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Psychological Sense of University Membership: An Adaptation Study of the PSSM Scale for Turkish University Students

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ABSTRACT

The Psychological Sense of School Membership Scale (PSSM) is a widely used instrument to assess the sense of belonging to a school among adolescents. Despite its widespread use in middle and high school students, to date no particular adaptation study has been conducted for its use among university students. For this reason, the present study conducted an adaptation of the PSSM scale for these students. Five hundred and nine students at a Turkish university voluntarily participated in the study, and the PSSM Scale's factor structure was examined by exploratory and confirmatory factor analyses, identifying three factors representing the students' sense of university membership with acceptable internal consistencies: *acceptance by faculty members* (.70), *belonging* (.75), and *acceptance by students* (.76). The internal consistency of the 18-item scale was calculated as .84. As hypothesized, the convergent and discriminant validity of the scale was also tested. The self-report sense of belonging and degree of satisfaction with the university were positively correlated with the three dimensions of the scale. Also, the scores regarding the students' intention to drop out of university along with loneliness were negatively correlated with all the dimension of the PSSM scale.

Schools are known to be important for adolescents and children as social contexts because of their influence on the academic and psychological well-being of students. Among the school-related variables, the psychological sense of belonging has attracted the interest of researchers and school mental health professionals. Students' feelings that they are an important and respected member of their school is known as the "sense of school belonging" (Anderman & Freeman, 2004). The concept has its theoretical roots from the need to belong, which was proven to be a fundamental human motivation; that is, humans do need to feel connected to a larger group or community as well as their family and friends (Baumeister & Leary, 1995). With this respect, the school for students is one of the larger groups to which to belong. Conceptually, the sense of school belonging can be seen from *a social cognitive model to motivation* perspective (Osterman, 2000). This theoretical model proposes that individuals have psychological needs and satisfaction of these needs affect their perception and behavior. The

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characteristics of the social context influence how well these needs are met and, hence, the sense of school belonging is considered to be the psychological component of the students' connections at schools (Appleton, Christenson, & Furlong, 2008). The sense of school belonging includes an individual's perceptions of fitting in and belonging with others at the same institution and is linked to identification with one's school (Osterman, 2000) and "related to interpersonal interactions that students have in school" (Booker, 2004, p. 140).

Generally, researchers who study the sense of school belonging have been interested in middle and high school students. The majority of this research has used The Psychological Sense of School Membership Scale (PSSM), which is a reliable and valid instrument for the assessment of the sense of belonging among middle and junior high school students. The scale was developed by Goodenow (1993) to measure the construct of school membership, which includes students' perception of being personally accepted, respected, and included at school. Based on the author's knowledge, the PSSM has not been developed for or administered to post-secondary students to assess their sense of school membership. The aim of the current study is to carry out the adaptation study of the PSSM scale for university students and to examine the latent factor structure and psychometric properties to assist researchers and university mental health practitioners.

Sense of School Belonging at Middle and High Schools

The results of research that was conducted with middle and high school students showed a relationship between the sense of school belonging and various student outcomes including psychological well-being and academic achievement. Roeser, Midgley, and Urdan (1996) have proposed a comprehensive model for this subject in which it is stated that a students' high sense of school belonging is likely to lead to more positive beliefs and emotions regarding learning, which can later be associated with better academic achievement and less behavioral problems. Previous research shows that constructive motives and attitudes, positive expectancies, values and goals, better emotional functioning, higher levels of intrinsic motivation, self-regulation, autonomy, self-esteem, and self-efficacy were found to be positively correlated with the sense of school belonging (Booker, 2004; Marks, 2000; Osterman, 2000; Van Ryzin, Gravely, & Roseth, 2009; Wentzel, 1997). Lack of school belonging, on the other hand, is associated with negative psychological and academic outcomes, such as feelings of social rejection and isolation, poor academic performance, and dropping out of school. Moreover, lack of school belonging has been shown to be a strong predictor of loneliness (Hagerty, Williams, Coyne, & Early, 1996; Pretty, Andrewes, & Collett, 1994).

