Associations between Teachers' Interpersonal Behavior and Students' Socio-Emotional Learning Skills in Social Sciences Classrooms in Turkey

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Associations between Teachers' Interpersonal Behavior and Students' Socio-Emotional Learning Skills in Social Sciences Classrooms in Turkey

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Abstract

Associations between students' socio-emotional learning skills and students' perceptions about their social sciences teachers' interpersonal behavior were investigated in this study. A primary level version of the *Questionnaire on Teacher Interaction* (QTI) was adapted into Turkish in order to gather the data concerning teacher interpersonal behaviors in the Turkish elementary classrooms. This process together with the collection of data concerning students' socio-emotional learning skills was performed in several state elementary schools with 386 students from Grade 5 and Grade 6. Descriptive statistics, Canonical Correlation Analysis and Confirmatory Factor Analysis (with Mplus) were utilized for the purposes of data analyses. The results revealed that the Turkish version of the QTI for primary schools demonstrated a reasonable fit with the data with some minor deviations. The results also indicated that students' perceptions about their teachers' leadership, helpful, uncertain and understanding behaviors were positively but admonishing, dissatisfied and strict behaviors were negatively related to students' socio-emotional learning skills.

Key words: Interpersonal teacher behavior, Teacher interaction, Socio-emotional learning, Mplus analyses, Canonical correlation analyses, Circumplex models

Introduction

Research on learning environments is now an established area of research and expertise and it appears that this research venue is originally derived from the studies and research practices of Lewin (1936) and Murray (1938) concerning human environment and behaviors and interactions of human beings in their surroundings. Given this first and leading line of research, it is observed that these first group of researchers attempted to understand the influence of several characteristics of any human environment upon the individuals' behaviors and perceptions. A particular effort was spent to understand how human beings perceive their surrounding environment and how their perceptions affect their performance and behaviors. Following this first line of researchers, further attempts were performed by Moos (1974) and Walberg and Anderson (1968) who in fact tried to apply this first line of research agenda into more educational contexts. That is, one simple implication is that there was a transfer from a broad perspective of "environment" to a more specific outlook of "classroom learning environment". With this second line of researchers, there were several attempts to develop research instruments and theoretical models to denote the several characteristics existent within classroom learning environments (Walberg, 1968; Wubbels, Creton, & Haymayers, 1985; Wubbels & Levy, 1993). Investigations into human environments and their relevant dimensions were performed in terms of physical characteristics, social characteristics and also some psycho-social ones observed and perceived in learning environments. Within these characteristics, such sub-topics or terminologies as teacher interaction (Wubbels, et al., 1985; Wubbles & Levy, 1991; 1993), classroom assessment characteristics (Waldrip, Fisher, & Dorman, 2008) and general classroom characteristics further including, for instance, cooperation, competition, materials environment and task orientation in particular classroom settings (Fisher & Fraser, 1981; Fraser, Anderson, & Walberg, 1982; Fraser & Fisher, 1982; 1983) emerged and each of these dimensions formed the basic venues of research or corresponded to the main variables of investigation for following researchers (Fraser, 2002). In this regard, a considerable number of studies have been conducted on each of these dimensions and *teacher interaction* or its synonym *teacher interpersonal behaviors* appeared to attract researchers from all over the world. These studies were in fact guided by the proponent work by Wubbels et al. (1985). That is, Wubbels and his associates' (1985) proponent attempt to develop a Model for Teacher Interpersonal Model by adapting

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Leary's (1957) model on social interaction in psychotherapy into education provided the theoretical framework for the following researchers. Wubbels et al. (1985) adapted Leary's (1957) model for interpersonal behavior to form eight different teacher interaction profiles (i.e. understanding, helping/friendly, strict, dissatisfied, admonishing, uncertain, leadership and student freedom) to be perceived by the students to conceptualize their teachers' interpersonal behaviors in the classrooms. Future researchers widely used this framework, the Model for Interpersonal Teacher Behavior and the related data collection instrument, Questionnaire on Teacher Interaction (QTI) developed again by Wubbels et al. (1985) to examine teacher behavior as an important sub-dimension of classroom learning environments.

