	0,108*	0,106*	0,050	0,089	-

**p<.01, *p<.05

There is a significant difference between the attitudes of the students towards English and lesson programme and the students' attitudes towards English and towards being a teacher. The students who have positive attitudes towards English have the same positive attitudes towards being a teacher.

Another finding of this research is that there is a significant difference between the attitudes of the students towards lesson programme and examinations, physical conditions and being a teacher. Finally, it is found out that there is a significant difference between the attitudes of the students towards examinations and physical conditions of the department and their attitudes towards examinations.

4. Conclusion and Recommendations

The results of this study indicate that the attitudes of prospective teachers of English towards English and being a teacher are affected by each other. Since these two variables affect each other directly and because the attitudes of prospective teachers will be of vital importance for their future students, prospective teachers of English should have positive attitudes towards not only their main subject area English but also towards their profession. To this end, the education faculties should help their students to acquire the importance of their future profession and see the positive sides of it. The instructors in these faculties should be able to have a humanistic perspective and exemplify the characteristics of an effective teacher who likes his students and who is successful during the education period. Furthermore, all of the necessary changes should be made such as developing the education quality of faculties, the physical conditions of the departments and giving importance to the self-development of the university instructors. Moreover, necessary developments should

be made in the living and working conditions of the teachers in Turkey. For instance, the salaries should be raised, accommodation problems should be solved, and the social activity centers should be founded for teachers. In this way, the place of teachers in the society would be much more valuable and the prospective teachers may have more positive attitudes towards their future job. Prospective teachers of English should internalize the importance of their profession and should have positive attitudes towards not only their branch; English, but also towards being a teacher. Whatever needed should be made in order to train such effective teachers of English.

The students' attitudes are affected by several factors like parents, social-cultural issues, achievement etc. However, perhaps the most important factors among these are the teachers and the teaching methods they utilize. Teachers have the necessary power to change the attitudes of the students. Thus, they should learn about the attitudes of the students and try to create positive attitudes towards the foreign language and change the existing negative attitudes by analyzing their underlying reasons. The negative attitudes may stem from the methods and techniques of the teacher or the materials he uses. Teacher should be able to change his techniques and methods if these are the source of the students' negative attitudes. A teacher should also keep up with the developments in his field and try to adopt these to his teaching period. What is more, in the preparation of lesson plans, different learning styles should be taken into consideration.

This study has found out the relationships between the students' gender, class, the type of high school they graduated from, socio-economic condition and profession of their parents and the two main subjects of the research; namely, attitudes toward English and toward being a teacher. These factors can be multiplied in order to obtain much more detailed information about the subject.

The growing interest after the 1980s in the researches related to affective factors such as attitude and motivation should continue with new studies on different sample groups. Thus, the importance of affective factors, as well as cognitive ones should be underlined.

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A Longitudinal Study of the Attitudes of Early Childhood Pre-service Teachers towards Mathematics

Serhat Aydın¹, Serkan Çoştu²

¹Karamanoğlu MehmetBey University, Turkey, ²Karadeniz Technical University, Turkey

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ABSTRACT

As in many countries, early childhood teachers introduce mathematics content in kindergartens in Turkey. Therefore, early childhood teachers should master a certain level of mathematics knowledge and are offered a mathematics methods course in faculties of education. Teacher training programs are also expected to improve early childhood preservice teachers (PSTs) attitudes towards mathematics (ATM). In this context, it seems important to investigate whether and how much early childhood PSTs' attitude towards mathematics changed throughout their university lives. Our study was conducted with a sampling of 43 participants studying at a state university in the north of Turkey, in the Black Sea Region. The data was collected from early childhood PSTs using the same attitude scale in their 1st and 3rd years of study. The quantitative analysis of the data in SPSS 22 using t-test for paired samples demonstrated that the early childhood PSTs' attitudes towards mathematics have improved from the 1st to the 3rd year. In our sampling, one-way ANOVA and t-test for independent samples revealed that the ATM of the early childhood PSTs were not associated with variables such as gender, the type of completed high school, total family income, and parents' level of education. Based on the findings, it was concluded that the mathematics methods course offered to early childhood PSTs in their 2nd year might be effective in improving the attitudes towards mathematics.

Keywords:

Early childhood preservice Teachers (PSTs), Attitudes towards Mathematics (ATM), Longitudinal Study, Mathematics methods course

1. Introduction

Vacc and Bright (1999) claim that the attitudes and views of preservice teachers (PSTs) about mathematics are shaped long before they enter universities. Most of these attitudes are negative and resistant to change (Book et al., 1983; Feiman-Nemser et al., 1988; Weinstein, 1989). These negative attitudes are found to be a result of numerous negative former student experiences (Tabachnick and Zeichner, 1984). Some studies also showed that the attitudes of preservice teachers remain unchanged during the course of university life and sometimes they get worse (Feiman-Nemser et al., 1987).

