

## The Social Problem-Solving Questionnaire: Evaluation of Psychometric Properties Among Turkish Primary School Students

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### Abstract

*Problem Statement:* Children, like adults, face numerous problems and conflicts in their everyday lives, including issues with peers, siblings, older children, parents, teachers, and other adults. The methods children use to solve such problems are more important than actually facing the problems. The lack of effective social problem-solving skills among primary school children leads to larger problems such as learning difficulties during adolescence and adulthood, increased dropout potential, academic underachievement, bullying, and exposure to bullying. Sub-features of social problem solving, such as behavior problems, social-emotional adjustment, aggression, violence and anger in the primary school are evaluated by way of observations made by teachers and/or parents. The Social Problem- Solving Questionnaire (SPSQ) measures the methods used by the children in their interpersonal relations in their own words. As there are not any scales in Turkey that measure the social problem-solving skills of students in their own words at the first- and second-grade levels of primary school, it is important to adapt the SPSQ into the Turkish language for use in research and applications.

*Purpose of Study:* The purpose of this study was to translate the Wally Child Social Problem -Solving Detective Game Test developed by Webster-Stratton (1990) [(into Turkish and investigate its validity and reliability among Turkish primary school students)].

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*Methods:* Forward and back translation methods were used to translate the Wally Child Social Problem-Solving Detective Game Test from English to Turkish. The Turkish form of the Wally Child Social Problem-Solving Detective Game Test and the Sears Aggression Scale were administered to 376 Turkish primary school students (median age  $M=8.10$ ) in first and second grades. Exploratory and confirmatory factor analyses were used to examine the factor structure of the questionnaire. The relationship between social problem solving scores and aggression was assessed by calculating the Pearson product moment correlation coefficient. Additionally, internal consistency was evaluated by calculating Cronbach's alpha, while item-total correlation, split-half, and test-retest reliability coefficients were calculated by Pearson correlation.

*Findings and Results:* Exploratory factor analysis (EFA) identified two factors that account for 47.541 % of the variance. Factor 1, social problem solving for peers (eigenvalue=4.96), accounted for 35.473 % of the variance and included 9 items and item loadings that ranged from .59 to .73. Factor 2, social problem solving for adults (eigenvalue=2.07), accounted for 12.068 % of the variance and included 5 items and item loadings that ranged from .63 to .72. The CFA indicated that the two-factor model fit the data well:  $\chi^2 = 171.07$ ,  $df = 76$ ,  $\chi^2/df = 2.25$ , RMSEA=.05, SRMR=.004, GFI=.92, AGFI=.90, CFI=.96. Sears Aggression Scale was used to check the criterion validity of the Wally Child Social Problem-Solving Detective Game Test. There was negative moderate level correlation between social problem-solving subscales and Sears Aggression subscales.

The Cronbach's alpha internal consistency coefficients were .86 (social problem solving for peers), .73 (social problem solving for adults), and .85 (total social problem solving). The Spearman-Brown coefficients were .83 (social problem solving for peers), .71 (social problem solving for adults), and .75 (total social problem solving). The test-retest reliability coefficients for the total scale social problem solving, for social problem solving for peers, and for social problem solving for adults were .85, .86, and .83, respectively. The findings also indicated sufficient evidence in favor of the concurrent validity and reliability of the Turkish Wally Child Social Problem-Solving Detective Game Test.

*Conclusions and Recommendations:* The results of this study revealed that the 14-item Wally Child Social Problem-Solving Detective Game Test can be used to evaluate conduct problems and social problem-solving skills among Turkish primary school students between the ages of 7 and 8.

*Keywords:* social problem solving, aggression, primary school, peer relationships, adult relationships.

While researchers have long considered intelligence to be a key predictor of school readiness, evidence suggests that school readiness also recognizes that

emotional self-regulatory ability, social competence, the absence of behavior problems, and parent-teacher involvement are independent and important predictors of future academic achievement. Children with emotional and social problems and early conduct problems are at high risk for academic failure, school dropout, and delinquency (Webster-Stratton, Reid, & Stoolmiller, 2008). Social problem solving refers to problem solving as it occurs in the real world and has been defined as the general coping strategy by which a person attempts to identify effective responses to specific problematic situations (D'Zurilla & Nezu, 1999). Social problem solving is an important psychological behavior because it includes a broad range of situations, from social adjustment to stress situations. In addition, social problem solving relates to different forms of positive psychological adjustment as well as to pathological and psychological non-adjustment (Morera, Maydeu-Olivares, White, Fernandez, & Skewes, 2006). Social problem solving covers problematic situations that are related to interpersonal issues and that cannot be easily solved in everyday life, as they do not have specific solutions; that is, logic alone cannot solve the problem. However, social problems do have several appropriate solutions, and the effectiveness of the solutions depends on the individual characteristics and particular environmental factors during the problem-solving stage (D'Zurilla & Nezu, 1999). Specifically, children who are alienated by their friends during the first years of primary education and children who cannot initiate friendships and solve interpersonal problems are at risk of having behavioral problems during childhood and adolescence (Dodge, Lansford, Salzer-Burks, Bates, Pettit, Fontaine, & Price, 2003; Miller-Johnson, Coice, Maumary-Gremaud, & Bierman, 2002).

