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## ORIGINAL RESEARCH

# State-Trait Anxiety Inventory (STAI) assessment of mothers with language delayed children

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### Abstract

**Objectives:** In this study, we evaluated the continuous and state anxiety levels of mothers with children with language delay.

**Methods:** The study group consisted of the mothers of 18 children with language delay. The control group consisted of the mothers of 29 healthy children without language delay. To gain data about mothers, a personal information form and Spielberger's State-Trait Anxiety Inventory (STAI) form were applied to determine continuous and state-trait anxiety levels.

**Results:** State anxiety levels in the study group were significantly higher (by Student t-test) than that of the control group. For continuous anxiety level, no statistically significant difference was determined between two groups. In the study group, higher education levels of mothers and their

husbands were associated with lower levels of both continuous and state anxiety.

**Conclusion:** In the majority of the group of mothers with language delayed children and even mothers of children with normal language development, there were high levels concern. Mothers' concerns and anxiety levels may decrease with increasing levels of their education levels. We recommend providing detailed information regarding language development to the families at all stages of the childs' training programme.

The proportion of children with language delay or deficit seems to be increasing, likely due to the negative effect of one way communication channels, such as television or internet. In addition, this clinical entity is now more easily diagnosed with improvements in

diagnostic criteria. If a child at the appropriate age does not talk or the language and speech is retarded with regard to his or her peers, then the diagnosis of language delay must be considered. A child with language delay may try to communicate with single words or signals. Sometimes he or she does not communicate in any way. Children with language delay usually have defective communication with the environment, and may present with serious psychological problems. This situation is also a reason for psychological trauma in parents, and creates various concerns for the future.<sup>1</sup>

A physically and psychologically healthy child is a natural expectation for all parents. However, all parents experience psychological distress when a child is born with any disability, or encounters a problem during growth.<sup>2</sup> It seems that parents having children with language delay or a speech defect have anxiety about their children, possibly due to the fact that they do not have satisfactory knowledge about these conditions.

The incidence of language delay is reported as 3-15% in various studies.<sup>3</sup> Language delay also occurs in most children with speech defects. The confusion in terminology about language and speech defects can cause controversy about diagnostic criteria. The lack of reliability in diagnostic processes and problems in methodology prevent determination of the exact incidence of speech problems in children. However, language delay is a common problem in childhood with an incidence of 3-10%.<sup>4,5</sup>

Mental retardation, hearing loss, maturational language delay, verbal expression defect, speech perception defects, bilingualism, psychosocial abstinence, autism, selective mutism and neurological pathologies as cerebral palsy are most common etiological factors for language delay (6). Regardless of the etiological factor, early diagnosis and treatment attempts are very important for these children. When delayed in diagnosis, the recovery period lengthens which causes additional problems for both the child and the parents.

In many studies performed on parents of children with various disabilities, high levels of psychological distress were determined.<sup>7-9</sup> Smith et al. reported that parents with impaired children (specifically those with cerebral palsy) had more emotional problems and depressive symptoms when compared with parents having "normal" children.<sup>10</sup>

In this study, we compared the continuous and state anxiety levels between mothers of normal and language delayed children. We also aim to clarify the factors that increase the level of anxiety in mothers having language delayed children.

## Materials and Methods

This study was performed in Hacettepe University Faculty of Medicine, Division of Audiology and Speech Pathology of ENT Department. All steps of the study were planned and continued according to the principles outlined in the Declaration of Helsinki.<sup>11</sup>

### Subjects

The study group consisted of the mothers of 19 children with language delay referred to Education in Audiology Division. The 19 children attended language training. These children had no additional clinical problems other than language delay. The parents were referred to the study by their clinician.

The control group consisted of the mothers of 29 healthy preschool students without language delay. Preschool teachers also helped the clinicians for the conduct of the study. No training programme for language delay was applied to the children of the parents in this group as their children were all healthy and had no language delay.

In order to gain data about the mothers, a personal information form was used. Spielberger's State-Trait Anxiety Inventory form was administered by the clinicians to evaluate the state of anxiety.