Faculties of education should address these issues and develop positive attitudes towards mathematics (ATM) since evidence shows that it's not all about the teachers themselves. Many studies demonstrated that there is a positive correlation between teachers' positive ATM and their instructional performance (Chester and Beaudin, 1996; Mewborn ve Cross, 2007; Thompson, 1992), their pupils' achievement (Lake and Kelly, 2014; Lindgren, 1995; McLeod, 1994; Pehkonen, 1994; Schram et al., 1988) and motivation (Vinson, 2001).

When it comes to early childhood PSTs, the problem seems to be a deeper one. First, it should be noted that there's a growing interest to teach an ever increasing amount of mathematics content (Aydın, 2009). However,

¹ Corresponding author's address: Karamanoğlu MehmetBey University, Karaman

e-mail:acserhat@msn.com

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most of early childhood PSTs are shown to have chosen the profession because they don't like mathematics and don't find themselves good at mathematics (Lake and Kelly, 2014). Early childhood teacher education programs focus on emotional, physical and social development mostly at the expense of academic subjects such as mathematics (Lee and Ginsburg, 2009) and even worse, some programs may see teaching mathematics as harmful in early childhood (Elkind, 1981; 1998). In this context, there's every reason to hypothesize that early childhood PSTs mostly enter teacher education programs with negative attitudes towards mathematics and leave the university with the same or even worse attitudes. This problem may have some serious consequences like bad attitudes imply bad pupil achievement, motivation, etc.

If we take the contrapositive, i.e. the logical equivalent of this hypothesis, we could state that early childhood PSTs obviously need to have positive ATM to successfully perform their duties. Based on the assumption that the teacher training programs have the responsibility to develop these attitudes, many treatment studies focused on how to improve early childhood PSTs' ATM (Jones, Lake and Dagli, 2005; Lake and Kelly, 2014; Yesil-Dagli, Lake and Jones, 2010). Mathematics methods courses found in most early childhood teacher training programs are shown to focus only on improving ATM or reducing mathematics anxiety (Burroughs, 2007; Mewborn and Cross, 2007). For example, in a series of studies the researchers have shown that during mathematics methods course in the university process of early childhood PSTs, the ATM were shown to improve (Lake, Jones and Dagli, 2004; Lake and Kelly, 2014; Lake, Vives and Jones, 2004; Jones, Lake and Dagli, 2003; 2005; Yesil-Dagli, Lake and Jones, 2010).

While this is the case in the world, little evidence was found from Turkey. In the only relevant study in Turkish context, Tarım and Bulut (2006) showed that early childhood teachers had negative ATM before they started the profession but these negative attitudes toward mathematics improved as they realized that the mathematics they have to teach is simpler than they previously thought. The researchers of the same study suggest that it was not obvious whether teacher preparation program has anything to do with improving early childhood teachers' ATM. In fact, the total body of related literature does not seem to provide us with sufficient data about the university process and its effects on the attitude of early childhood PSTs' toward mathematics when no special intervention is designed and implemented. In our study, it was intended to find new evidence about this relationship.

In our developmental study, no special intervention is used though, the early childhood PSTs in Turkey are offered a mathematics course in their 2nd year (or in some universities in their 3rd year) and this course may have some effect on early childhood PSTs attitude toward mathematics. In this regard, we're convinced that determining the attitudes of early childhood preservice teachers in 1st and 3rd years of their studies and investigating whether and how these attitudes changed from the 1st through the 3rd year is an important research question which may increase our understanding in the above mentioned relationship. Therefore our null and alternative hypotheses are as follows:

H0: The attitudes of early childhood PSTs towards mathematics do not change from the 1st to the 3rd year.

H1: The attitudes of early childhood PSTs towards mathematics change from the 1st to the 3rd year.

1.1. Belief constructs

When investigating attitudes, it's very important first to properly conceptualize the term attitude. Teacher beliefs are usually investigated under different names such as "teachers' instructional criteria", "principles of practice", "perspectives", "conceptions", "knowledge", "views" or "attitudes" (Clandinin and Connelly, 1987). We will try to define the term attitude properly and state the underlying assumptions clearly.

This study will investigate the attitudes of early childhood preservice teachers (PSTs) towards mathematics. For this aim, we have preferred the definition of "attitude" suggested by Maio and Haddock (2010). They define "attitude" as a summary evaluation about a stimulus object which can be anything from an ice-cream to mathematics. Attitudes about the same object which can be translated simply as "to like or dislike the object" have two important attributes as "strength" and "direction" Maio and Haddock (2010). In a similar fashion, Rokeach (1968), defines attitude as the cluster of beliefs developed about a certain object or event and is predisposed to respond in a specific way.

