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 of 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 child’s 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 lan-
guage delay may try to communicate with single
words or signals. Sometimes he or she does not com-
municate in any way. Children with language delay
usually have defective communication with the envi-
ronment, and may present with serious psychological
problems. This situation is also a reason for psycho-
logical trauma in parents, and creates various concerns
for the future.¹

A physically and psychologically healthy child is a
natural expectation for all parents. However, all par-
ents experience psychological distress when a child is
born with any disability, or encounters a problem dur-
ing growth.² 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 condi-
tions.

The incidence of language delay is reported as 3-
15% in various studies.³ 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
metodology prevent determination of the exact inci-
dence of speech problems in children. However, lan-
guage delay is a common problem in chilhood with an
incidence of 3-10%.⁴⁻⁵

Mental retardation, hearing loss, maturational lan-
guage delay, verbal expression defect, speech percep-
tion 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 diagno-
sis, the recovery period lengthens which causes addi-
tional 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.⁷⁻⁹ Smith et al. reported that
parents with impaired children (specifically those with
cerebral palsy) had more emotional problems and de-
pressive symptoms when compared with parents hav-
ing “normal” children.¹⁰

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.¹¹

Subjects
The study group consisted of the mothers of 19 chil-
dren with language delay referred to Education in Au-
diology 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 lan-
guage 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 cli-
nicians 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**

<table>
<thead>
<tr>
<th>Mother number</th>
<th>Mother’s education</th>
<th>Husband’s education</th>
<th>Birth month and year of the child with language delay</th>
<th>Child’s age at initial language training</th>
<th>Child’s total language training duration</th>
<th>Mother’s STAI VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STAI-S</td>
</tr>
<tr>
<td>1</td>
<td>Secondary school</td>
<td>University</td>
<td>05.2004</td>
<td>4 years</td>
<td>5 months</td>
<td>47</td>
</tr>
<tr>
<td>2</td>
<td>Secondary school</td>
<td>University</td>
<td>05.2003</td>
<td>3 years</td>
<td>3 years</td>
<td>51</td>
</tr>
<tr>
<td>3</td>
<td>High school</td>
<td>Secondary school</td>
<td>12.2005</td>
<td>3 years</td>
<td>4 months</td>
<td>39</td>
</tr>
<tr>
<td>4</td>
<td>Primary school</td>
<td>Primary school</td>
<td>7.2004</td>
<td>3 years</td>
<td>2 years</td>
<td>54</td>
</tr>
<tr>
<td>5</td>
<td>Primary school</td>
<td>Secondary school</td>
<td>07.2005</td>
<td>3 years</td>
<td>2 months</td>
<td>39</td>
</tr>
<tr>
<td>6</td>
<td>Primary school</td>
<td>University</td>
<td>08.2006</td>
<td>2 years</td>
<td>15 days</td>
<td>30</td>
</tr>
<tr>
<td>7</td>
<td>University</td>
<td>University</td>
<td>07.2004</td>
<td>4 years</td>
<td>4 months</td>
<td>21</td>
</tr>
<tr>
<td>8</td>
<td>University</td>
<td>University</td>
<td>06.2003</td>
<td>3 years</td>
<td>2 years and 6 months</td>
<td>32</td>
</tr>
<tr>
<td>9</td>
<td>Primary school</td>
<td>High school</td>
<td>01.2002</td>
<td>6 years</td>
<td>2 months</td>
<td>48</td>
</tr>
<tr>
<td>10</td>
<td>Secondary school</td>
<td>Secondary school</td>
<td>06.2005</td>
<td>3 years</td>
<td>2 months</td>
<td>55</td>
</tr>
<tr>
<td>11</td>
<td>Secondary school</td>
<td>University</td>
<td>03.2006</td>
<td>3 years</td>
<td>2 weeks</td>
<td>55</td>
</tr>
<tr>
<td>12</td>
<td>Primary school</td>
<td>Secondary school</td>
<td>01.2003</td>
<td>6 years</td>
<td>3 months</td>
<td>59</td>
</tr>
<tr>
<td>13</td>
<td>University</td>
<td>University</td>
<td>06.2003</td>
<td>4 years</td>
<td>1 year and 6 months</td>
<td>56</td>
</tr>
<tr>
<td>14</td>
<td>Primary school</td>
<td>Secondary school</td>
<td>13.2005</td>
<td>3 years</td>
<td>1 year and 5 months</td>
<td>50</td>
</tr>
<tr>
<td>15</td>
<td>Primary school</td>
<td>Secondary school</td>
<td>09.2001</td>
<td>6 years</td>
<td>10 months</td>
<td>69</td>
</tr>
<tr>
<td>16</td>
<td>Secondary school</td>
<td>University</td>
<td>06.2004</td>
<td>3 years</td>
<td>10 months</td>
<td>27</td>
</tr>
<tr>
<td>17</td>
<td>University</td>
<td>University</td>
<td>12.2002</td>
<td>6 years</td>
<td>4 months</td>
<td>24</td>
</tr>
<tr>
<td>18</td>
<td>Secondary school</td>
<td>University</td>
<td>05.2002</td>
<td>6 years</td>
<td>3 months</td>
<td>36</td>
</tr>
</tbody>
</table>
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±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±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 was significantly higher than that 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 were 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-

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

<table>
<thead>
<tr>
<th>STAI Values</th>
<th>Study Group (Mothers with language delayed child)</th>
<th>Control group (Mothers with normal child)</th>
<th>p*</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>State Anxiety</td>
<td>44.0</td>
<td>13.5</td>
<td>36.9</td>
<td>9.9</td>
</tr>
<tr>
<td>Continuous Anxiety</td>
<td>45.2</td>
<td>9.4</td>
<td>41.0</td>
<td>5.3</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th></th>
<th>STAI-S</th>
<th>STAI-C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>p</td>
</tr>
<tr>
<td>Mother education</td>
<td>-0.486</td>
<td>0.041</td>
</tr>
<tr>
<td>Father education</td>
<td>-0.495</td>
<td>0.037</td>
</tr>
<tr>
<td>Age of the child</td>
<td>0.144</td>
<td>0.569</td>
</tr>
<tr>
<td>Initiating age of the training programme</td>
<td>0.183</td>
<td>0.468</td>
</tr>
<tr>
<td>Duration of the education</td>
<td>0.158</td>
<td>0.532</td>
</tr>
</tbody>
</table>

*p value shows the result of “Pearson correlation test”
Between 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.\(^4\,^5\) 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 statistically 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 affecting 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 mothers’ 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.

References

5. Silva PA, Williams S, McGee RA: Longitudinal study of children with developmental language delay at age


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