The Model for Interpersonal Teacher Behavior primarily map teacher interpersonal behavior on two main dimensions, *proximity* and *influence*. Teacher proximity has two opposing sub-dimensions or poles as *cooperation (C)* and *opposition (O)* while teacher influence again was dealt with two opposing sides as *dominance (D)* and *submission (S)* as depicted in Figure 1. These two main dimensions are further divided into eight different sections based upon some variations of the opposing poles to show eight different types of teacher behaviors. That is, these two main dimensions form a coordinate cyclical system further divided into eight equal sectors to map teacher behavior. Accordingly, this circumplex form or cyclical system show the complexity and interaction of several factors underlying human interpersonal relationships. Overall, the criterion that different types of interpersonal behavior ordered in a circular form along with two main interpersonal behaviors (proximity and influence), which is common to both Leary's Model and its following version, Model for Interpersonal Teacher Behavior is in fact theoretically related to Circumplex Models in psychology (see den Brok, Fisher, Brekelmans, Rickards, Wubbels, Levy, & Waldrip, 2003 and Saydam & Telli, 2010 for a detailed discussion of the Circumplex Models).
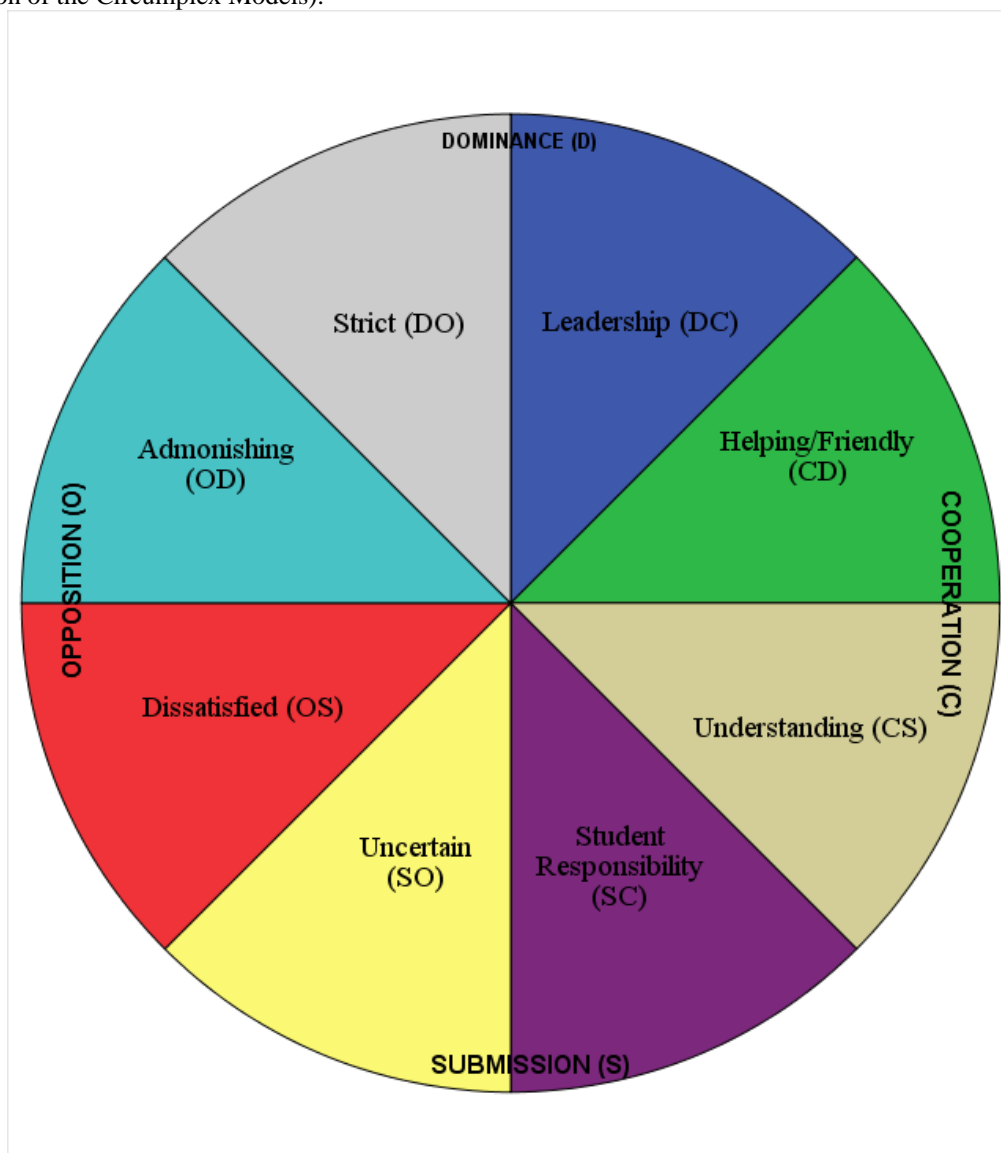

Figure 1. Model for Interpersonal Teacher Behavior (Wubbels & Levy, 1993)

Each of the eight equal sectors are labelled with the initials of opposing poles such as CS or SC in which the preliminary initial refers to the dominant dimension (proximity or influence). Thus, The Model for Interpersonal Teacher Behavior developed by Wubbels et al. (1985) includes eight types of interpersonal teacher behavior, a) leadership (DC), b) helping/friendly (CD), c) understanding (CS), d) student responsibility/freedom (SC), e) uncertain (SO), f) dissatisfied (OS), g) admonishing (OD) and lastly h) strict (DO). As was also mentioned above, The Model for Interpersonal Teacher Behavior in fact was developed in combination with a data collection tool named as Questionnaire on Teacher Interaction (QTI) aiming to elicit students' perceptions about their teachers' interpersonal behavior (see Fisher, Henderson, & Fraser, 1995; Wubbels et al., 1985 and Wubbels & Levy, 1991 for three QTIs with different number of items). This data collection instrument became a very popular research instrument and was widely used in the following investigations into teacher interaction.

For its extensive use in several countries, the researchers adapted QTI to elicit teacher interaction perceptions and these adaptation studies formed a common line of research practice for researchers around the world. For instance, adaptation studies took place in Canada (Lapointe, Pilote & Legault, 1999), Brunei (Scott & Fisher, 2004), Cyprus (Kokkinos, Charalambous, & Davazoglou, 2009), Korea (Kim, Fisher, & Fraser, 2000), Singapore (Goh & Fraser, 1998), Indonesia (Fraser & Aldridge, & Soerjaningsih, 2010) and recently in Kosovo (Berisha Kida & Karaj, 2020). Turkish adaptation of the 64-item (American) version was also performed by a Turkish researcher (Telli, 2006) to be used with secondary level students. However, as either the short version with 48 items or long version with 64 items were aimed at secondary level students, most adaptations were conducted with the students at this particular level excluding a few (Goh & Fraser, 1998; Kokkinos, et al., 2009; Scott & Fisher, 2004). When the results from these studies including the adaptations were examined, it is seen that they provided sufficient evidence for the associations between student perceptions of teacher interpersonal behaviors and affective and cognitive outcomes of the students in different classrooms at schools (den Brok, 2001; den Brok et al., 2003; Fraser et al., 2010; Kyriakides, 2006; Maulana, Opdenakker, den Brok, & Bosker, 2011; Rakıcı, 2004, Telli, 2006; Telli, den Brok, & Çakıroğlu, 2007; Wei, den Brok, & Zhou, 2009). Based upon these studies, it appears that teacher interaction has been extensively studied in science and science-related disciplines at the secondary schooling level mostly by means of correlational research designs while there is less surge of interest into the classrooms in different discipline areas other than science and into other levels of schooling. Thus, there is a need to investigate classrooms other than science ones in different levels of schooling to provide a broader and better picture of the teacher interaction characteristics and their influence on student outcomes. Moreover, given the most studied affective outcomes in relation to their links to teacher interpersonal behaviors, investigations into motivation, attitude towards the lessons, self-regulation and self-efficacy appear to dominate the literature while there is no study to date including socio-emotional learning skills as one of these affective outcomes.