Webster-Stratton and Lindsey (1999) posit that social skill is the ability to establish and maintain positive friendships with peers and those socially skilled children should exhibit prosocial behaviors when interacting with and responding to their peers. Furthermore, socially skilled children realize and correctly interpret their social status. Children who use antisocial strategies tend to display antisocial behaviors in their relationships with adults and peers, they are often disliked and ostracized by their friends, and they are in constant conflict with their families. This vicious cycle increases the child's aggression and may result in behavioral problems (Hay, Payne, & Chadwick, 2004). Assisting children at risk of behavioral problems to gain peer acceptance during the first years of their primary education and providing early interventions to improve social competence may prevent antisocial behaviors and increase prosocial behaviors (Prinstein & La Greca, 2004; Webster-Stratton & Hammond, 1997; McMurrin & McGuire, 2011). Research indicates that preschool and the first years of primary school are the critical periods for intervention before behavioral problems develop into permanent patterns (Webster-Stratton & Reid, 2003).

Many children engage in peer experiences for at least 5 or 6 years before reaching secondary education. Antisocial children who are at the second stage of primary education, in other words children in the age group between 11 and 16 years, may have experienced social challenges until the secondary stage of primary school, and their behavior becomes stable as these children maintain antisocial behaviors during

the second stage of their primary education. As a consequence, the antisocial child develops a negative reputation that carries through the secondary stage of the primary education and causes the child to be ostracized by peers and even family members. Even if the child learns appropriate social skills during 6<sup>th</sup>-8<sup>th</sup> grades, this pattern of rejection may make it difficult for the child to use these skills and change his or her image. Early intervention during the early childhood can help children develop effective social skills and reduce antisocial behaviors before these behaviors develop into permanent patterns and result in negative reputations (Webster-Stratton & Reid, 2003). Deficiencies in their social skills and social problem solving are a result of children's lack of knowledge regarding positive social behavior towards social situations or conditions they encounter; or their insufficient experience to exhibit positive behavior (Webster-Stratton, 1999). Individuals who lack social skills will be identified and preventive intervention can be applied by teaching positive social behaviors and social skills, providing the opportunity to practice social skills and social problem solving, providing training programs for social skills and social problem solving.

The structures of the social problem-solving strategies are related to one another and have sequential steps such that each step influences the next. A person facing a social problem encodes his/her social status and evaluates the social cues of the status. The person then later selects a goal or result and reaches solutions based on his/her memory of solutions to similar past experiences, or she/he forms new behaviors that can be answers to a social problem that has not been previously encountered, that is, a new social problem. The selected solutions to social problems are then reviewed in light of certain criteria such as expectations and self-evaluation. In the end, the person behaves according to the response that she/he deems most appropriate (Keltikangas & Järvinen, 2001).

Aggressive children and adolescents do not have in their repertoire many effective social problem-solving strategies. Aggressive people, for example, produce fewer social problem-solving solutions, and the solutions that they produce are often weak, ineffective, and antisocial. Furthermore, aggressive individuals are inadequate in or incapable of evaluating the results of solutions. Accordingly, such children may see an antisocial solution as the appropriate one and therefore consider their antisocial behavior to be an effective method for solving the problem (Mize & Cox, 1990; Crick & Dodge, 1994).

The absence of effective problem-solving skills is related to interpersonal difficulties, mental problems or behavioral problems. There are two reasons why individuals fail to engage in effective problem solving. One is caused by ineffective problem solving and a failure to demonstrate such skills, in which case the individual may have the ability to solve problems but is unable to implement it. The other reason originates from the lack of social problem-solving skills (McMurrin & McGuire, 2011).

In recent years, violence and aggression have become serious and increasing problems around the world (D'Zurilla, Chang, & Sanna, 2003) and may be encountered in every aspect of our lives. Because antisocial behaviors, violence, and

aggression have their bases in childhood, it is important to take measures during childhood before children develop behavioral problems that lead to permanent patterns of social problem-solving deficiencies and negative peer interactions and communications. Unless behavioral risk factors are identified before or during the first stage of the child's primary education and necessary precautions are taken, such behaviors gradually increase and eventually result in problems that are far more difficult to solve in adolescence or adulthood (Webster-Stratton & Lindsay, 1999; Webster-Stratton & Hammond, 1997). Social problem-solving skills encompass the cognitive attitudes and instrumental behavioral skills that are necessary for coping effectively with events encountered in daily life (D'Zurilla & Nezu, 1999).

The social problem-solving scale considers the methods that children use, reported in their own words, to solve problems they encounter during their daily lives. This scale is capable of measuring both the quality and the quantity of children's social problem-solving skills and determining their current behavioral problems (Webster-Stratton & Hammond, 1997). Therefore, this study analyzes the adaptation of the social problem-solving scale into Turkish for students in the first stage of primary school, and it analyzes the relationship between social problem solving and aggression.

