The Validity, Reliability and Factorial Structure of the Turkish Version of the Tromso Social Intelligence Scale

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Abstract

The purpose of the present study was to investigate the reliability and validity of the Turkish version of the Tromso Social Intelligence Scale (TSIS) developed by Silvera, Martinussen, and Dahl (2001). 719 students from Sakarya University participated in the study. Construct validity and criterion related validity and reliability were assessed. Factor analysis for Turkish university students yielded three factor solutions as the original TSIS. Correlation coefficient of the Social Skills Inventory with the TSIS was .51. Cronbach alpha, test-retest and split half reliability coefficients were .83, .80, and .75 respectively. Overall results of this study showed that this scale is capable enough to measure social intelligence among university students in a valid and reliable way.

Key Words

Social Intelligence, Social Intelligence Scale, Reliability, Validity.

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Social intelligence has become the main topic of conversation for the first time as Thorndike defined intelligence as social, mechanical and abstract intelligence in 1920. Although numerous studies have been conducted since that time, problems encountered in the research on social intelligence can be collected under four headings.

The first one is related to the definition of social intelligence. Thorndike (1920) defined social intelligence as *(i)* the ability to understand and manage people and *(ii)* the ability to act wisely in human relations. Subsequent research has been generally based on Thorndike's above definition. However, a generally accepted definition of social intelligence has not been agreed upon. Marlowe (1986) stated that "social intelligence or social competence is the ability to understand the feelings, thoughts and behaviors of persons, including one's own, in interpersonal situations and to act appropriately upon that understanding." According to Walker and Foley (1973), social intelligence is the ability to deal with people, understand the feelings, thoughts and intentions of others, judge correctly the feelings, moods and motivations of individuals.

On the other hand, Wedeck (1947) concentrated upon the cognitive aspect of social intelligence and defined social intelligence as correctly judging the feelings, moods, and motivations of people. In some of the studies carried out on the subject, the concepts of social competence and social skills were sometimes used instead of social intelligence.

In line with the difficulties confronted in defining social intelligence, the second problem relates to the aspects social intelligence comprises of (Goleman, 2007). In spite of the fact that social intelligence had been analyzed in early studies on the base of two aspects, namely cognitive (understanding people) and behavioral (managing people) aspects, later studies put forth the fact that it has a multiple aspect structure. However, different arguments have been suggested about the aspects within the scope of social intelligence. In his social intelligence model, Marlowe (1986) proposed a four-dimensional construct: *(i)* Social interest (to be interested in others) *(ii)* Social self-sufficiency, *(iii)* Empathy skills (the ability to understand others cognitively and emotionally), and *(iv)* Social performance skills (observable social behaviors).

Kozmitzki and John (1993) stated that social intelligence is made up of seven constituents: *(i)* to sense the internal conditions and moods of others *(ii)* a general ability of establishing relationships with persons

(iii) knowledge about social theories and life *(iv)* social intuition and sensitivity in case of complex social circumstances *(v)* use of techniques in order to manipulate others *(vi)* empathy and *(vii)* social adaptation.

Silberman (2000) examined social intelligence and the traits of individuals having social intelligence on the base of eight aspects: *(i)* Understanding people *(ii)* expressing one's own feelings and ideas *(iii)* expressing one's own needs (boldness) *(iv)* giving**/**receiving feedback to/from the person contacted *(v)* influencing, motivating and persuading others *(vi)* offering innovative solutions to complex situations *(vii)* working cooperatively instead of individualistically, being a good team member, and *(viii)* adopting the appropriate attitude in the event relationships come to a deadlock.

According to Buzan (2002), social intelligence comprises of eight factors: *(i)* reading persons' minds: understanding and knowing people by making use of their body signals and verbal and nonverbal communication data *(ii)* active listening skill *(iii)* sociability *(iv)* influencing others *(v)* being active in social medium (popularity) *(vi)* negotiation and social problem solving *(vii)* persuasion, and (vii) knowing how to behave in different social mediums (Buzan, 2002).

The third problem is whether social intelligence is an independent structure different from general intelligence. Even though Weschler (1958) regards social intelligence as a dependant structure being the application of general intelligence to social circumstances and the use of general intelligence in social medium (as cited in Somazo, 1990), many studies have been conducted in order to prove that social intelligence is an independent structure. Early studies did not produce satisfactory results. Inadequate distinctive properties of social intelligence scales were influential in this situation as well. On the other hand, recent studies have revealed the fact that social intelligence and academic intelligence are two distinct structures independent of, yet supporting each other (Barnes, & Sternberg, 1989; Ford, & Tisak, 1983; Lee, 1999; Albretch, 2006).