Socio-emotional learning to be defined as the combination of such competencies or components as emotional intelligence (Basu & Mermillod, 2011; McCombs, 2004), social learning and cognition (Frey, Nolen, Van Schoiack Edstrom & Hirschstein, 2005), life-skills and well-being (Greenberg, Domitrovich, Weissberg, & Durlak, 2017) and stress management (Kusché & Greenberg, 2001) briefly refers to individuals' understanding and managing of their emotions and social relationships, which is in fact a direct correlate of their socio-emotional progress or academic achievement (Elias et al., 1997; Kabakçı & Korkut Owen, 2010; McCormick, Cappella, O'Connor, & McClowry, 2015). In addition, The Collaborative for Academic, Social, and Emotional Learning (CASEL) in fact made a good summary of the main sub-components of social emotional learning and shortened these competencies as "The CASEL 5" which includes social awareness, self-awareness, self-management, relationship skills and lastly responsible decision making (CASEL, n.d.). Accordingly, research into this construct and its relationship to teacher interpersonal behaviors is needed to promote literature not only as to teacher interaction but also as to socio-emotional learning. To these ends, the current study aimed to investigate teacher interaction in an elementary social sciences classroom by adapting a QTI version for younger (primary level) students (Goh & Fraser, 1998). The researchers also aimed to understand if student perceptions of their social sciences teachers' interaction behavior were associated with their socio-emotional learning skills. The following research questions guided this current study:

1. How do elementary school students in state schools in Turkey perceive their social science teachers' interpersonal behaviors?

2. To what extent are students' perceptions about their social sciences teachers' interpersonal behavior related to their socio-emotional learning skills?

Method

Participants

Participants were 386 elementary school students from Grade 5 ($n = 224$) and Grade 6 ($n = 162$) enrolled in several state schools in a city in the western part of Turkey. Out of 386 students, 232 (%60) participants were females and the remaining 154 (%40) were males. Given their ages, 208 (%54) were aged 11, 135 (%35) aged 12 and the remaining 43 (%11) were 10 years old.

Data Collection Tools

Turkish Version of the Questionnaire on Teacher Interaction for Elementary Levels

A primary school version of the QTI previously adapted and designed by Goh and Fraser (1998) with its 48 items was used in this study. Goh and Fraser (1998) in fact had adapted this primary QTI from the two previous versions in the literature, QTI long form with 64 items (Wubbels & Levy, 1991) and QTI short form with 48 items (Wubbels, 1993) developed for secondary school students. Thus, Goh and Fraser (1998) attempted to adapt these tools to use at the primary school level in Singapore and this tool became the first version in the literature appropriate for primary or elementary school students aged around 11 years old. In contrast to five-point responses required for secondary school versions, this elementary version required answers on a three-point scale (Seldom – Sometimes - Generally) by making it more suitable for younger students at the primary schooling levels. In their study in Singapore, Goh and Fraser (1998) reported Alpha reliability scores ranging from .50 to .78 at the class-level analyses and from .73 and .96 at the student-level analyses.

Turkish adaptation study started with the seeking of permissions from the developers (B. Fraser, personal communication, 31 January, 2020) and then translation of all 48 items into Turkish by a language expert. The translated Turkish form was back translated into English by another language expert. For the items the meanings of which seem unclear and problematic in the original English version, developed by Goh & Fraser (1998) in Singapore, a foreign expert experienced with the instrument development and adaptation studies of elementary and secondary school versions in the Netherlands and in other countries including Turkey was contacted and asked for his expert opinions (P. den Brok, personal communication, 30 December, 2019 & 31 January, 2020). The versions from the backtranslation process were compared by two experts and based on their expert opinions, back-translations suggested no major changes. Hence, the instrument took its almost-final form to be used in the pilot study. Four students took part in the pilot study and they were asked to respond to the items by evaluating their comprehensibility. As a result of this piloting process, some similar connotations elicited in a couple of items (concerning dissatisfied and admonishing scales) were improved to make these items different from each other. Accordingly, the Turkish version of the QTI-primary took its final form and was named "Turkish Questionnaire on Teacher Interaction for Elementary Schools" (TQTI-E). The 48-item TQTI-E has eight sub-scales with six items in each to refer to eight different types of teacher behavior. These eight sub-scales were labelled as they were in the original instrument as a) leadership, b) helping/friendly, c) understanding, d) student Responsibility/freedom, e) uncertain, f) dissatisfied, g) admonishing and lastly h) strict. The adaptation and validation results for the TQTI-E was presented in detail in the Results section of this work.

Socio-Emotional Learning Skills Scale

In order to elicit data concerning students' socio-emotional learning skills, Socio-Emotional Learning Skills Scale (SELSS) developed for elementary school students by Kabakçı and Korkut Owen (2010) was used in this study. Kabakçı and Korkut Owen (2010) reported a Cronbach reliability score of .88 on the whole scale (40 items) while reliability values ranged between .61 and .83 on its four sub-scales, a) problem solving skills (11 items), b) coping with stress skills (10 items), c) communication skills (9 items) and d) self-esteem enhancing skills (10 items). Test-retest coefficients were also reported to be .85 on the whole scale and between .69 and .82 on the four subscales. The instrument required responses on a four-point Likert scale.