## Method

### *Sample*

The individuals who served as subjects for this study were determined by a purposive sampling method. This sampling method involves analyzing one or a few purposive sub-sections of a universe that are consistent with the purpose of the research, rather than using a representative sample of a given population. In other words, purposive sampling means observing a specific section of the universe that is most appropriate for addressing the problem. In purposive sampling, the researcher defines a sample based on previous theoretical information, his/her own information of the universe, and the special purpose of the research (Fraenkel & Wallen, 1993). In this research, among the sampling types, a maximum variation method was adopted and, for representation of the universe, participants were chosen according to their age, that is, they were between the ages of 7 and 8. There was an equal distribution of participants according to their parental and educational status. Once the sample was identified, the previously discussed measuring tools were applied to these individuals. Previous research has indicated that this sampling method can provide important insights on the values of the universe (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2008).

Data were collected from randomly selected first- and second-grade classes from among both public and private primary schools in Eskişehir and Konya. Data were gathered from 202 (53.7 %) female and 174 (46.3 %) male primary grade students. The students were between 7 and 8 years of age, and the average age was 8.10. The mothers of 115 (30.58 %) of the participants were primary school graduates; the mothers of 140 (37.23 %) of the participants were high school graduates; and the

mothers of 121 (32.19 %) of the participants were university or master/doctoral graduates. The fathers of 110 (29.25%) of the participants were primary school graduates; the fathers of 135 (35.90 %) of the participants were high school graduates; and the fathers of 120 (34.85 %) of the participants were university or master/doctoral graduates.

#### *Research Instruments*

*Social Problem-Solving Questionnaire (SPSQ):* The Wally Child Social Problem-Solving Detective Game Test was developed using Spivak and Shure's (1985) problem-solving test by Webster-Stratton (1990) and Rubin and Krasnor's (1986) child social problem-solving test. Webster-Stratton (1990) developed the questionnaire to identify social problem solving in children ranging in age from 4 to 8. The questionnaire is designed to measure both the quality and the quantity of children's social problem-solving skills and consists of stories with colorful pictures that include hypothetical, problematic situations that are based on 15 different adult and child problems. The stories include social problems that are introduced to the children who then respond to each problem in their own words. Solutions generated by children to the hypothetical problem situations are compared to 100 behavioral categories that include prosocial and antisocial behaviors. The scale covers peer problems (peer relationships) and adult problems (acquisition of objects). These sub-dimensions can be analyzed either separately or as a total score within the overall spectrum of social problem-solving skills. The internal consistency using Cronbach's alpha was found to be .65 for the prosocial solution categories of the Wally Child Social Problem-Solving Detective Game Test and .64 for the antisocial solution categories. The construct validity of the scale was tested (with Wally Child Social Problem-Solving Detective Game Test and Rubin and Krasnor's Child Social Problem Solving Scale): the correlation coefficient between the prosocial strategies was ( $r = .60$ ), and the correlation coefficient between antisocial strategies was ( $r = .50$ ) (Webster-Stratton & Lindsay, 1999).

Answers given to the hypothetical problem situations by the children were video recorded for the reliability of the scale, and three different observers were asked to categorize the answers given by the children. The correlation coefficients between categories of the three observers were .97 (Webster-Stratton & Hammond, 1997).

*Application of the scale.* Colorful pictures involving hypothetical, problematic situations that include 15 different adult and child problems are introduced to the children. The children were shown 15 different pictures of hypothetical problem situations, and the pictures were described to the children. The children were then asked, "What would you do or what would you say if you were the child in the picture?" In other words, the child is asked to solve the problem in the picture. Children are encouraged to give multiple answers for each situation. The researcher takes notes as the children address each problem and then encodes the solutions generated by the children by comparing them with the categories of the scale. One point is given if the solution generated by the child is prosocial, while a 0 is given if the response is antisocial. A high score demonstrates that the child used positive

solutions to resolve social problems, while a low score indicates that the children used negative, antisocial solutions.

*Sears Aggression Scale:* The scale was developed by Sears (1961) to identify aggression in children aged 7-12 years old. Uluğtekin's (1976) Turkish adaptation of the Sears Aggression Scale was also used in this study. The scale consists of 67 items and 5 subscales (projected aggression, self-directed aggression, antisocial aggression, aggression depression, and prosocial aggression). In this study, projected aggression (13 items), self-directed aggression (5 items), and antisocial aggression (9 items) subdimensions were used. The scale's reliability was analyzed with Kuder Richardson formula by Uluğtekin (1976) and Kuder Richardson coefficient was .70 for projected aggression, .48 for self-directed aggression, .44 for antisocial aggression. Sears found in construct validity that aggression scores change with gender. Prosocial aggression scores of girls is higher than boys and antisocial aggression scores of boys is higher than girls. Sears found that there is a negative relationship between antisocial aggression and prosocial aggression, aggression depression (Uluğtekin, 1976).

#### *Procedure*

The Wally Child Social Problem-Solving Detective Game Test was translated into Turkish by the investigator. Three assistant professors from the Department of Translation and the Department of English Education were asked to separately control and correct the translation. The three different forms were then combined, and a second opinion was sought. The items in the Turkish and English forms were given to five professors and associate professors in education, psychology, and child development departments, all of whom speak both languages and all of whom are qualified to assess the language equivalency.