In line with their definition, Maio and Haddock (2010), assert that attitude has three components: a) cognitive information, b) affective information and c) behavioral information. These components seem to cap all relative belief constructs in the literature by assuming that they all serve under one of the components of attitude. For example all kinds of beliefs, views, cognitions and etc. about mathematics can be classified as cognitive information forming up the cognitive domain of attitude. Likewise, all fears, anxieties, self-perceptions and etc. about mathematics can be classified as emotional information forming up the affective domain of attitude. Similarly all previous experiences and behaviors about mathematics can be sorted as behavioral information constituting the behavioral domain of attitude.

The attitude researches are alleged to start with the efforts of several social psychologists. One of the most famous founders of attitude research, Gordon Allport believes that attitude is probably the most distinctive and indispensable concept in American social psychology (Allport, 1937, p.198).

There are different streams of attitude research all of which warrant further inquiries. The most visible and current attitude research deals with what attitudes are, how are they formed and changed. This paper adheres to the third line of research.

1.2. Attitude Scales

As stated by LaPiere (2010), attitude scales are commonly used to assess the attitudes of individuals because, they are easy, cheap and feasible. On the other hand, assessing real human behaviours is usually very expensive, exhaustive and time-consuming. Indeed, surveys are considered at best as being able to identify symbolic responses to symbolic situations. All attitude researches using attitude scales have the presumption that there's a one to one correspondence between symbolic responses and real human behaviours.

After "attitude" is clearly defined and limitations of attitude scales are considered, the investigation of the attitudes of early childhood PSTs towards mathematics using attitude scale is thought to be more comprehensible.

1.3. Mathematics Methods (Teaching Mathematics) Course

In this study, a paper and pencil explicit attitude scale was used. As stated by LaPiere (2010), attitude scales are commonly used to assess the attitudes of individuals because, they are easy, cheap and feasible. On the other hand, assessing real human behaviours is usually very expensive, exhaustive and time-consuming. Explicit measures of attitudes are also called as direct measures which are extremely popular (Krosnick, Judd and Wittenbrink, 2005)

There are of course other measures which are called as implicit (indirect) measures of attitudes. They have their own strengths and weaknesses. Implicit measures of attitudes do not necessitate directly asking the participants for a verbal report. Although this may be seen as an advantage it does not guarantee obtaining the most reliable answers from the participants. On the other hand they are usually very expensive to administer and difficult to interpret.

After "attitude" is clearly defined and limitations of attitude scales are considered, the investigation of the attitudes of early childhood PSTs towards mathematics using a self-reported paper and pencil measure of attitude is thought to be more comprehensible.

1.4. Research questions

1. Do the attitudes of early childhood PSTs towards mathematics show significant differences in their 1st year of study in terms of gender, type of completed high school, family income, father's level of education, and mother's level of education?
2. Do the attitudes of early childhood PSTs towards mathematics show significant differences in their 3rd year of study in terms of gender, type of completed high school, family income, school, family income, father's level of education, mother's level of education and the grade obtained from the mathematics course in the 2nd year of study?
3. How did these attitudes change from the 1st to the 3rd year of study?

2. Method

This study has a longitudinal design. Longitudinal and cross-sectional studies are the fundamental methods of collecting data on human development. The data can be analyzed then using correlational or factorial designs. This type of research tests the same sampling repeatedly. In a longitudinal study, the same participants are observed several times and the change or consistency in their behaviors are recorded.

On the other hand, the environmental effects on the participants cannot be controlled between the measurements and the participants may lose interest in the study (Çepni, 2007). This type of research may not be generalizable.

After considering all these pros and cons of the longitudinal design, this type of study was found appropriate for our research concerns and sampling. In this way, we will be able to investigate the change in the attitudes of early childhood PSTs towards mathematics from their 1st to 3rd year.

2.1. Data Collecting Tools

This paper reports the findings of a study which made use of an attitude scale consisting of 42 items. The attitude scale was developed by Alkan et al. (2004) and its reliability and validity was shown on 450 secondary students. The reliability of the scale was shown to be 0,95. The scale consisted of 4 factors such as "Affective Dimension", "Cognitive Dimension", "Application Dimension" and "Belief Dimension". These factors were shown to explain %44,2 of the total variance which consisted of % 23,02, %8,32, %6,88 and %6,05 consecutively. The factor loadings for the four factors were shown to be between 0,338 and 0,767; 0,342 and 0,666; 0,361 and 0,724; 0,385 and 0,609 consecutively. The scale was also used for PSTs in several studies (Bukova, 2006; Mandacı Şahin, 2007).

In this study, the scale was conducted to 51 (40 females, 11 males) early childhood PSTs in their 1st year. Then the same scale was applied to 43 (36 females, 7 males) of the same 51 early childhood PSTs in their 3rd year.

In addition to the attitude scale, a number of questions seeking demographic information were asked to the participants such as "What is your total family income?", "What is the education level of your parents?", "Which type high school have you graduated from?", "Gender?", "Which mark did you take from the mathematics course in the 2nd year?" etc. These questions aimed at determining whether these independent variables led to significant changes in attitudes.