Data Analysis

For the purpose of research question one (RQ1), that is, to investigate students' perceptions of their social sciences teachers' interpersonal behaviors, descriptive statistics for each TQTI-elementary scale, including

means and standard deviations were derived. In order to examine the relationship between eight types of teacher interpersonal behaviors and four types of socio-emotional learning skills for the purposes of second research question (RQ2), canonical correlation analysis (CCA) was utilized. For the validation of the teacher interaction instrument (adapted as TQTI-elementary in this study) and to establish its construct validity, data were subjected to Confirmatory Factor Analysis by means of Mplus Version 7.4. Prior to CCA and CFA, some assumptions such as multivariate normality, absence of outliers, multicollinearity and sufficient sample size were evaluated for the suitability of the data for these analyses. No violations of these assumptions were ensured.

Results

Validation of the TQTI -Elementary Version

Prior to multilevel confirmatory analysis, items were first assigned to their sector (scale) scores on the individual level data. The reason for this was theoretically related to the circumplex structure of the study instrument. That is, as the items all are required to load into the two main dimensions (i.e. proximity and influence) and to correlate with each other and the remaining adjacent scales on the circumplex (Blackburn & Renwick, 1996; den Brok et al, 2003; Gurtman, 1992; Gurtman & Pincus, 2000; Wiggins, Philips, & Trapnell, 1989), testing the model at the scale level rather than at the item level appeared meaningful and theoretically more appropriate. A multilevel confirmatory factor analysis was then performed on the scale scores in order to confirm the factor structure in TQTI-E with its two independent dimensions and eight free scale positions (with prescribed factor loadings) along with these two dimensions. The formula used in the current multilevel confirmatory analysis with Mplus was taken from the goniometric circle function behind Circumplex Models (see den Brok, et al., 2003 for a detailed discussion of the Circumplex Model and goniometric function) and it is depicted as in the following:

Influence = (.92*DC) + (.38*CD) - (.38*CS) - (.92*SC) - (.92*SO) - (.38*OS) + (.38*OD) + (.92*DO)

Proximity = (.38*DC) + (.92*CD) + (.92*CS) + (.38*SC) – (.38*SO) – (.92*OS) - (.92*OD) – (.38*DO)

Once the assumptions regarding normality and sample size were ensured (see the relevant results concerning assumptions within the analyses for RQ2 below), confirmatory factor analysis was conducted by means of Mplus Version 7.4 (Muthén & Muthén, 1998–2017) on the study data (n = 386). Such fit indicators as Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker Lewis Index (TLI) and Standardized Root Mean Square Residual (SRMR) were used for the interpretation of the model. With the examination of fit indexes in the initial confirmatory analysis (on the student level data), several fit indices seemed appropriate (i.e. CFI = .895 and SRMR = .058) while the others required improvement (RMSEA = .166 and TLI = .787). Modification indices (MIs) gained as a part of the analyses in Mplus Version 7.4 (Muthén & Muthén, 1998–2017) already suggested allowing some of the subdimensions to covary with the others. Thus, to have a better fitting and more parsimonious model, the researchers conducted several modifications by using the theoretical understanding related to assumptions concerning The Model for Interpersonal Teacher Behavior in combination with the MIs recommended. For the theoretical model behind the study instrument (i.e. The Model for Interpersonal Teacher Behavior) require crossloadings of the all sectors though in a decreasing fashion as one moves from one particular scale in the circle towards opposing scales (i.e. high and positive correlations between neighboring scales and decrease of correlations when moving on the interaction circle) as one of its main assumptions, linking scales seemed in line with the theoretical background of teacher interaction instrument.

Once the modifications were completed in the light of theoretical justifications with the literature on teacher interaction (by allowing several subscales to covary with several other subscales within the circle), the model with two independent factors along with eight free scales run with modifications yielded a CFI of .980, TLI of .939, RMSEA of .089 and SRMR of .033. As the values for CFI and TLI were above .90 and the value for SRMR below .08, the fit indices apparently improved and indicated a good model fit (Kline, 2005). In addition, the RMSEA value was very close to the threshold of .08 of good fit (Kline, 2005). It was also in the range of .05 to .10 thus exhibiting mediocre (fair) fit (MacCallum, Browne, & Sugawara, 1996). Accordingly, the model fit statistics showed that the model with the modifications was a better fit for the data compared to the initial model performed. The standardized coefficients loaded into one particular independent dimension more strongly than

the other remaining dimensions thus contributing to the circumplex nature of the model as was expected and required (Figure 2).
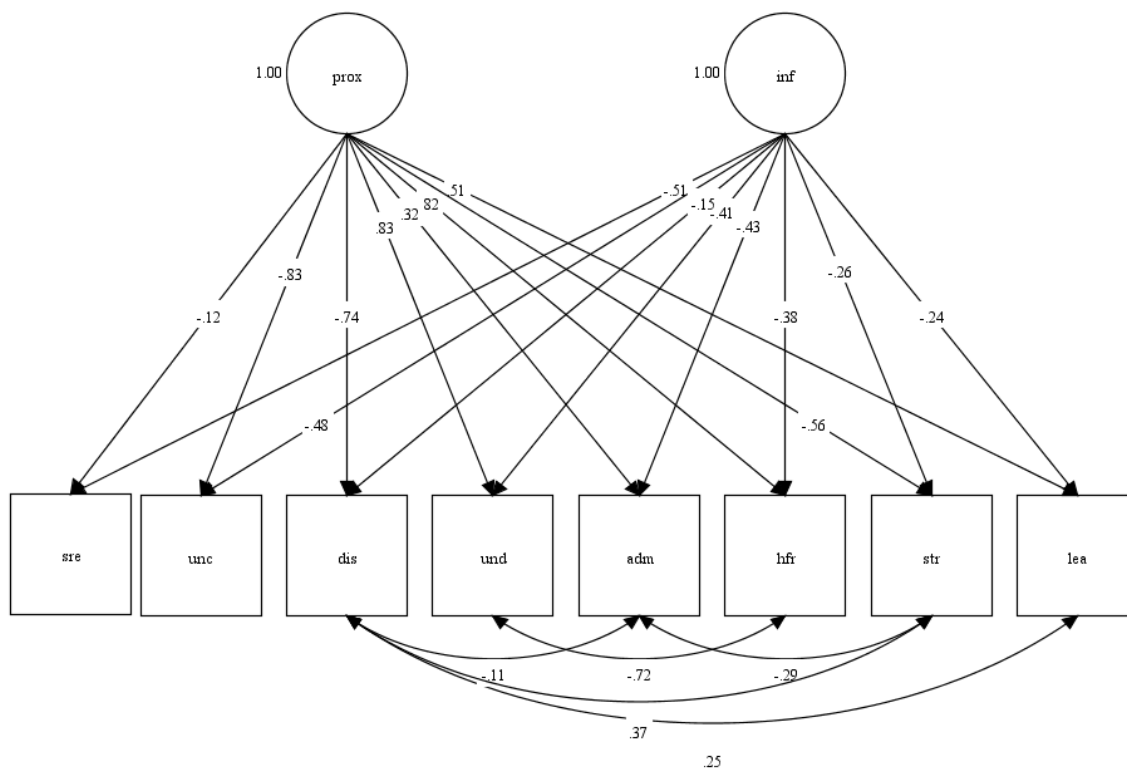