The translations were then reviewed by the researcher, and it was determined that no semantic changes were necessary. It is thereby concluded that the Turkish version of the scale was ready to be implemented for the validity and reliability studies. The questionnaire was introduced to 11 specialists studying for their doctorates in pre-school and child development and then revised based on their expert opinions. Later, a pilot application was conducted to assess the comprehensibility of the questionnaire with respect to children. The questionnaire was individually administered to 376 children by the researcher in a separate environment during the 2010-2011 school year. The validity and reliability studies were performed using data obtained from these 376 children. Additionally, a test-retest reliability study was conducted on 100 participants in two-week intervals.

#### *Data Analyses*

The study for adaptation of the SPSQ measure to Turkish was conducted with 376 volunteer students between the ages of 7 and 8 (average age 8.10, standard deviation 2.08) who attended public and private primary schools in Eskişehir and Konya. First, the factor structure of the scale was examined using exploratory principal component factor analysis with varimax rotation. Second, factors provided by the exploratory analysis were used in a confirmatory factor analysis. Cronbach's

alpha correlations on scale and subscales, Spearman-Brown correlations of subscales, test-retest correlations, and correlation coefficients between subscales were computed. SPSS 15.0 and Lisrel 8.70 were used to analyze data.

Two criteria are generally used for the sample size in the structural equation model. According to the first, the minimum sample size should be between 100 and 200. According to the second criteria, the ratio of the individual number in the sample to the variables observed or measured must be at least 10:1 (Thompson, 2000). The Social Problem Solving Scale for Children, which was adapted in this study, consists of 15 items. According to both criteria, it can be concluded that the number of individuals (376) in the study group is sufficient for the application of the confirmatory factor analysis.

## Results

In this section, first the validity findings and then the reliability findings of the questionnaire are presented.

### *Validity Results*

#### *Construct Validity*

The construct validity of the questionnaire was investigated using two different methods, each of which is discussed herein.

#### *Explanatory Factor Analysis (EFA)*

The construct validity of the questionnaire was first tested using explanatory factor analysis. The principal components analysis and varimax rotation were applied separately to the data gathered from 7- and 8-year-old children. The results indicated there was no difference between the factor constructs for the two separate age groups, that is, 7- and 8-year-old children. Thus, explanatory factor analyses were applied to all of the participants together. Kaiser-Meyer-Olkin (KMO) and Barlett's test of sphericity were used to determine whether factor analysis was suitable for the independent variables. The KMO was found to be .855, which suggests that the correlation matrix is appropriate for factor analysis. The chi-square value ( $\chi^2=1684.330$ ,  $df=91$ ,  $p<.01$ ) for Barlett's test of sphericity also indicates that the factor model is appropriate. The explanatory factor analysis results are shown in Table 1 and Table 2. Principal component factor analysis indicated that, in terms of factor loadings, only item 11 had a loading less than .30 (.276) and that the other items had loadings higher than .40, ranging from .41 to .77. This result indicates that this questionnaire was used as a single construct factor. The varimax rotation identified two factors that explained 47.541 % of the total variance, and the factor loadings for the varimax rotation ranged from .59 to .73.

According to the literature, factor loadings of .59 and higher are good measures for the selection; however, in practice, the limit value for a small number of items is .30. (Büyükoztürk, 2002; Bryman ve Cramer, 1997; Kline, 2005). The SPSQ does not have any items with factor loading values below .59. Therefore, according to exploratory factor analysis, the measuring tool has a good structure.

**Table 1.***Eigenvalue and Explained Variance for SPSQ Items*

| Components | Eigenvalue | Explained Variance % |
|------------|------------|----------------------|
| 1          | 4.96       | 35.473               |
| 2          | 2.07       | 12.068               |

In the factor analysis, factors with 1 or higher eigenvalues are considered to be important factors (Büyükoztürk 2002). Two factors for which the eigenvalues are higher than 1 were found in the SPSQ. This scale's social problem solving for peers subscale consists of 9 items (item1, item4, item7, item8, item9, item10, item13, item14, item15), and the social problem solving for adults subscale consists of 5 items (item2, item3, item4, item5, item6, item12). In Table 2, the exploratory factor analysis and corrected item total correlations are given.

**Table 2***Exploratory Factor Analysis and Corrected Item Total Correlation for SPSQ*

| Item Number | Principal components factor loading | Factor 1    | Factor 2    | R(jx) |
|-------------|-------------------------------------|-------------|-------------|-------|
| 1           | .772                                | <b>.732</b> | .272        | .6933 |
| 2           | .405                                | .278        | <b>.725</b> | .4847 |
| 3           | .453                                | .160        | <b>.632</b> | .4488 |
| 4           | .673                                | <b>.597</b> | .312        | .5668 |
| 5           | .522                                | .249        | <b>.613</b> | .4688 |
| 6           | .512                                | .189        | <b>.697</b> | .5224 |
| 7           | .632                                | <b>.637</b> | .161        | .5624 |
| 8           | .697                                | <b>.725</b> | .137        | .6278 |
| 9           | .658                                | <b>.669</b> | .156        | .5877 |
| 10          | .446                                | <b>.625</b> | .214        | .5580 |
| 11          | .276                                | .279        | .285        | -     |
| 12          | .408                                | .159        | <b>.634</b> | .4228 |
| 13          | .598                                | <b>.640</b> | .208        | .5407 |
| 14          | .634                                | <b>.653</b> | .136        | .5621 |
| 15          | .607                                | <b>.722</b> | .218        | .5724 |

R(jx)= Corrected Item Total Correlation for SPSQ

In Table 2 all of the scale items except for item 11 have high factor loadings. Therefore, a corrected item total correlation and confirmatory factor analysis was performed on 11 items, subtracting from the questionnaire

#### Confirmatory Factor Analysis(CFA)

Confirmatory factor analysis makes use of numerous fit indices to assess the construct validity of a model. CFA was applied to all participants using two-factor hierarchical models. The path diagram of the factorial structure of the scale is presented in Figure 1.