*State-trait anxiety inventory (STAI)*

The mothers in the study and control groups were asked to complete the state anxiety scale and continuous anxiety scale of the State-trait anxiety inventory (STAI) form described by Spielberger et al. (12). They also filled out a demographic questionnaire prepared for this study. The state anxiety scale (STAI-S) consists of 20 items arranged on a four-point scale of intensity ('not at all', 'somewhat', 'moderately so' and 'very much so') and measures the subjective feelings of apprehension, nervousness and anxiety at the moment. The continuous anxiety scale (STAI-C) consists of 20 items arranged on a four-point scale of intensity ('not at all', 'somewhat', 'moderately so' and 'very much so') and measures ongoing chronic subjective feelings of apprehension, nervousness and anxiety. The adaptation and validation studies of STAI have been performed in the Turkish population (13,14). The adaptation of STAI to Turkish was performed by Öner

and Le Compte (13); its reliability and validity was evaluated by Özusta (14). The reliability coefficient determined by the alpha correlation in adaptation of STAI to the Turkish population was 0.83. The reliability coefficient determined in State-Trait anxiety inventory for children was 0.82 (13, 14).

*Statistical analysis*

Results were evaluated and the statistical analysis were performed using SPSS 10.0. Student t-test, Chi-Square test and Pearson Correlation test were used as appropriate. A p value of <0.05 was considered as statistically significant.

**Results**

The mean age of the 18 children with language delay in the study group was 5.27 years, and the mean age of the 29 children in the control group was 5.93 years.

TABLE 1. Characteristics and STAI results of the mothers with language delayed children

Mother number	Mother's education	Husband's education	Birth month and year of the child with language delay	Child's age at initial language training	Child's total language training duration	Mother's STAI VALUES	
						STAI-S	STAI-C
1	Secondary school	University	05.2004	4 years	5 months	47	45
2	Secondary school	University	05.2003	3 years	3 years	51	55
3	High school	Secondary school	12.2005	3 years	4 months	39	42
4	Primary school	Primary school	7.2004	3 years	2 years	54	55
5	Primary school	Secondary school	07.2005	3 years	2 months	39	40
6	Primary school	University	08.2006	2 years	15 days	30	40
7	University	University	07.2004	4 years	4 months	21	27
8	University	University	06.2003	3 years	2 years and 6 months	32	55
9	Primary school	High school	01.2002	6 years	2 months	48	58
10	Secondary school	Secondary school	06.2005	3 years	2 months	55	55
11	Secondary school	University	03.2006	3 years	2 weeks	55	53
12	Primary school	Secondary school	01.2003	6 years	3 months	59	47
13	University	University	06.2003	4 years	1 year and 6 months	56	42
14	Primary school	Secondary school	13.2005	3 years	1 year and 5 months	50	53
15	Primary school	Secondary school	09.2001	6 years	10 months	69	47
16	Secondary school	University	06.2004	3 years	10 months	27	35
17	University	University	12.2002	6 years	4 months	24	30
18	Secondary school	University	05.2002	6 years	3 months	36	35

TABLE 2. The results of the state anxiety and continuous anxiety in Groups 1 and 2

STAI Values	Study Group (Mothers with language delayed child)		Control group (Mothers with normal child)		p*	t
	Mean	Standard Deviation	Mean	Standard Deviation		
State Anxiety	44.0	13.5	36.9	9.9	0.046	2.050
Continuous Anxiety	45.2	9.4	41.0	5.3	0.058	1.947

\*p value shows the result of “Student t-test”

The age of the children in the study group was significantly lower than the control group ( $p=0.025$ , student t-test). The study group consisted of 3 girls and 15 boys, and the control group consisted of 19 girls and 10 boys. The gender distribution of the study and control groups were significantly different ( $p=0.002$  Chi-Square Test).

36.88% of the mothers of children in the study group had graduated from primary school; 36.88 % from secondary school; 5.26 % from high school and 21.05 % from university. The mothers of children in the control group, 34.48% of the mothers had graduated from primary school, 51.72% from secondary school, 3.44% from high school and 10.34% from university.