2.2. Participants

Convenience sampling method was used in this study. All of the students in the selected year of the sample university were invited to the study. The sampling of the study was consisted of 51 (40 females, 11 males) in the first data collection, and 43 (36 females, 7 males) of the same 51 early childhood PSTs in the second data collection, pursuing a degree in a state university, in the north of Turkey, in the Black Sea Region. The attitudes of the same group was assessed both in their 1st and 3rd year of studies.

2.3. Data Analysis

In order to determine the effects of several independent variables such as gender or total family income in the attitudes of early childhood PSTs towards mathematics in years 1 or 3, t-test for Independent Samples or one-way ANOVA were used. The t-test for independent samples is used to reveal the effects of a continuous independent variable with two levels on a continuous dependent variable. For example, the effect of gender on the attitudes of early childhood PSTs towards mathematics. And one-way ANOVA is used to reveal the effects of a continuous independent variable with more than two levels on a continuous dependent variable. For example, the effect of parents' education level on the attitudes of early childhood PSTs towards mathematics.

Table 1. General Properties

	N	Male	Female
First Year	51	40	11
Third Year	43	36	7

Variables	Number of Levels	Levels
Gender	2	Male Female
School Type	3	Vocational Sch. High School Spec. High Sch.
Income	3	1000-2500 2500-5000 5000-
Education Level of the Father or Mother	4	Primary High School Undergraduate Graduate

Additionally, in order to determine the change of attitudes between years 1 and 3; t-test for paired samples was used. Pre-test and post-test designs on a single sampling are usually analyzed using t-test for paired samples.

3. Findings and Discussion

3.1. Findings

Research Problem #1: Do the attitudes of early childhood PSTs towards mathematics show significant differences in their 1st year in terms of gender, type of completed high school, family income, father's level of education, and mother's level of education?

The hypotheses regarding the first research problem were stated as follows:

Ho: There is no statistically significant difference in the attitudes of early childhood PSTs towards mathematics in their 1st year in terms of gender.

H1: There is a statistically significant difference in the attitudes of early childhood PSTs towards mathematics in their 1st year in terms of gender.

Similar hypotheses were constructed for the other independent variables such as the type of completed high school, family income, father's level of education, and mother's level of education. And moreover, for all independent variables the variances were found homogenous by using Levene test.

Table 2

Gender	N	Mean (M)	Std. Deviation	df	t	Sig. (2-tailed)
Male	7	158,429	27,652	41	,747	,459
Female	36	151,528	21,325			

(*) $p < .05$

When we look at the results of independent t-test for gender we see that there's no statistically significant difference in the attitudes of early childhood PSTs towards mathematics in their 1st year in terms of gender ($F = 0,684$, $df = 41$, $q = 0,459$).

Table 3

ANOVA Results		Sum of Squares (SS)	df	Mean Square (MS)	F	Sig.			
High Sch. Type	Between	124,412	2	62,206	,120	,887			
	Within	20659,355	40	516,484					
	Total	20783,767	42						
Income	Between	182,712	2	91,356	,177	,838			
	Within	20601,055	40	515,026					
	Total	20783,767	42						
Edu. level	Between	620,460	3	206,820	,400	,754			
	Mother	Within	20163,308	39			517,008		
		Total	20783,767	42					
	Father	Between	463,719	3			154,573	,297	,828
		Within	20320,048	39			521,027		
		Total	20783,767	42					

The results of the one-way ANOVA tests also revealed that there were no statistically significant differences in the attitudes of early childhood PSTs towards mathematics in their 1st year in terms of completed high school types ($F = 0,120$, $df = 2$, $q = 0,887$), total family income ($F = 0,177$, $df = 2$, $q = 0,838$), father's level of education ($F = 0,297$, $df = 3$, $q = 0,828$), or mother's level of education ($F = 0,400$, $df = 3$, $q = 0,754$).

Research Problem #2: Do the attitudes of early childhood PSTs towards mathematics show significant differences in their 3rd year in terms of gender, type of completed high school, family income, father's level of education, mother's level of education, and the grade obtained from the mathematics course in the 2nd year?

The hypotheses regarding the second research problem were stated as follows:

Ho: There is no statistically significant difference in the attitudes of early childhood PSTs towards mathematics in their 3rd year in terms of gender.

H1: There is a statistically significant difference in the attitudes of early childhood PSTs towards mathematics in their 3rd year in terms of gender.

Similar hypotheses were constructed for the other independent variables such as the type of high school, family income, father's level of education, mother's level of education, and the grade obtained from the mathematics course in the 2nd year. And moreover, for all independent variables the variances were found homogenous by using Levene test.