The final problem faced in social intelligence studies is related to the measurement of the structure. Various scales have been used in order to measure social intelligence. Early-developed scales concentrated primarily on the cognitive aspect of the structure. Later, some scales were developed based on the evaluations and judgments of others (teacher,

mother-father, etc.), the interpretation of photographs and video records and the self-report. Uncertainties regarding the definition and aspects of social intelligence were reflected on scales as well and scales which produced inconsistent results were developed (Ford, & Tisak, 1983; Frederiksen, Carlson, & Ward, 1984; Kaukainen et al., 1999). The purpose of the present study was to investigate the reliability and validity of the Turkish version of the Tromso Social Intelligence Scale (TSIS) developed by Silvera, et al., (2001).

Method

Sample

A total of 719 students in Sakarya University from the departments of Educational Sciences, Turkish Language Education, Elementary sciences, Counseling, Computer and Instructional Technologies Education and Social Studies Education were included in the study on validity and reliability of Tromso Social Intelligence Scale during the academic year of 2006-2007. Ages of the students varied between 17 and 26; with the mean age of 20.4 (SD = 2.2).

David Silvera was contacted and the necessary permission was obtained for the study at the initial stage. The scale was translated into Turkish both by the researcher and two instructors from the department of Counseling. Later on, these translations were compared; for each item, the Turkish expressions which were deemed to represent that item best were adopted. Turkish and English forms were compared and reviewed by an instructor from the department of psychology. Controversial items in the translated form were discussed. The resultant Turkish form was administered to 15 university students from the faculty of education, thus the comprehensibility of the language was tested. Lastly, the equivalency of the Turkish translation to the original text was accepted and the Turkish form took its final expressions. The scale was administered to the university students volunteered for the research. The implementation lasted 5-8 minutes. The validity and reliability analyses of the scale were performed by SPSS 11.5 and LISREL 8.54.

Measure

For the purpose of collecting the data, in addition to the TSIS, the Social Skills Inventory (SSI) was used in order to test criterion validity in the research.

The Tromso Social Intelligence Scale: Developed by Silvera et al. (2001) in order to reveal social intelligence level, the Tromso Social Intelligence Scale (TSIS) is a self-report instrument including 21 items. The TSIS measures intelligence on the base of three different subscales: *(i)* **Social Information Processing (SIP):** This subscale measures the ability of understanding verbal or nonverbal messages regarding human relations, empathizing and reading hidden messages as well as explicit messages. *Sample Item:* "I usually understand what people are trying to do without feeling the need for their explanations." *(ii)* **Social Skills (SS):** This subscale measures the basic communication skills such as active listening, acting boldly, establishing, maintaining, and breaking up a relationship. *Sample Item:* "I am good at becoming acquainted with people and being involved in new social circles." *(iii)* **Social Awareness (SA):** This subscale measures the ability of active behaving in accordance with the situation, place, and time. *Sample Item:* "I usually break others' heart without being aware."

Each of the subscales comprises of 7 items. A 7-point Likert-type scale form was prepared for the items included in the scale. The minimum and maximum scores in the items are 1 and 7 respectively. By Silvera et al. (2001), cronbach alpha internal consistency coefficients for social information processing, social skills and social awareness were found to be .81, .86 and .79 respectively. Regarding validity studies, expert opinion was asked, structure validity was conducted and similar scales validity was applied in the original scale. Among 130 items in the item pool, 21 items having a factor value higher than .045 and .30 correlation were selected. When varimax factor analysis was applied to 21 items, 3 factors were found to correspond to the theoretical basis. In terms of similar scale validity, it was examined by the Marlowe Crowne Social Desirability Scale (MSCD) and the correlation was found to be .22.

The Social Skills Inventory: Developed by Riggio (1986), this instrument was revised in 1989 and took its current form. The Social Skills Inventory is a 90-item self-report instrument prepared for measuring basic social skills. The SSI measures social skills on the base of six subscales. Furthermore, it calculates the level of global social skills involving all social competences or social skills in total. The main subscales are as follows: emotional expressivity, emotional sensitivity, emotional control, social expressivity, social sensitivity, and social control. Each of the above subscales comprises of 15 items. A five-point Likert-type scale

form was prepared for the inventory. The minimum and the maximum scores in the items are 1 and 5 respectively. In terms of total points, an individual may receive a minimum of 90 and a maximum of 450 points from the inventory. Regarding the subscales, an individual may receive a minimum of 15 and a maximum of 75 points. The Turkish version of the scale was adapted to by Yüksel (1997). Internal consistency (cronbach alpha) coefficient was .85 for the scale. On the other hand, internal consistency coefficients acquired on the base of subscales varied between .56 and .82. The Social Skills Inventory was administered to 53 university students twice with a four-week interval and the reliability coefficient for the total score calculated by test-retest method was .92. On the other hand, reliability coefficients acquired from subscales varied between .80 and .89. The validity of the scale was examined by the Self-Monitoring Scale developed by Synder and adapted to Turkish by Bacanlı (1990). The correlation between the scales was .63 (n=37) (Yüksel, 1997).