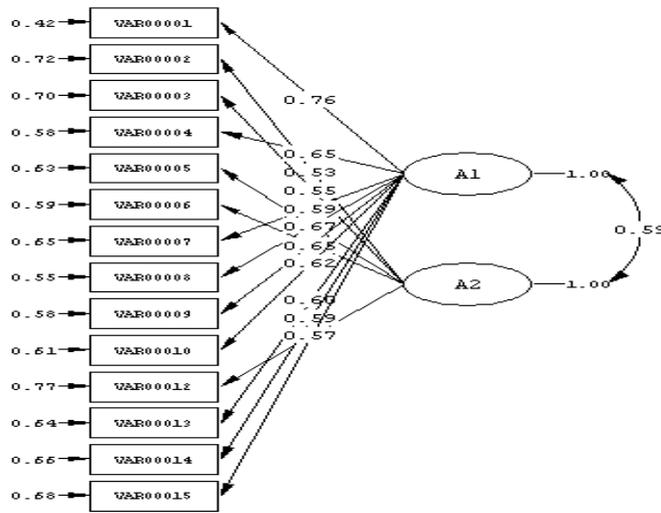


Figure 1. Path Diagram for SPSQ

Figure 1 reveals a variance of the standardized coefficient for all items between .53 and .76. Among numerous fit indices, the most frequently used are Chi-square goodness ( $\chi^2$ ), adjusted goodness of fit index (AGFI), root mean square residuals (SRMR), root mean square error of approximation (RMSEA), normed fit index (NFI), goodness of fit index (GFI), comparative fit index (CFI), incremental fit index (IFI), and non-normed fit index (NNFI) Çokluk, Şekercioğlu & Büyüköztürk, 2010).

If the calculated  $\chi^2/df$  ratio is between 2 and 5 and the values observed in the scale model are between the ranges of  $0 \leq RMSEA \leq 0.05$ ,  $0.97 \leq NNFI \leq 1$ ;  $0.97 \leq CFI \leq 1$ ;  $0.95 \leq GFI \leq 1$ ;  $0.90 \leq AGFI \leq 1$  and  $0.95 \leq IFI \leq 1$ , then a perfect fit is demonstrated. If the values are between the ranges of  $0.05 \leq RMSEA \leq 0.1$ ,  $0.95 \leq NNFI \leq 0.97$ ;  $0.95 \leq CFI \leq 0.97$ ;  $0.90 \leq GFI \leq 0.95$ ;  $0.85 \leq AGFI \leq 0.90$  and  $0.90 \leq IFI \leq 0.95$ , then an acceptable fit is demonstrated (Kline, 2005). Numerous fit indices results are given in Table 3.

**Table 3***Fit Indices and Test Values for SPSQ*

| $\chi^2$ | df | $\chi^2/df$ | GFI | AGFI | CFI | NFI | IFI | NNFI | RMSEA | SRMR |
|----------|----|-------------|-----|------|-----|-----|-----|------|-------|------|
| 171.07   | 76 | 2.25        | .92 | .90  | .96 | .93 | .96 | .95  | .05   | .004 |

$\chi^2$ = chi-square goodness, *df*=degree of freedom, GFI= goodness of fit index, AGFI= adjusted goodness of fit index, CFI= comparative fit index, NFI= normed fit index, IFI= incremental fit index, NNFI= non-normed fit index, RMSEA= root mean square error of approximation, SRMR= root mean square residuals

The  $\chi^2/df$  ratio was found to be 2:25 in the CFA. The data set has a good fit value as the  $\chi^2/df$  ratio is between 2 and 5 (Jöreskog and Sörbom, 1993; Du Toit et al., 2008). The SRMR value, which is equal to or lower than 0.05, shows a perfect fit, while the RMSEA value, which is between 0.04 and 0.08 indicates an acceptable fit. Accordingly it could be said that there is a perfect fit in the study as the RMSEA value is 0.05. The indices calculated for the fit of the two-factor structure to the data are as follows:  $\chi^2$  (*df*=76)=171.07,  $\chi^2/df$ = 2.25, GFI=.92, AGFI=.90, CFI=.96, NFI=.93, IFI=.96, NNFI=.95, RMSEA=.05, and SRMR=.004. When CFA results were evaluated according to these criteria, they indicated that the model is quite good.

**Table 4.***Correlations Between Factor Subscales in the Adapted Questionnaire*

| Factor                               | 1      | 2      |
|--------------------------------------|--------|--------|
| 1. Social Problem Solving for Peers  | 1      | .558** |
| 2. Social Problem Solving for Adults | .558** | 1      |

*p*<.01\*\*

As evidenced in Table 4, there are positive correlations between social problem solving for peers and social problem solving for adults (*r*=.55, *p*<.01).