Table 4

Gender	N	Mean (M)	Std. Deviation	df	t	Sig. (2-tailed)
Male	7	169,000	16,104	41	,716	,478
Female	36	163,083	20,611			

(*) $p < .05$

When we look at the results of independent t-test for gender we see that there's no statistically significant difference in the attitudes of early childhood PSTs towards mathematics in their 3rd year in terms of gender ($F = 1,929$, $df = 41$, $q = 0,478$).

Table 5

ANOVA Results		Sum of Squares (SS)	df	Mean Square (MS)	F	Sig.	
High Sch. Type	Between	523,233	2	261,616	,650	,528	
	Within	16106,674	40	402,667			
	Total	16629,907	42				
Income	Between	153,187	2	76,593	,186	,831	
	Within	16476,720	40	411,918			
	Total	16629,907	42				
Edu. Level	Between	81,580	3	27,193	,064	,979	
	Mother	Within	16548,327	39	424,316		
	Total	16629,907	42				
The grade from the mathematics course in 2nd year	Between	580,423	3	193,474	,470	,705	
	Father	Within	16049,484	39	411,525		
	Total	16629,907	42				
The grade from the mathematics course in 2nd year	Between	463,609	3	154,536	,373	,773	
	Within	16166,298	39	414,520			
	Total	16629,907	42				

(*) $p < .05$

The results of the one-way ANOVA tests also revealed that there were no statistically significant differences in the attitudes of early childhood PSTs towards mathematics in their 3rd year in terms of completed high school types ($F = 0,650$, $df = 2$, $\eta^2 = 0,528$), total family income ($F = 0,186$, $df = 2$, $\eta^2 = 0,831$), father’s level of education ($F = 0,470$, $df = 3$, $\eta^2 = 0,705$), mother’s level of education ($F = 0,064$, $df = 3$, $\eta^2 = 0,979$), or the grade obtained from the mathematics course in the 2nd year ($F = 0,373$, $df = 3$, $\eta^2 = 0,773$).

Research Problem #3: How did the attitudes of early childhood preservice teachers towards mathematics changed from their 1st through 3rd year?

The hypotheses of the study regarding the 3rd research problem were stated as follows:

Ho: There is no statistically significant difference in the attitudes of early childhood PSTs towards mathematics between their 1st and 3rd years of study.

H1: There is a statistically significant difference in the attitudes of early childhood PSTs towards mathematics between their 1st and 3rd years of study.

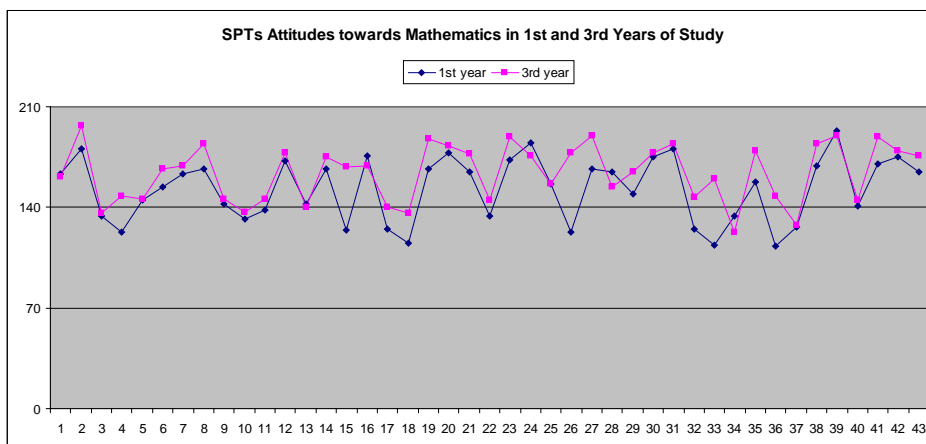
Table 6

Paired Samples Test Results	N	Mean	Std. Deviation	df	t	Sig. (2-tailed)
First Year	43	152,651	22,245	42	-5,158	,000
Third Year	43	164,047	19,899			

(*) $p < .05$

According to the results of t-test for paired samples ($N = 43$, $t = -5,158$, $df = 42$, $\eta^2 = 0,000$) we refuse the null hypothesis Ho and accept the alternative hypothesis H1. Thus, there is a statistically significant difference in the attitudes of early childhood PSTs towards mathematics between their 1st and 3rd years of study.

Figure 1.



3.2. Discussion

Our study showed that the attitudes of early childhood PSTs’ towards mathematics in their 1st year improved through time and became more positive through their 3rd year. This finding is in line with the results of the work by Tarım and Bulut (2006), which suggested that the attitudes of early childhood teachers towards mathematics improved from their first year in the university through their upper years. They also claimed that these attitudes kept improving as the early childhood teachers start working in schools and see that the mathematics of early childhood is quite different from what they saw in their own primary and high school lives. The similar finding in our study made us think that, the mathematics course in the 2nd year of these student teachers and the other theoretical developments via university education might have helped them

realize that preschool mathematics is quite different, more enjoyable and easier than advanced level of mathematics which challenged them in their early school lives as a student. Again, the work of Phillippou and Christou (1998) on improving the attitudes of student class teachers towards mathematics via a series of university mathematics courses revealed that university mathematics courses can enable making the student class teachers towards mathematics more positive. Similar results were shown also for student elementary and secondary mathematics teachers in numerous studies (Ashton and Webb, 1986; Chester and Beaudin, 1996).