Procedure

Reliability and validity analysis of the scale were analyzed by using SPSS 11.5 and LISREL 8.54. Test-retest, interconsistency and split-half methods were used for determination of reliability. For the validity study of the scale, exploratory and confirmatory factor analyses and concurrent validity with the social skills inventory were studied.

Results

Reliability

The reliability of the Tromso Social Intelligence Scale was calculated by internal consistency, test-retest and split-half methods. Obtained from 719 subjects, internal consistency (Cronbach alpha) reliability coefficient was .83 for the whole scale. On the other hand, internal consistency reliability coefficient was .77 for the "Social Information Processing", .84 for "Social Skills" and .67 for "Social Awareness" subscales. In the reliability study conducted by the TSIS split-half method, reliability coefficient was .75 for the whole scale. As for subscales, reliability coefficient was .76 for the "Social Information Processing", .83 for "Social Skills" and .71 for "Social Awareness" subscales.

The Tromso Social Intelligence Scale was administered to 101 university students twice with a 2-week interval and the reliability coefficient for the total score calculated by test-retest method was .80 for the whole test. Test reliability coefficient was .68 for the "Social Information Processing", .81 for "Social Skills" and .95 for "Social Awareness" subscales. These results indicate that the TSIS is adequately reliable.

Item analysis was carried out in order to designate the Tromso Social Intelligence Scale (TSIS) items' levels of prediction and discrimination. Item total correlations varied between .30 and .58 for the "Social Information Processing" subscale, between .38 and .78 for the "Social Skills" subscale and between .22 and 46 for the "Social Awareness" subscale. Considering that items having a value of .30 and higher are generally considered to be adequate in terms of distinguishing between the traits to be measured (Büyüköztürk, 2004) for construing item total correlation, it is possible to state that item total correlations regarding the subscales are adequate.

Construct Validity

Exploratory Factor Analysis: In this study, exploratory factor analysis (EFA) was carried out in order to investigate the factor structure of the TSIS. Having a factor load of .30 or higher was found adequate. For the purpose of demonstrating the adequacy of the sample for the factor analysis, sampling adequacy and Barlett Sphericity tests were conducted. Kaiser-Meyer-Olkin (KMO) Sampling Adequacy coefficient was.87 and Barlett Sphericity Test χ2 value was 4330,49 (p<.001). These results suggest that data are adequate for factor analysis.

As a result of Exploratory Factor Analysis, Principal Components and varimax rotation, a 3-factor model which has an eigenvalue higher than 1 and explains 45% of the total variance was acquired. As in the original scale, these factors were called "Social Information Processing", "Social Skills" and "Social Awareness". Since the factor loadings of all items in the scale are higher than .30, no item was omitted from the scale. Different from the original scale, 15ᵗʰ item was included in the "Social Information Processing" subscale instead of the "Social Skills". The factor loadings of the "Social Information Processing" subscale which resulted from EFA vary between .35 and .71 and this subscale explains 16.40% of the total variance. On the other hand, the factor loads of the "So-

cial Skills" subscale vary between .40 and .85 and this subscale explains 16.15% of the total variance. The factor loads of the "Social Awareness" subscale vary between .30 and .70 and this subscale explains 12.31% of the total variance. The three-factor structure acquired from the TSIS is considered as three distinct scales and scores are calculated separately from each subscale. In addition, it is possible to get a total score from the scale. Higher scores both in the total score and the subscale scores indicate higher level of social intelligence.