*Criterion Validity*

To determine the criterion validity of the SPSQ, the referred scale and the aggression scale were applied. The results are given in Table 5.

**Table 5.***Correlations between SPSQ Scores and Sears Aggression Scores*

| Aggression Subscales     | Social Problem Solving for Peers | Social Problem Solving for Adults | Total Social Problem Solving |
|--------------------------|----------------------------------|-----------------------------------|------------------------------|
| Projected aggression     | -.521**                          | -.446**                           | -.485**                      |
| Self-directed aggression | -.562**                          | -.511**                           | -.530**                      |
| Antisocial aggression    | -.536**                          | -.649**                           | -.582**                      |

*p* < .01\*\*

As evidenced in Table 5, there are negative correlations between social problem solving for peers and projected aggression ( $r = -.521$ ,  $p < .01$ ), self-directed aggression ( $r = -.562$ ,  $p < .01$ ), and antisocial aggression ( $r = -.536$ ,  $p < .01$ ). There are negative correlations between social problem solving for adults and projected aggression ( $r = -.446$ ,  $p < .01$ ), self-directed aggression ( $r = -.511$ ,  $p < .01$ ), and antisocial aggression ( $r = -.649$ ,  $p < .01$ ). There are negative correlations between total social problem solving scores and projected aggression ( $r = -.485$ ,  $p < .01$ ), self-directed aggression ( $r = -.530$ ,  $p < .01$ ), and antisocial aggression ( $r = -.582$ ,  $p < .01$ ).

*Reliability Results*

The Cronbach's alpha coefficient, split-half, and test-retest were calculated to determine the reliability of the questionnaire scores. A Pearson correlation analysis was performed with two-week intervals on 100 people for test-retest reliability. The calculated alpha coefficient is .85 for social problem solving for peers, .71 for social problem solving for adults, and .86 for total social problem solving. The calculated Spearman-Brown coefficient is .83 for social problem solving for peers, .72 for social problem solving for adults, and .78 for total social problem solving. The calculated test-retest correlation is .86 for social problem solving for peers, .83 for social problem solving for adults, and .85 for total social problem solving.

**Table 6***Cronbach's Alpha Coefficients, Spearman-Brown Coefficients and Test Re-Test Coefficients*

| Factors        | Number of Items | $\alpha$<br>(N=376) | Spearman-Brown Coefficients | rtt<br>(n=100) |
|----------------|-----------------|---------------------|-----------------------------|----------------|
| SPS for Peers  | 9               | .85                 | .83                         | .86**          |
| SPS for Adults | 5               | .71                 | .72                         | .83**          |
| Total SPSQ     | 14              | .86                 | .78                         | .85**          |

*p* < .01\*\* $\alpha$ = Cronbach's Alpha coefficients, rtt= test re-test coefficients

As evidenced in Table 6, the results of the reliability analysis indicate that social problem-solving questionnaires have acceptable internal consistency and stable measurement over a short test-retest interval.

**Table 7.**

*Item Factor Correlations, Cronbach's Alpha Coefficients, Spearman-Brown Coefficients and Test Re-Test Coefficients for Prosocial and Antisocial Categories*

| Factors         | Item Factor Correlations Range | $\alpha$ (N=376) | Spearman-Brown Coefficients | rtt (n=100) |
|-----------------|--------------------------------|------------------|-----------------------------|-------------|
| SPSQ for Peers  | .49-58                         | .79              | .80                         | .82**       |
| SPSQ for Adults | .45-61                         | .71              | .73                         | .79**       |
| Total SPSQ      | -                              | .76              | .77                         | .80**       |

$p < .01$ \*\*

$\alpha$ = Cronbach's Alpha coefficients, rtt= test re-test coefficients

As can be seen in Table 7, the alpha coefficient is .79 for social problem solving for peers, .71 for social problem solving for adults, and .76 for total social problem solving, according to the prosocial and antisocial categories. The calculated Spearman-Brown coefficient is .80 for social problem solving for peers, .73 for social problem solving for adults, and .77 for total social problem solving, according to the prosocial and antisocial categories. The calculated test-retest correlation is .82 for social problem solving for peers, .79 for social problem solving for adults, and .80 for total social problem solving, according to the prosocial and antisocial categories. The results of the reliability analysis indicated that social problem-solving test categories demonstrate acceptable internal consistency and stable measurement over a short test-retest interval.

## Discussion and Conclusion

In this study, the validity of the Social Problem-Solving Questionnaire for first and second grade primary students was analyzed using exploratory factor analysis, confirmatory factor analysis, and convergent scales. The Social Problem-Solving Questionnaire is a scale used to identify behavioral problems in children at the first and second grade levels of primary education (Mash & Barkley, 2007). The Social Problem-Solving Questionnaire is also a unique questionnaire in that it measures the behavioral problems of these children in their own words. Behavioral problems are measured through observations by parents and/or teachers (Mash & Barkley, 2007). High-loading values before rotation in the exploratory factor analysis indicate that