Moreover, we have found in our study that the type of high school student teachers graduated from, parents' level of education, total family income and the mark obtained from the mathematics course taken by the student teachers in their 2nd year made no difference in their ATM in their 1st years or 3rd years. This finding aligns with the results of both studies (Tarım and Bulut, 2006; Phillippou and Christou, 1998).

4. Conclusions and Recommendations

Firstly, it should be noted that our study is limited with 43 participants. In addition, it should be noted that explicit measures of attitude always run the risk of social desirability issues. On the other hand, if we consider that the findings reflect the reality with best approximation, we can interpret our results in the following way:

The attitudes of early childhood PSTs towards mathematics in their 1st year improved and became more positive through year 3. One of the factors contributing to this improvement in ATM might be the mathematics course offered in the 2nd year. The real reasons behind this improvement warrant further control of relevant variables.

Future inquires may concentrate on exploring the existence and nature of such kind of relationship.

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The Nursing Care And Education Plan For A Child With Epidermolysis Bullosa (A Case Report)

Esra Karaca Çiftçi¹, Selma Kahraman²

¹Zirve University, Faculty of Health Sciences, Turkey, ²Harran University, Health College, Turkey

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ABSTRACT

Epidermolysis Bullosa (EB) is a chronic disease, some types of which may have morbidity and mortality. That is why the patients must receive multidisciplinary care in case any complications arise. Families must be informed about the disease, about home care and receive genetic counselling. The importance of genetic counselling cannot be stressed enough, since both M.C. and his younger brother were diagnosed with EB. If the family had received genetic counselling, this tragic situation could have been prevented. Home care education for the families of EB patients is also of great importance. Relatives of the patient must also be educated about wound care, infection control, patient nutrition and physical treatment. They must also be educated about how to use the medications and about bandaging, dressing, Vaseline bandages, antiseptics, bathing procedures, and the use of antibiotic cream ointment. It was obvious, therefore, that the nursing care given at home enhanced both the patient's and the family's quality of life.

Keywords:

Epidermolysis Bullosa, Education, Care, Nursing

1.Introduction

Epidermolysis Bullosa (EB) is a rare, chronic and heterogeneous disease which causes minimal trauma, bullas and erosions on the skin and mucous membranes (Fine et al, 2008). Its incidence is only 8 to 19 in one million (Fine, 2010). Although the disease, which can be diagnosed prenatally, has some symptoms in the neonatal period, clinical symptoms, some of which are normal during birth, may also appear in time. Since there is not a definite treatment for epidermolysis bullosa, supportive care is given. It has been reported that the caregivers of EB patients have much difficulty in caring for the patients due to the patients'9 physical limitations and their dependency on the caregiver (Greenwood, Mackenzie, Cloud and Wilson, 2008; Park, 2008). In our country, patient care is regarded as the family's responsibility. Therefore, caring not only has an effect on the patient but also on the caregiving family members, which in turn causes changes in the roles of the caregivers (Hinojosa, Rittman, Hinojosa and Rodriguez, 2009; Qiu and Li, 2008). In this sense, it is significant for the nurses, who are indispensable members of the health team, to make an effective plan and apply it so that the patient can adapt to his or her disease, so that the patient has continuity of care, and so that the patient's relatives can make informed decisions about the patient's care (Almborg et al, 2009; Yekta et al, 2011; Dinçer et al, 2009). A nursery designed for EB patients can contribute to the qualified sustainability of patient care and to the caregivers' well-being. A study to be carried out for this purpose should provide further data for other similar studies (Küçükgüçlü, Esen ve Yener, 2009; Mollooğlu et al, 2011).

² Corresponding author's address: Dr. Selma Kahraman, Harran Universtiy, Health High School. Public Health Nursing
Telephone: 0414 318 32 04
Fax:0414 318 3202
e-mail: skahraman1308@gmail.com
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1.1. The Case Report:

In this paper, the case of 9-year-old M.C., a patient with epidermolysis bullosa registered in the *Şanlıurfa Social Assistance and Solidarity Foundation* (SYDV), is reported. The report will identify the problems related to M.C.'s disease, the planning and the practice of nursing care and the follow-up after the activity.

Epidermolysis bullosa treatment costs for M. C. resorted to grips with because they receive financial assistance from the Foundation and has been recorded. Based on these records it was made in the patient's home. official permission letter from the Social Assistance and Solidarity Foundation for the study were taken. approval of parents and children to work time and family were given information about the contents. Accordingly it was made between February 2014 to work in June. nurses during this time at least once a week, including home visits were performed.