Sense of School Belonging at University

Few studies conducted with university students reveal a similar relationship between the sense of school belonging and other school related variables. For example, Pittman and Richmond (2007) conclude that school belonging significantly predicts psychological and academic adjustment. Other correlational studies show that feeling connected to college is linked to better social adjustment (Tao, Dong, Pratt, Hunsberger, & Pancer, 2000), lower levels of depressive symptoms, higher academic motivation, participation, satisfaction with the learning experience (Levett-Jones & Lathlean, 2009), and lower attrition rates (Beyers & Goossens, 2002). Among the variables that were found to be related with the sense of school

belonging, three of them have special importance for university students because of their prevalence and costly consequences for both to the students and the universities. These are: university drop-out, loneliness, and satisfaction with the school.

Dropping out of the university is one of the most frequently studied topics in higher education research (Brawer, 1996; Lotkowski, Robbins, & Noeth, 2004). Leaving school is a costly decision not only for the higher education institutions themselves, but also for the students (Allen, Robbins, Casillas, & Oh, 2008; Brawer, 1996; Freeman, Anderman, & Jensen, 2007; Hausmann, Schofield, & Woods, 2007; Lotkowski et al., 2004). Because of such negative consequences, studies have endeavored to find the correlates of university dropout (Braxton & Hirschy, 2005) and methods of increasing student retention (Lotkowski et al., 2004). In most of the college retention studies, demographic and academic variables have traditionally been used to predict college students' academic success and retention (Pritchard & Wilson, 2003; Reason, 2009; Robbins et al., 2004; Robbins, Allen, Casillas, Peterson, & Le, 2006). However, a number of studies reveal that these traditional academic variables such as pre-college academic performance (Allen et al., 2008) and achievement motivation (Lotkowski et al., 2004) are not comprehensive in predicting college dropouts. Moreover, in many recent studies, nonacademic variables have been shown to be more powerful in predicting the students' persistence compared to academic variables. Among these, college commitment and social connectedness are the most significant variables because of their direct effects on college retention (Allen et al., 2008; Walker, Greene, & Mansell, 2006). Hausmann et al. (2007) found that the sense of belonging is the strongest predictor of university dropout and that it can predict the intention to persist, even beyond background variables and other academic predictors of persistence.

The second variable that is associated with sense of belonging among university students is loneliness. Loneliness or feeling isolated which is one of the most frequently seen psychological complaints (Nicpon et al., 2006; Pretty et al., 1994), was reported to be significantly and negatively correlated with the sense of belonging among university students (Hagerty et al., 1996). Recently, Asher and Weeks (2014) proposed that, although loneliness and belonging can be seen as opposite ends of a single continuum, they are distinct dimensions that should be studied separately.

Students' satisfaction with their university experiences is another specific concept that is related with the sense of belonging. Satisfaction can be defined as the fulfillment of the needs. Similarly, satisfaction with the university can be defined as the degree to which a university fulfills the psychological, social, and academic needs and expectations of its students. Research shows that there is a close relationship between the sense of belonging and satisfaction. Sheldon, Elliot, Kim, and Kasser (2001) reported that relatedness was one of the psychological needs that university students felt most fulfilled when they experienced it. In their comprehensive study regarding belonging and intimacy factors affecting the university students' retention, Cashmore, Scott, and Cane (2011) concluded that managing students' expectations regarding the university (e.g., increasing their satisfaction with the institution) is one of the key themes that influences their feelings of belonging toward that establishment.