Figure 2. Structural Model for the TQTI-E

Several scales also exhibited poor (<.2) second factor loadings (e.g. Student Responsibility subscale) though their first factor loadings were satisfactory. Some of the scales appeared to deviate from their original positions on the circular model by containing more proximity than the hypothesized by the researchers and the original model requirements. Leader, uncertain and strict scales appeared to exhibit higher loadings on the proximity dimension than theoretically expected (Table 1). However, these minor deviations had no negative influence on the goodness-of-fit indicators and interpretation of the data in a different culture than its original one. Hence, CFA conducted on the 48-item Turkish QTI for elementary students confirmed the researchers' proposal that the instrument used in this study had a circumplex structure with two dimensions together with eight sub-subscales.

Table 1. *Factor loadings of the sub-scales of the TQTI-E (estimated with Mplus, N = 386)*

	Factor Loading	
Subscales	1	2
DC Leadership	- .24	**.51**
DO Strict	- .26	**- .56**
SC Student Responsibility	**- .51**	- .12
SO Uncertain	- .48	**- .83**
CS Understanding	- .41	**.83**
CD Helpful/friendly	-.38	**.82**
OS Dissatisfied	- .15	**- .74**
OD Admonishing	.32	**- .43**

Note. Boldface indicates highest factor loadings. Factor 1 = Influence; Factor 2 = Proximity.

Students' Perceptions of Their Social Sciences Teachers' Interpersonal Behaviors

Participants generally perceived their social sciences teachers as mostly showing understanding, helpful and leader behaviors. As shown in Figure 3, students reported that their social sciences teachers showed understanding behaviors the most in their relationships within classrooms ($M= 2.64$, $SD = .41$) followed by helpful/friendly ($M = 2.53$, $SD = .35$) and leader behaviors ($M = 2.46$, $SD= .28$). Students also perceived their teachers as sometimes allowing student responsibility and freedom, which is less frequently, compared to the perceptions about the three most frequent interpersonal behaviors above. The least frequent teacher interpersonal behavior perceived by the students was dissatisfied behaviors ($M = 1.23$, $SS = .35$) respectively followed by admonishing ($M= 1.40$, $SD = .46$), uncertain ($M = 1.57$, $SD = .27$) and strict behaviors ($M = 1.62$, $SD = .38$). In this essence, positive perceptions regarding social sciences teachers' interpersonal behaviors outperformed the negative ones.
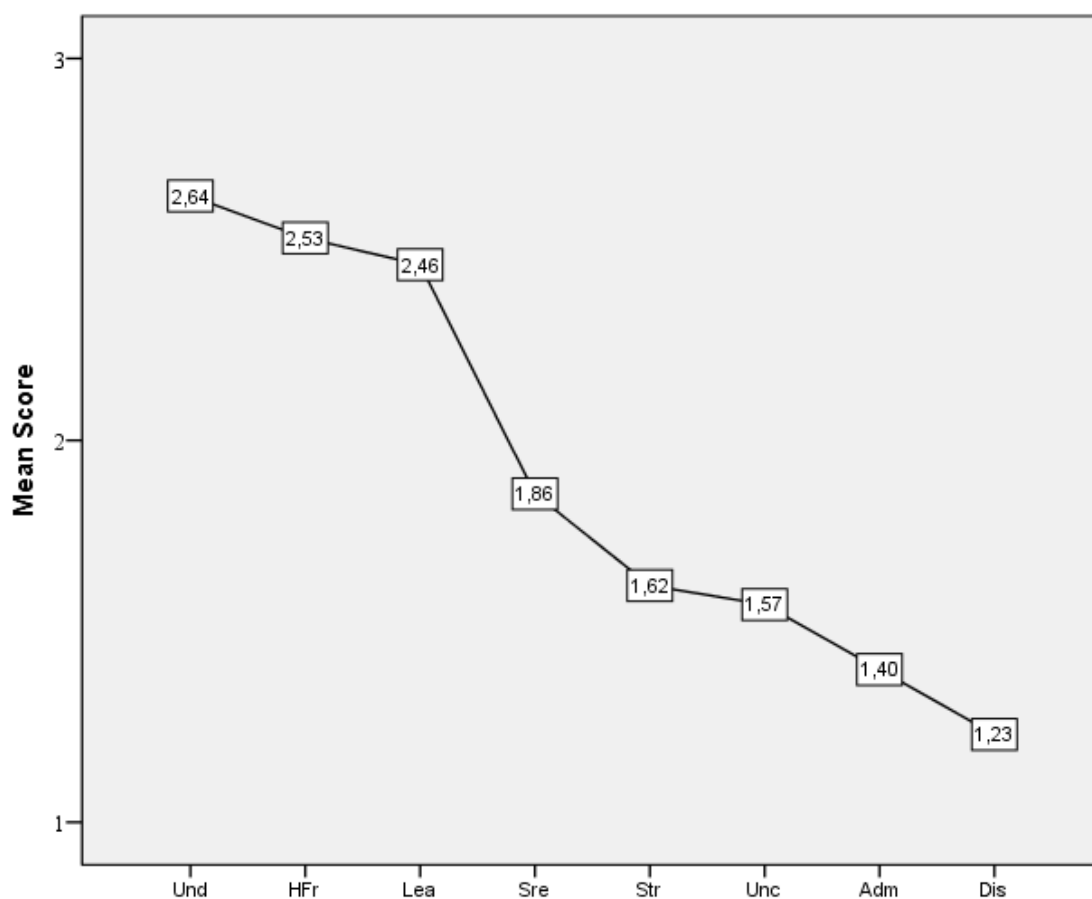