Researchers made visits to the patient's home, the first being in February 2014. After the first visit, they made 20 visits in total at intervals of at least once a week. In June 2014, all of the visits concluded. During the first visit, they met the child and the family and got complete information about them and their child's situation. Moreover, they asked the family if they would accept regular visits to teach the child the principles of his own care, thereby ensuring the parents' participation. The home visits were made when the wound care was given to the child by the nurse and the mother. The visits lasted from 90 minutes to two hours.

1.2. The evaluation of M.C's Health Story, According to Gardon's Functional Health Patterns

- 1) **Detection of Health:** Because epidermolysis bullosa disease is known as an incurable, often fatal disease and will create a problem for the family, the child's--and the family's--quality of life has declined and the possibility of more complications related to the disease has increased. For the child, the concept of better health was defined as "passing a day less itchy and free from pain."
- 2) **Nutrition and Metabolic Situation:** There were wounds in M.C's mouth and tongue that caused him to be unable to take any nourishment. The child's weight was 10 (ten) kilograms., putting him well below the third percentile of the growth curve. The mother fed M.C. twice a day in the morning and in the evening with a glass of ready-made baby food. Difficulties were experienced while feeding him because he had a lot of pain during feeding. Clearly, the child had little appetite.
- 3) **Excretory System:** A diaper, changed once a day, was used for M.C. He usually produced faeces at this time. Even if he did not produce faeces, his mother changed his diaper before he went to sleep. Since a special diaper was not used, the diaper stuck to the wounds on his anal area. Each diaper changing, therefore, became a painful situation. Furthermore, M.C. suffered from constipation. He produced faeces only once in four days. Therefore, duphalac was given to him three times a day.
- 4) **Activity and Exercise:** M.C. had wounds on his fingers, toes and legs, beginning from his knees, which stick to each other. His limbs, too, were twisted and contracted. Therefore, the could not walk, nor could he use his hands and feet. The child was moved by his parents. He spent the entire day watching television or sleeping.
- 5) **Sleep and Resting:** M.C's sleep was broken up into short periods of time because the wounds were so itchy. When he scratched the wound, he created an even larger wound, it became infected or both. Due to this situation, both mother and child did not get an adequate amount of sleep.
- 6) **Cognitive Development, Self-perception, and Comprehension:** The child had never attended school or other institutions, such as day-care centers. Therefore, he could not use his hands properly or play with a toy that required manual skill or motion. He sat all day, cried continually, and did not have contact with anyone except his mother. He seldom smiled. He asked for his mother when he had pain or itching. When he soils his underclothes, he reacted by crying.
- 7) **Role and Relationship:** Since his illness was diagnosed at birth, he could not assume a normal childhood role as did his peers.

2. M.C.'S CARE PLAN

2.1. Descriptive Data: The ambient temperature increased the number of the wounds on M.C. and decreased the rate of healing.

2.1.1. Diagnosis and Objective: Making the ambient temperature suitable for wound healing and preventing wound formation.

2.1.2. Interventions: Since the child's home was very cold in winter and very hot in summer (38-39°C in the summer), air conditioners were installed by the foundation in the rooms where the child spends most of his time. The family was informed that the room temperature must be 24-27°C. The family was also educated to adjust the temperature using a thermometer in the rooms when stoves were used for heating.

2.1.3. Evaluation: It was seen that there were no wound formations due to the hot weather in May and June. When the temperature was above 28°C, the healing process picked up speed.

2.2. Descriptive Data: The infection in M.C.'s wounds was on his feet and around his stomach.

2.2.1. Diagnosis and Objective: M.C must be protected against trauma and infection. Erosion formation must be prevented with the use of topical agents; the skin must be moisturized, and the infection must be treated.

2.2.2. Interventions: The caregiving mother said that she did not know that the wounds on feet and around the stomach were infected and thought that they were normal, since she was not informed about the possibility of their being infected. The mother also said that she dressed M.C.'s wounds on alternate days, washing her hands before the procedure, removing the bandages with her bare hands, cleaning them with baticon, using fucidin cream and then binding up the wounds with non-sterile bandages. Furthermore, she reported that she had difficulty getting sterile gauze bandages. When she could not get sterile bandages, she covered his wounds with paper towels and removed the paper that was stuck onto the wounds by pouring tap water on it. On the second visit, M.C. was taken to a dermatologist with his mother to determine a how to treat his wounds. All of the equipment required for the treatment was supplied by the financial aid from the foundation. The topical agents were given both as a siccative for wounds and as a preventative against secondary infection.