As literature findings suggest, because of its relationship with positive student outcome, school belonging is an important issue in university communities. A reliable and valid assessment of the sense of school belonging among university students is specifically important for university mental health workers and administrators. Together with its prevalent use in research "PSSM has a great value as a screening tool to identify students at risk of

disengagement …[and] academic failure" (Ye & Wallace, 2014, p. 213). Also, having a psychometrically sound measure of this sense allows professionals to tailor their interventions for the students who have isolation and adjustment problems (Ye & Wallace, 2014). For instance, they can develop programs where students are given opportunities to have psychological bonds with friends and faculty. Experience shows that in many university counseling centers, the counselors deal with problems such as loneliness, low levels of motivation, and peer relationship problems; all of which have been shown to be the conceptual components, or research-based correlates, of a psychological sense of belonging. Having a reliable and valid assessment tool for the sense of school belonging is also important for university administrators. Kennedy, Sheckley, and Kehrhahn (2000) show that, in spite of their low GPA (Grade Point Average), many students persist due to their social connectedness feelings and perceived fit with their schools (as cited in Lotkowski et al., 2004). In this respect, administrative units at universities can design new programs and re-adjust the learning settings in such a way as to increase the sense of belonging, leading to better academic performance and lower dropout rates.

Despite such an apparent need, no specific adaptation study of the PSSM scale has been conducted for university students. As it was stated earlier, based on the current literature, the purpose of this study is twofold: To carry out the adaptation study of the PSSM scale for university students, and to examine the latent factor structure and psychometric properties to assist researchers and university mental health practitioners.

Turkish Culture

As the results reported herein are based on the data obtained from Turkish university students, it is useful to mention some aspects of the Turkish culture. As far as the aim of this study is concerned, the most relevant cultural variable is Hofstede's (1980) cultural value systems classification. Although his classification gained popularity during the 1980s, the recent research has revealed some inconsistent results. The cultural value systems have been shown to vary on the individualism–collectivism (I–C) dimension and are considered to embody different goals and routes for self-development (Greenfield, 1994; Markus, Mullally, & Kitayama, 1997). Western cultures have been said to be characterized by independence, separateness, idiocentrism, or individualism, whereas Eastern cultures have been described as being interdependent, related, allocentric, collectivist, communal, or embedded (e.g., Markus & Kitayama, 1991). Although Hofstede stated that the country-level analysis of individualism could not explain individual-level assessments, and as his research assessed only individualism but not collectivisim, many researchers have assumed that these different self-orientations tend to be opposite of each other (e.g., Hui, 1988). Actually, several psychologists have suggested that, on an individual-level, it is possible for one to be any combination of the following: agentic, autonomous, related, individuated and interdependent (e.g., Ng, Ho, Wong, & Smith, 2003). In Hofstede's classic work, *Culture's Consequences*, on the the I–C dimension, the United States is classified as the most individualistic culture and Turkey is classified as being collectivist but close to the midpoint on the I–C classification. Although it is typically assumed that Americans tend to be higher in individualism and lower in collectivism, Oyserman, Coon, and Kemmelmeier (2002), on the basis of an extensive meta-analysis, concluded that there is hardly enough empirical support for such assumptions.

Research regarding cultural values of Turks, on the other hand, reveals that Turkish people from the more progressive, better-educated segments of society, such as university students and university graduates, tend to show more individualism in their self-construals and values while retaining their relatedness (İmamoğlu, 1987, 1998, 2003; İmamoğlu & Karakitapoğlu-Aygün, 2004). Aygün and İmamoğlu (2002) reported that among the better-educated segments of the Turkish society, the trends are toward both individuation and relationality, together with a decrease in other-directed, collectivist values. More recently, Uskul, Hynie, and Lalonde (2004) compared Turkish and Euro-Canadian university students and showed that they did not differ on independent self-construal; in fact, Turkish women appeared to have more independent self-construals than both Turkish men and Canadian men and women.

Therefore, the research results regarding the I–C value system suggest that in rapidly changing world, the difference in self-construals seems to be more within-culture variability rather that the cross-cultural difference. For example, Raeff (1997) stated that "both individualism and collectivism are taken to be multidimensional cultural value systems that involve independence and interdependence" (p. 206). As the sample of the present research is composed of university students, based on the current literature findings regarding young educated Turkish people, it is assumed that Turkish university students have more similarities than dissimilarities to their counterparts from individualistic cultures, such as the ones from the United States where the PSSM was originally developed.