Figure 3. Mean QTI Scores based on Students' Perceptions (N= 382)
Note. Und (*SD* = .41); HFr (*SD* =.35); Lea (*SD* =.28); SRe (*SD* = .39); Str (*SD* =.38);   Unc (*SD* = .27); Adm (*SD* = .46); Dis (*SD* = .35).

Associations between Students' Socio-Emotional Learning Skills and Their Perceptions of Their Social Science Teachers' Interpersonal Behaviors

Canonical correlation analysis was conducted by using the eight teacher interpersonal behaviors as independent variables (Set 1 variables) and four socio-emotional learning skills as dependent variables (Set 2 variables) to examine relationships between these two sets of variables. CCA is considered a multivariate technique which minimizes the risk of committing Type 1 error (Stevens, 1998) as it allows researchers to test multiple dependent variables simultaneously. Prior to CCA, the assumption of multivariate normality was tested by plotting the Mahalanobis distances and the examination of the plots and histograms and there were no violations for this assumption. Bivariate correlations of all the independent variables were examined and there were no correlations above .70. With these statistically appropriate correlations (Hair, Black, Babin & Anderson, 2010; Tabachnick & Fidell, 2013), the data ensured no violations for multicollinearity. Given the ratio of at least 20

cases for the number of variables included in the analysis (Stevens, 1996), the sample of the study ($n = 386$) was found to be adequate to conduct CCA. CCA was conducted by running a canonical correlation macro in SPSS Version 17, that is, by writing a command syntax for the SPSS.

The statistical analyses first yielded four possible canonical correlations as there were four levels in the variate with the smaller number of sub-dimensions, that is, in the socio-emotional learning skills variable set. Only the first canonical correlation (Rc= .49) accounted for a significant amount of the overlapping variance (with a squared canonical correlation (Rc^2) of .237) between the sets of variables, *Wilks's λ = .66, χ2* (32) =155.50, *p*<.001. When the Rc2 effects and statistical significance of the functions were collaboratively evaluated, only the first function (canonical correlation) was considered meaningful and noteworthy to interpret in the context of this study in that variation explained by this function was above the 10% standard (i.e. Rc= > 0.30 thus corresponding to Rc^2 of about 10 % variance) recommended by Pedhazur (1982) to interpret a function in CCA. The remaining three functions that explained less than 10% of the overlapping variance between the two variable sets (6.7%, 4.5% and 2.3%, respectively) were considered weak so as not to warrant interpretations. The canonical correlation path model for the function interpreted in this study was visualized and presented in Figure 4.
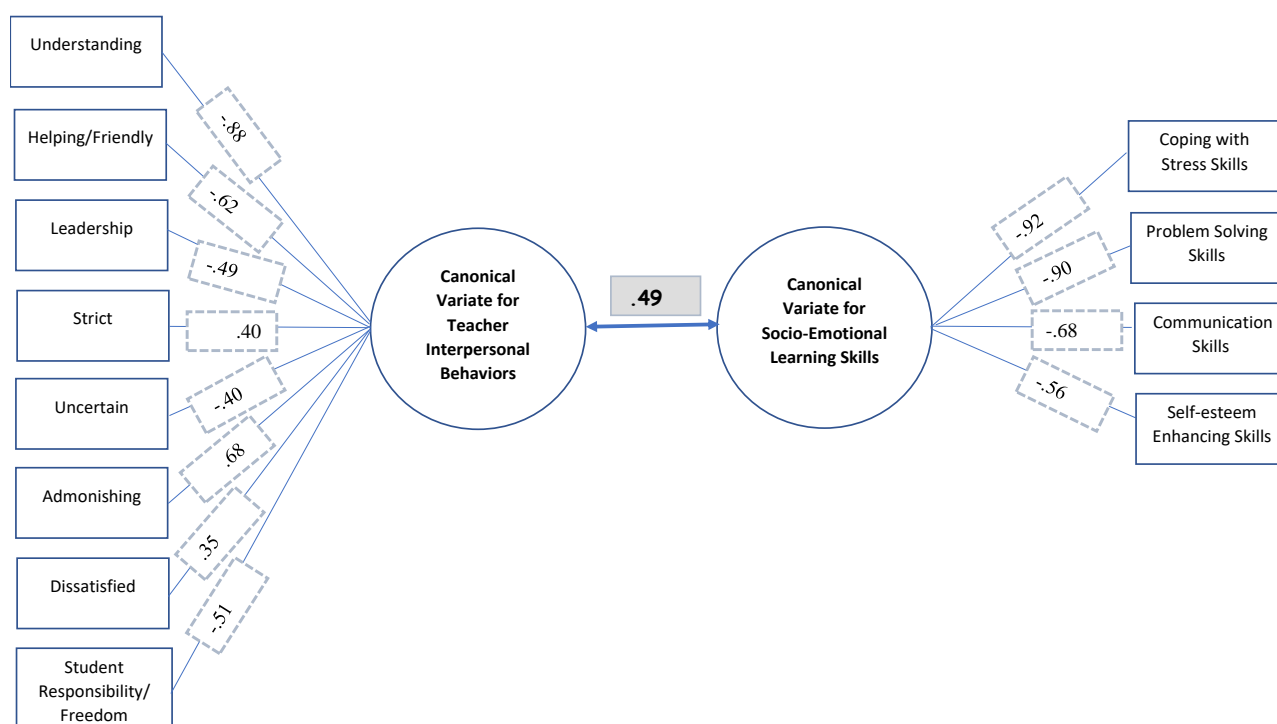