The mean age for initiation of language education was  $3.94 \pm 1.39$  years (range 2.00 to 6.00 years) in the study group and the mean period of language education was 41.22 weeks. The characteristic properties of study group and the STAI form scores are listed in Table 1. For the control group, the initiation of attending Preschool for routine pre-school education was  $3.41 \pm 0.68$  years (range 3.00 to 5.00 years)

The STAI form was applied for mothers in each group to determine continuous and state-trait anxiety levels. State anxiety levels of the study group were significantly higher than those of the control group ( $p=0.046$ , Student t-test). For continuous anxiety level, no statistically significant difference between the two groups was found ( $p=0.058$ ) (Table 2).

In the study group, potential correlations between various factors and the level of anxiety were analyzed with Pearson Correlation test (Table 3). The level of both state and continuous anxiety was found to be lower in mothers having higher levels of education although the correlation was only statistically significant for STAI-S ( $p=0.041$ ,  $r = -0.486$ ). The results are similar with the education levels of fathers (significant for STAI-S,  $p=0.037$ ,  $r = -0.495$ ).

In the study group, there were no significant correlations between age of the child, the age at which language training began, the duration of the language training period, or the mothers’ anxiety levels ( $p>0.05$ ). As the gender distribution of the children was heterogeneous in the study group (3 girls, 15 boys), we did not evaluate potential correlations be-

TABLE 3. Correlation Test of different factors on state anxiety and continuous anxiety of the mothers with language-delayed children\*

	STAI values			
	STAI-S		STAI-C	
	r	p	r	p
Mother education	-0.486	0.041	-0.439	0.068
Father education	-0.495	0.037	-0.396	0.103
Age of the child	0.144	0.569	-0.069	0.785
Initiating age of the training programme	0.183	0.468	-0.193	0.442
Duration of the education	0.158	0.532	0.421	0.082

\*p value shows the result of “Pearson correlation test”

tween gender of the children and anxiety levels of the mothers.

## Discussion

In our study, the children with language delay consisted of 3 girls and 15 boys. In the literature, it is reported that language delay is a common problem in childhood and it effects boys 3-4 times more than girls. The ratio of boys to girls with language delay in the study group seems to be consistent with what has been reported in the literature.<sup>4,5</sup> The control group consisted of 17 girls and 12 boys. The gender of the study and control groups was significantly different which might be considered a limitation of this study.

In the present study, the STAI form was applied to mothers in each group to determine continuous and state-trait anxiety levels. The anxiety level of the study group was significantly higher than that of the control group. However, for continuous anxiety level, this difference did not quite reach statistical significance.

The child's age does not seem to be an important factor on state and continuous anxiety levels of the mothers. Although Turkish society has a patriarchal structure, this characteristic of the society and associated concerns may not be a factor on this matter as the age of the child does not appear to affect the mothers anxiety levels.

Our study attempts to address both mothers' anxiety level due to language delay of their children and the factors affecting anxiety levels. In the majority of the mothers with language delayed children and even mothers of children with normal language development, there were high-levels of anxiety. Anxiety in mothers of healthy children could be considered as a result of natural process of motherhood.

In the study group, potential correlations between various factors effecting the the level of anxiety were analyzed with Pearson Correlation test. The age of the child at the beginning of education and duration of training do not seem to significantly effect the moth-

ers' anxiety levels. With higher levels of education in the mothers and their husbands, their levels of both state and continuous anxiety were measured to be lower. In the language delayed group with higher parental education levels, state and the continuous anxiety levels were found to be lower. These results suggest that, as parents' intelligence about developmental features and training processes for language delay increase, they are able to accept the situation more easily and the associated anxiety decreases. Today, it is more easy to access informative resources and these data may be more conveniently synthesized, which may help parents cope with this period.

In an attempt to reduce the level of anxiety, families may participate in the training studies of their children. Families should be provided more information in a manner appropriate for their social and cultural levels; and training should be started as soon as possible. Thus, at the beginning of the training session, families should be informed about the duration and content of the training. This may eliminate uncertainties for the families and their expectations would be more realistic. We feel that parents should spend time with their children in social environments and getting professional help should be supported when needed.

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