the questionnaire can be used one-dimensionally. In the exploratory factor analysis, it was found that the questionnaire showed a two-dimensional structure after the varimax rotation and explained 47.541 % of the total variance. The Chi-square value was found to be [ $\chi^2=171.07$ ,  $df=76$ ;  $p < .01$ ] in the confirmatory factor analysis. Additionally, the RMSEA was 0.05, the GFI was 0.92, the NFI was 0.93, the CFI was 0.96 and the AGFI was 0.90. Fit index values obtained by the confirmatory factor analysis demonstrated that the model is well-fitted (Hu & Bentler, 1999; Jöreskog, Sörbom, Du Toit, & Du Toit, 1999; Jöreskog & Sörbom, 1996; Kline, 2005). The results of the factor analysis revealed a two-factor structure. These structures are consistent with the original structure used abroad (Mash & Barkley, 2007; Webster-Stratton, 2001; Webster-Stratton & Lindsay, 1999; Webster-Stratton, Reid, & Hammond, 2001). These two structures are referred to as social problem solving for peers and social problem solving for adults. The validity of the questionnaire was tested using the Sears Aggression Questionnaire adapted into Turkish by Uluğtekin (1976). It was found that there was a negative significant relationship between the points of social problem-solving sub-dimensions and total social problem-solving points and the sub-points of the aggression scale. Deficiencies in social problem-solving skills can result in anger accompanied by aggression and behavioral disorders (Korkut, 2002; Şahin, 2006). According to this result, as the prosocial answers given by the children in the first stage of primary school increase, their aggression decreases. Aggressive children and adolescents have a higher number of aggressive problem-solving strategies stored in their social-cognitive memory structures (Gerhart, 2011; McMurran & McGuire, 2011). The existence of a negative significant relationship between the sub-dimensions of social problem solving and aggression is consistent with the literature (Gerhart, 2011; D'Zurilla, Chang, & Sanna, 2003; Lochman & Dodge, 1994; McMurran, Blair, & Egan, 2002). According to these results, it can be concluded that the Social Problem-Solving Questionnaire is a valid measurement tool for children in the first and second grades of primary school (Büyüköztürk, 2002).

The research indicates that in the social problem solving for peers' dimension, the total item correlation range is between 54 and 69, the internal consistency coefficient is .85, the Spearman-Brown coefficient is .83, and the retest correlation coefficient is .86. With respect to the social problem solving for adults' dimension of the scale, the total item correlation range is between 42 and 52, the internal consistency coefficient is .71, the Spearman-Brown coefficient is .72, and the retest correlation coefficient is .83. With respect to the entire scale, the internal consistency coefficient is .86, the Spearman-Brown coefficient is .78 and the retest correlation coefficient is .85. In the social problem-solving test, it was found that Cronbach's alpha coefficient of the prosocial and antisocial categories used by children in the sub-dimension of social problem solving with peers was .79, the Spearman-Brown coefficient was .80 and the retest correlation was .82. It was found that Cronbach's alpha coefficient of the prosocial and antisocial categories used in the sub-dimension of social problem solving for adults was .71, the Spearman-Brown coefficient was .73, and the retest correlation was .79. It was found that Cronbach's alpha coefficient of the prosocial and antisocial categories used in the social problem solving for the entire scale was

.76, the Spearman-Brown coefficient was .77, and the retest correlation was .80. These values indicate that the Social Problem-Solving Questionnaire is a reliable measuring tool for first- and second-grade students of primary education (Büyüköztürk, 2002; Tezbaşaran, 1996).

### Recommendations

The reliability and validity of the social problem-solving questionnaire can be analyzed by studying different groups. In this research, children's social problem-solving skills and aggression tendencies were analyzed. Future studies can be carried out to identify other factors that may affect social problem solving. Factors affecting social problem-solving skills of first and second grade students in primary school can be identified, and educational programs can be implemented to improve the social problem-solving skills of these children. Further studies can also be conducted regarding family characteristics that may affect social problem solving, and training programs can then be implemented to address the concerns.

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### Sosyal Problem Çözme Ölçeği: Türk İlköğretim Birinci Kademe Öğrencilerinde Psikometrik Özelliklerinin Değerlendirilmesi

#### Atf:

- Dereli-İman, E. (2013). The social problem-solving questionnaire: Evaluation of psychometric properties among Turkish primary school students. *Eğitim Araştırmaları- Eurasian Journal of Educational Research, 52*, 97-116.

#### (Özet)

*Problem Durumu:* Çocuklar da yetişkinler gibi günlük hayatta akranları, kendilerinden büyük çocuklar, ebeveynleri, öğretmenleri ve diğer yetişkinlerle pek çok problemle karşı karşıya kalmaktadırlar. Çocukların bu problemlerle karşılaşmalarından çok, problemi çözerken kullandıkları yöntemler önemlidir. Sosyal problem çözmede başarısız olan ilköğretim çocukların etkili sosyal problem çözme becerilerini kazanmalarını engelleyen etkenler ve yetişkinlik dönemlerinde öğrenme güçlüğü, okulu terk etme, akademik başarısızlık, zorbalık, zorbalığa maruz kalma gibi daha büyük problemlere neden olmaktadır. İlköğretim birinci kademedeki çocukların davranış problemleri, sosyal-duygusal uyumları, saldırganlık, şiddet ve öfke gibi sosyal problem çözmenin alt özellikleri ya öğretmenlerin gözlemleri ile ya da anne-babalarının gözlemleri ile değerlendirilmektedir. Sosyal Problem Çözme Ölçeği (SPÇÖ) ise çocukların kendi ifadeleri ile kişilerarası ilişkilerinde nasıl bir yöntem izlediklerini ölçmektedir. Türkiye'de ilköğretim birinci ve ikinci sınıf öğrencilerinin kendi ifadeleri ile sosyal problem çözme becerilerini ölçen bir ölçek bulunmamaktadır. Bu nedenle, araştırmalarda ve uygulamalarda kullanılmak üzere SPÇÖ'nün Türkçeye uyarlanması önemlidir. Diğer bir deyişle, ilköğretim dönemi çocukların sosyal problem çözme becerilerindeki mevcut durumu saptamayı sağlayacak geçerli ve güvenilir bir ölçme araçlarına ihtiyaç vardır.