Figure 4. The Canonical Correlation Path Model for Perceived Teacher Interpersonal Behavior and Socio-Emotional Learning Skills Sub-Scales (*Note.* ☐.XX = canonical correlation (Rc); ☐ XX = canonical loadings)

Major CCA statistics for the two sets of variables on the first canonical variate including standardized canonical variate coefficients, correlations between the variables and canonical variates, within-set variance accounted for by the canonical variates and redundancies are shown in Table 2 below. With a cut-off correlation of .30 (Hair et al., 2010), all eight variables in the teacher interpersonal behaviors set were correlated with the first canonical variate. Given the dependent variables set of socio-emotional skills, again all four socio-emotional variables were found to be correlated with the first canonical variate. Canonical variate of teacher interpersonal behaviors accounted for 32 % of the variance in its own set while its canonical variate pair of socio-emotional learning skills explained 61 % of the variance in its own set. Redundancy analysis results further revealed that teacher interpersonal behaviors set was able to predict 15 % of the variance in the socio-emotional skills (set 2) while socio-emotional skills set was able to predict only 7.6 % of the variance in the set of teacher interpersonal behaviors. Results also indicated that when teachers were perceived to show less understanding (-.88), helping/friendly (-.62), leadership (-.49), student freedom (-.51) and uncertain (-.40) but stricter (.40), more

dissatisfied (.35) and admonishing (.68) behaviors in the classrooms, they were likely to show less problem solving (-.90), coping with stress (-.92), communication (-.68) and self-esteem enhancing (-.56) skills. Thus, understanding, helping/friendly, uncertain, leadership behaviors in combination with praising student freedom are positively but strict, dissatisfied, admonishing teacher behaviors are negatively related to students' socio-emotional skills (Table 2).

Table 2. *Correlations, Standardized Canonical Coefficients, Canonical Correlations, Percentages of Variance and Redundancies between Teacher Interpersonal Behaviors and Students' Socio-Emotional Skills*

	First canonical variate	
	Correlation	Coefficient
Teacher Interpersonal Behaviors		
Understanding	-.88	-.68
Helpful/friendly	-.62	.21
Student Freedom	-.51	-.03
Leadership	-.49	-.19
Uncertain	-.40	-.32
Admonishing	.68	.56
Strict	.40	-.05
Dissatisfied	.35	-.18
Proportion of Variance	.32	
Redundancy	.08	
Socio-Emotional Learning Skills		
Coping with Stress Skills	-.92	-.55
Problem Solving Skills	-.90	-.41
Communication Skills	-.68	-.08
Self-esteem Enhancing Skills	-.56	-.13
Proportion of Variance	.61	
Redundancy	.15	
Canonical Correlation	.49	

Discussion & Directions for Further Research

The results from the Confirmatory factor analysis with Mplus by means of specifying a two-dimensional factor model with zero correlations between these two factors and prescribed factor loadings in line with the goniometric circle function revealed reasonable fit with the data. As is understood with the factor structure of the TQTI-E, eight subscales could be considered blends of two main factors and thus crossloadings of the subscales can be considered as an expected and natural consequence of the theory concerning Circumplex Models. Therefore, it appeared that the factor structure of TQTI-E seemed reasonable by confirming the presence of two main dimensions. Its scales appeared reliable with their appropriate internal consistency values. However, the researchers of this study believe that this instrument needs further improvement especially with regard to Uncertain and Strict scales for future research. These three subscales showed deviations from the theoretically expected influence dimension by including more proximity instead. A previous study into the adaptation of the QTI in a Chinese context by Wei et al. (2009) also revealed similar minor validity problems concerning Student Responsibility and Uncertain scales. Such deviations in fact are consistent with previous research in that proximity dimension has been frequently found to be more dominant than the influence dimension (den Brok, 2001; den Brok, Brekelmans, & Wubbels, 2006; Kyriakides, 2005; Telli, 2006). In this regard, it is important to remember that the original instrument (QTI) was developed mainly for western cultures. Therefore, further improvement perhaps should be devoted to the revising of the items in this adapted version to make them more aligned with the norms and frames or references of the Turkish participants. These differences should be further considered when conducting cross-cultural studies with students from different countries and cultures.

The above-mentioned deviations could be related to the complex theoretical structure investigated with the instrument and cultural sensitivity or connotations provided with the items, which were also reported or emphasized in some previous research (den Brok, 2001; den Brok, et al., 2006; Kokkinos et al., 2009; Telli et al., 2007). Moreover, translation and back-translation along with expert opinions were utilized as the main activities for instrument adaptation in this study, which in fact could be a limitation of this study. Though the researchers had a pilot study with a couple of students in which the understandings of the students of the items in the instrument were tested and clarified, no systematic interviews or more rounds for pilot testing were conducted. Therefore, more qualitative research on the study instrument and student perceptions about their teachers' interpersonal behaviors is needed. The longer version of the instrument was previously adapted by Telli (2006, see also Telli, et al., 2007) for Turkish high school students by means of several rounds of piloting and conduct of interviews with students and teachers, which led to the addition of new items, omission of original items or rewording of some of the items to manage a better conceptual understanding and optimization of the instrument. Future studies aimed at older students at more advanced schooling levels are advised to use this long version due to its better cultural and conceptual optimization. Accordingly, as research on teacher interaction is still in its infancy in the Turkish culture especially with young learners though some valuable attempts with proponent studies with older Turkish students (Telli, 2006; Telli, Çakıroğlu, den Brok, 2006, 2007), further work in which the adapted instrument in this study will be tested is needed.