Confirmatory Factor Analysis (CFA): In this study, a confirmatory factor analysis (CFA) was conducted so as to demonstrate whether the factor structure of the original form would be confirmed in the Turkish sample. Numerous fit indexes are used for the purpose of presenting the adequacy of the model tested in CFA. For CFA conducted in this study, chi-square, goodness of fit index (GFI), adjusted goodness of fit index (AGFI), comparative fit index (CFI), normed fit index (NFI), relative fit index (RFI), incremental fit index (IFI) and root mean square error of approximation (RMSEA) were examined. For GFI, CFI, NFI, RFI, IFI and AGFI indexes, acceptable-fit value and best-fit value are considered to be 0.90 and 0.95 respectively (Bentler, 1980; Bentler, & Bonett, 1980; Marsh, Hau, Artelt, Baumert, & Peschar, 2006). As for RMSEA, acceptable-fit value and best-fit value are considered to be 0.08 and 0.05 respectively (Brown, & Cudeck, 1993; Byrne, & Campbell, 1999). Fit indexes of the model that resulted from CFA conducted were examined and it was seen that Minimum Chi-Square value (χ^2=621.26, N=719, p=0.00) was meaningful. Fit index values were found to be RMSEA=0.057, NFI=0.92, CFI=0.95, IFI=0.95, RFI=0.91, GFI=0.92 and AGFI=0.91. These fit index values prove that the model is fit.

Concurrent Validity

In this study, the Social Skills Inventory (SSI), which was adapted to Turkish by Yüksel (1997), was used in order to identify the criterion validity of the TSIS. The TSIS and Social Skills Inventory (SSI) were administered to 134 students studying in the departments of Turkish Language Education, Elementary Sciences, and Counseling. Correlation coefficient was found .51 between the TSIS and the SSI (n=134). Correlation coefficients between the subscales (SIP, SS, SA) of the TSIS and SSI varied between .41, .05 and .61, respectively.

Discussion

In this study, the validity and reliability of the Tromso Social Intelligence Scale (TSIS) originally developed by Silvera et al. (2001), were analyzed on a group of Turkish university students. In order to demonstrate the psychometric features of the scale, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were conducted. For the purpose of calculating the similar scale validity, the scale's correlation with the Social Skills Inventory was examined. As for the reliability, reliability coefficients were calculated by test-retest, internal consistency (Cronbach alpha) and split-half methods. Furthermore, an item analysis was carried out so as to determine the distinctiveness and prediction power of the total scale score for each item in the scale. In general, the results obtained are similar to the original form.

As a result of the exploratory factor analysis conducted for evaluating the structure validity of the scale, it was seen that the TSIS has a three-factor structure similar to the original form and that the scale items correspond to the items included in the original form except for the 15th item. The 15th item was included in the "Social Information Processing" subscale instead of the "Social Scales" subscale in the Turkish form. The subscales of the TSIS explain 44.79% of the total variance. The factor loads of the "Social Information Processing" subscale vary between .35 and .71 and this subscale explains 16.40% of the total variance. Factor loads of the "social skills" subscale vary between .40 and .85 and this subscale explains 16.15% of the total variance. The factor loads of the "Social Awareness" subscale vary between .30 and .70 and this subscale explains 12.31% of the total variance. A confirmatory factor analysis (CFA) was conducted so as to demonstrate whether the original form would be confirmed in the Turkish sample. Fit index values of the model acquired as a result of the analysis were found to be RMSEA=0.057, NFI=0.92, CFI=0.95, IFI=0.95, RFI=0.91, GFI=0.92 and AGFI=0.91. These fit index values prove that the model is fit. In order to demonstrate similar scales validity of the TSIS, its correlation with the Social Skills Inventory was examined. The correlation was found to be .51 for the whole scale.

Internal consistency (Cronbach alpha), test-retest and split-half methods were used for the purpose of determining the reliability of the TSIS. Internal consistency (Cronbach alpha) reliability coefficient was .83 for the whole scale. Internal consistency reliability coefficient was .77 for

the "Social Information Processing" subscale, .84 for the "Social Skills" subscale and .67 for the "Social Awareness" subscale. In the reliability study conducted by the TSIS split-half method, reliability coefficient was .75 for the whole scale. As for subscales, reliability coefficient was .76 for the "Social Information Processing" subscale, .83 for the "Social Skills" subscale and .71 for the "Social Awareness" subscale. The test reliability coefficient for the total score calculated by re-test method was .80 for the whole test. Test reliability coefficient was .68 for the "Social Information Processing" subscale, .81 for the "Social Skills" subscale, and .95 for the "Social Awareness" subscale.

As a result, findings obtained regarding validity and reliability demonstrate that the social intelligence scale is a valid and reliable instrument for measuring the level of social intelligence. In other words, according to the obtained results, the Turkish form of the Tromso Social Intelligence Scale has a high validity and reliability for measuring the level of social intelligence.

Even though this study is one of the first studies on social intelligence in Turkey and therefore, is a significant step, other studies in this field are still needed. First of all, this study was conducted on university students. Similar studies should be carried out on children, adolescents, other samples. Besides, it shall be proper to present the relevance of the TSIS with variables such as emotional intelligence, general traits, and self-respect.

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