After determining the treatment, the nurse applied it at home, and then showed the parents how to treat the child's wounds, thus correcting the misinformation. On the third visit, healing was observed, and the wound care was given to the child by both the nurse and the mother. During the fourth visit, the mother gave the wound care by herself under the nurse's supervision. M.C. had reacted by crying during the dressing hours before that visit. He did, however, stay calm during that wound care session. During the next visit (the fifth), it was observed that the infected wounds were desiccated and started to cicatrise. The mother reported that the child had slept longer for the first time during the previous night. When M.C. was asked about his pain, he made eye contact for the first time, and then nodded his head as a "yes" answer to the question about whether his pain was wearing off.

2.2.3. Evaluation: The wound care was given as taught every day in the first week and on alternate days afterwards. No infection symptoms occurred, and the preexisting infection was healed.

2.3. Descriptive Data: The contracture formation due to the coherence of M.C.'s wounds on his fingers, toes and knees kept M.C. from walking, and hence made him more dependent on his mother.

2.3.1. Diagnosis and Objective: Treating the complications caused by wrong or missing knowledge and care, preventing their reoccurrence and increasing the child's independence. **Interventions:** First, a plastic surgeon examined the child's wounds and said that it was possible to eradicate the joint contracture between the fingers and toes, but there was nothing to do for the knees because of the lasting contracture. It was told that it was a long-lasting treatment, and the family was asked to bring the child to the plastic surgery unit once a week to have a one-hour treatment. The nurse told the family that it would be effective for M.C.'s achieving

more independence and feeling better if they would consent to the treatment. The family, who did not accept the process in the first week, said that they would approve it if nursery support was given. To see if M.C. would like to use his fingers, he was informed about the treatment and then asked if he wanted to receive the treatment. With a smile and eye movements, M.C. showed that he wanted it. On the first day of the treatment, the nurse accompanied the family, but in the following weeks, they went alone.

2.3.2. Evaluation: The treatment is continuing. The wounds between the fingers and toes were observed to be better. M.C. smiles more.

2.4. Descriptive Data: M.C.'s developmental progress was not enough for a nine-year-old child; his percentile curve is low; he was self-enclosed; he didn't not speak; he cried continually; he communicated only with his mother; he was fed with formula at two main meals; he had a poor appetite, and he was constipated. Therefore, he had the following issues:

- 1- Growth and Developmental Delay
- 2- Constipation
- 3- Inappetence
- 4- Psychological Breakdown

2.4.1. Growth and Developmental Delay

The family was educated about the significance of holistic care for healthy growth and development.

2.4.2. Inappetence and Constipation: For the wounds in M.C.'s mouth, he gargled three times a day as prescribed by the doctor. The mother was informed about the fact that the formula with which she fed the child was not effective and was increasing the constipation, so she gave up the formula. Instead, she started to feed the child with the soup she prepared at home. She first tried lentil soup. In the first week, M.C. refused to eat it. The mother was told not to give him any formula and to feed him with the soup when he got hungry. Two weeks later, M.C. started to eat soup. Although he only ate 4-5 spoons of soup in the first days, he started to eat more in time. Before eating soup, he only defecated every four days. After starting to eat it, he started to defecate every three days in the first week. The medication of osmoloc solution prescribed by the doctor was then stopped by the doctor. The mother was informed about the regular bowel habits. Until his bowel movements were regular, M.C.'s acquisition of toilet habits were delayed. The mother was educated to change the diaper properly and to be careful about cleaning the wounds in the anal region. Proper care, however, decreased the risk of wound reformation. The frequency of diaper changes was increased to once every 6 hours at the most.

2.4.3. Interventions: Psychological Breakdown:

At the beginning, M.C. started to cry when he saw the nurse. Two weeks later, he started to react to the nurse and to cry less. The nurse tried to speak to the child at the beginning of the home visit. He only nodded his head and made eye contact. He was still self-enclosed.

Evaluation: The practices were in progress. The inappetence of M.C. was decreased. The wounds in the anal region healed and no other wound formation was observed.

3. The Nurse's Diagnosis about the Mother:

3.1. Change in Emotional Mood: Caregiving may have an effect on the caregiver's health and well-being. The never-ending needs of the patient may cause physical problems, such as fatigue and exhaustion. Physical fatigue and health deterioration of the caregiver may increase depression and anxiety (Toseland et al., 2001). The mother had depression, exhaustion, and insomnia.

3.2. Role insufficiency and deficiency: The caregivers expressed that due to the caregiving role they must take, their roles in both their home and their work environments were negatively affected. The mother has

three children: a 12-year-old girl, 9-year-old M.C. and another 4-year-old boy who suffered with EB. She described her difficulty in performing her caregiving role for two children with EB, as well as to care for her 12-year old daughter, who helped her mother with caregiving tasks and with housework. She also said that she felt bad because she could not perform her other roles at home.

3.3. Lack of knowledge: The mother felt that that having knowledge about child care alone was insufficient and it should be reinforced by practice, which was not possible in hospitals.

In the end of the four-month nursing care period, the mother said that she completed her missing knowledge and had less physical exhaustion, thanks to the nurse's support. She also told that she felt better herself, knowing that she was not alone.

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