It is important to note here that confirmatory factor analyses were performed at the individual (i.e. student) level. However, some previous research indicated that circumplex structure of the Teacher Interpersonal Behavior Model fit the class level data better than the student level data (den Brok, 2001; Telli, 2006, den Brok et al., 2006). For Fraser (1998), investigations into student level, class level and even school level data together are valuable and thus he recommends that the analyses should be tested and compared in a multi-level manner to gain a better and more reliable picture of the student perceptions of teacher interpersonal behaviors.

This study tested a model which linked different types of teacher interpersonal behavior with different types of skills pertaining to socio-emotional leaning and this model was meaningful and statistically significant with scores on all four socio-emotional skills subscales being able to be explained to some degree by the predictor variables of eight different teacher interpersonal behaviors. This result is consistent with the research that previously reported the presence of associations between student perceptions of teacher interpersonal behaviors and several attitudinal and affective student outcomes (e.g. den Brok, Fisher, & Scott, 2005; Goh & Fraser 1998; Koul & Fisher 2005; Kyriakides, 2006; Maulana et al., 2011; Rakıcı, 2004; Şimşeker, 2005; Telli et al., 2006; Wubbels, Brekelmans, & Hooymayers, 1991). In addition, positive associations have been demonstrated between understanding, student responsibility, helping/friendly, uncertain and leadership interpersonal behaviors and socio-emotional learning skills. In contrast, admonishing, strict and dissatisfied teacher interpersonal behaviors were found to be negatively associated with these skills. These associations and directions of relationships are consistent with the general tenure of research into teacher interaction (den Brok, et al., 2006; Fraser et al., 2010; Wubbels, 1993). However, the result that uncertain teacher behaviors were positively related to students' socio-emotional learning skills was in contrast with the most literature on teacher interpersonal behaviors. One implication here could be made about the nature of the connotations made by the socio-emotional sub-dimensions for which it showed positive associations. A teacher demonstrating a less dominant, strict and controlling figure is more likely to promote such socio-emotional skills as stress management and self-enhancement thus perhaps proving the positive associations found in this study. However, more qualitative research designs could be utilized to shed more light on these relatively unclear or unknown perspectives regarding students' conceptualizations of teacher interaction behaviors. The cultural meaning-making as to teacher interpersonal behaviors and whether the favorable and unfavorable conceptualizations of teacher interpersonal behavior differ in terms of the cultural context can be a particular area of interest for future research.

Given the pedagogical implications of the findings, one can easily see that when teachers promote student responsibility and freedom of their students and show more leadership, friendly and understanding behaviors in their relationships with their students, it is more likely for the students to feel better in terms of emotional well-being and social skills. In more specific, when students are taught by teachers showing the above favorable interactional profiles, they are likely to better cope with stress, comfort themselves and enhance their self-esteem more, better solve their problems with others and communicate more effectively in their social environments. These socio-emotional skills can in fact directly promote their academic achievement and gains at school as is already supported by the available evidence in the literature (Elias et al, 1997; Kabakçı & Korkut Owen, 2010; Jones, Brown, & Aber, 2011; McCormick, Cappella, O'Connor, & McClowry, 2015). In contrast, when they are taught by the teachers showing admonishing, strict and dissatisfied profiles in the classes, their socio-emotional skills reported above are all affected negatively, which in turn may lead to a negative effect on

their success at school. Therefore, teacher candidates should be made aware of their interpersonal profiles and how they are perceived by their students so that they can improve their negatively perceived characteristics to enhance student outcomes. In addition, research has shown that teachers have a tendency to see themselves more positively than their students (den Brok, 2001; Rickards & Fisher, 2000; Wubbels, 1993). In order to promote students' success and wellbeing, that is, the cognitive and affective outcomes of schooling in a more general sense, teachers should be supported and trained to improve their interpersonal skills. One recommendation from this current study could be about the use of QTI in teacher training. That is, teachers and teacher candidates should be supported by being trained to use such instruments like QTI to better see their strengths and weaknesses in their interactions with their students. This instrument is known to be used by some teacher training institutions in the Netherlands and Australia during the teaching practice of teacher candidates (Telli, 2006). Hence, the Turkish version of the QTI can be an appropriate instrument for future use both in pre-service and in-service training programs.

Previous researchers mentioned the different perceptions as to teacher interpersonal behaviors between people coming from eastern and western societies (Lee, Fraser, & Fisher, 2003; Wong, 1995; Wong & Fraser, 1994). More dominant, strict and leadership behaviors are favored and perceived by the students from eastern cultures while those from western societies like teachers who promote student responsibilities and freedom and who are more understanding and helpful. Given the Turkish case reported in this study, the most frequent teacher interpersonal behaviors included leadership, helping and understanding behaviors. Thus, one can easily assume that these preferences symbolized a synthesizing outlook by combining eastern and western preferences. However, further research is needed to check for the consistency of this trend found in this study.

CCA enabled the researchers to test associations between multiple dependent and independent variables in a composite manner rather than using separate bivariate correlations between these two big sets of variables thus increasing the risk of Type 1 error. In addition to this statistical advantage to minimize the possibility of committing Type 1 error (Sherry & Henson, 2005; Stevens, 1996), the use of such an analysis technique seemed theoretically appropriate and logical as CCA was a recommended data analysis method when there was no or little previous piece of evidence to date in the literature concerning associations about the sets of variables examined (Dattalo, 2014; Tabachnick & Fidell, 2013). In this essence, following our preliminary attempt with CCA, future researchers are recommended to take this sort of analysis further by testing the study variables here by means of more complex general linear models to get firmer evidence about the associations among multiple variables.

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