*Araştırmanın Amacı:* Bu araştırmanın amacı, SPÇÖ'yü ilköğretim birinci kademe Türk öğrencileri için kullanılabilirliğine ilişkin geçerlik ve güvenilirlik kanıtları elde etmektir.

*Araştırmanın Yöntemi:* Araştırma mevcut durumu sorgulayan tarama modellerinden

ilişkisel tarama modeli ile yürütülmüştür. Araştırma, Eskişehir ve Konya'da Milli Eğitim Bakanlığı'na bağlı resmi ve özel ilköğretimin 1 ve 2. sınıfına devam eden 376 öğrenci üzerinde yürütülmüştür. Araştırmada Webster- Stratton (1990) tarafından geliştirilen SPÇÖ, Sears (1961) tarafından geliştirilen ve Uluğtekin (1976) tarafından Türkçeye uyarlanan Sears Saldırganlık Ölçeği kullanılmıştır. SPSS 15.0 ve LISREL 8.70 programları ile veriler betimleyici istatistikler, açıklayıcı ve doğrulayıcı faktör analizi, Pearson momentler çarpım korelasyon tekniği ile analiz edilmiştir.

*Araştırmanın Bulguları:* Açıklayıcı faktör analizi yapılmadan önce elde edilen verilerin KMO ve Barlett Testi yapılmış ve örnekleme alınan bireylerin açıklayıcı faktör analizi için yeterli olduğu bulunmuştur. Varimaks döndürme yöntemi ile yapılan açıklayıcı faktör analizinde toplam varyansın %47.541'ini açıklayan iki faktörlü bir yapı elde edilmiştir. Açıklayıcı faktör analizinde on birinci maddenin işlemediği tespit edilmiştir. SPÇÖ'de yer alan maddelerin faktör yükleri .61 ile .72 arasında değişmektedir. Ölçeğin doğrulayıcı faktör analizinde uyum indeksi değerleri modelin iyi uyum verdiğini göstermektedir [ $\chi^2=171.07$ ,  $df=76$ ,  $GFI=0.92$ ,  $CFI=.96$ ,  $AGFI=0.90$ ,  $SRMR = 0.04$ ,  $RMSEA=0.05$ ]. Ayrıca SPÇÖ'nün alt boyutları ile Sears Saldırganlık Ölçeğinin alt boyutları arasında ölçeğin uyum geçerliliğini ortaya koyacak şekilde, anlamlı orta düzeyde korelasyonlar hesaplanmıştır. Ölçek geneli için Alpha katsayısı .85, alt boyutlar için .86 ve .73 bulunmuştur. Ölçek geneli için Spearman- Brown katsayısı .75, alt boyutlar için .83 ve .71 bulunmuştur. Test-tekrar test güvenilirlik katsayısı .80 ( $p<.01$ )'dir.

*Araştırmanın Sonuçları ve Öneriler:* İlköğretim birinci ve ikinci sınıf öğrencileri üzerinde gerçekleştirilen bu araştırmada, iki faktörden oluşan 14 maddelik SPÇÖ'nün psikometrik özelliklerinin oldukça iyi olduğu gözlenmiştir. Mevcut alinyazınla tutarlı olarak, SPÇÖ'nün Türkçe formundan elde edilen puanlarla, araştırmada ele alınan saldırganlık alt boyutları arasında anlamlı ilişkiler bulunmuştur. Ayrıca, uyarlanan ölçeğin yeterli güvenilirlik kanıtlarına sahip olduğu bulunmuştur. Sonuç olarak, elde edilen bulgular, SPÇÖ Türkçe formunun ilköğretim birinci kademe birinci sınıf ve ikinci sınıf öğrencilerinin sosyal problem çözme becerileri düzeyini ölçmek için geçerli ve güvenilir bir ölçme aracı olduğunu göstermektedir. SPÇÖ, gelecekte ilköğretim birinci kademe birinci sınıf ve ikinci sınıf çocukların sosyal problem çözme becerilerinde risk faktörü taşıyan bireylerin tespit etmek için kullanılabilir. Ayrıca, çocukların sosyal problem çözme becerilerini etkileyen faktörlerin belirlenmesine ve erken müdahale programları uygulanarak sosyal problem çözmedeki etkililiğine yönelik araştırmalar yapılabilir.

*Anahtar Sözcükler:* Sosyal problem çözme, saldırganlık, ilköğretim, akran ilişkileri, yetişkin ilişkileri.