Method

Participants

Five hundred and nine undergraduate university students who attended a Turkish university located in the capital city, Ankara, voluntarily participated in the study. The mean age of the participants was 22.36 $(SD = 2.70$, range = 18–28 years). Fifty percent of the participants were female and 50% were male. The mean CGPA (cumulative grade point average) was 2.48/4 $(SD = .72$, range = .75–4.00). Thirty-three percent of the students were freshman, 26% sophomore, 27% junior, and 14% senior. Two random samples from the total sample were generated using the SPSS data selection tool. The EFA used Study Sample 1 $(n = 270$; 51.1% female: $M_{age} = 22.33$ years, $SD_{age} = 2.88$) and the CFA used Study Sample 2 $(n = 239$; 50.8% female: $M_{age} = 22.32$ years, $SD_{age} = 2.82$).

Materials

A questionnaire, which included demographic questions (gender, age, grade level, and CGPA), and four scales [The Psychological Sense of School Membership Scale (PSSM), Satisfaction with the University Scale, Self-Report Sense of Belonging to the University, and UCLA Loneliness Scale] were used to collect data. In addition to the scales and demographic variables, in order to assess the students' intention to drop out of the university, an extra item was included: "I am planning to leave this university when I have the opportunity."

Psychological Sense of School Membership (PSSM) Scale

The PSSM Scale, developed by Goodenow (1993), is an 18-item Likert-type scale (5 = *totally agree*, 1 = *totally disagree*). The original factor analysis of the scale revealed three dimensions: *belonging* (e.g., "I am included in a lot of activities at this school"); *rejection* (e.g., "It is hard for people like me to be accepted here"); and *acceptance* (e.g., "I can really be myself at this school") (Hagborg, 1998). Goodenow reported the internal consistency of the scale as .80. In other studies, the Cronbach alpha coefficients varied between .72 (Stevens, Hamman, & Olivarez, 2007) and .90 (Isakson & Jarvis, 1999).

Factor Structure of the PSSM Scale

The literature review regarding the psychometric properties of the PSSM scale yields a handful of studies. The results of the studies regarding the factor structure of the PSSM scale are somewhat inconsistent and limited. As stated earlier, although Hagborg (1998) identified three factors of the PSSM scale (belonging, rejection, and acceptance), most of the other studies have used it as a unidimensional scale. For example, Pittman and Richmond (2007) reported that they conducted a factor analysis, with their results similar to those by Hagborg, and that the factors they obtained were represented by the underlying constructs of school connectedness; namely, respect and recognition of abilities, acceptance, and alienation. In their analysis, however, they used a single total belongingness score because of cross-loadings of multiple items and correlated factors (ranging from r = .51 to.72, p <.001) (Pittman & Richmond, 2007). In another study, where researchers developed a Chinese version of the PSSM scale, the results of the factor analysis conducted with data from 547 primary school students revealed two factors: school belonging and feeling of rejection (Cheung & Hui, 2003). The authors noted that the factor rejection was composed of only the negatively worded items.

Because of the inconsistent findings regarding the number of dimensions of the PSSM Scale, two recent studies are conducted to specifically examine the psychometric properties of the scale. You, Ritchey, Furlong, Shochet, and Boman (2011) investigated the latent factor structure of the PSSM Scale with 504 Australian high school students. Also, Ye and Wallace (2014) studied the factor structure of the PSSM scale with 890 high school students in the United States. In the following, details of these studies are presented because this research compares its results mainly with these two studies. You et al. extended the previous research by conducting both an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA) to 504 high school students. The EFA results indicated that, with 12 retained items, a three-factor solution was more appropriate to the data when statistical and theoretical issues were taken into account, and they named these factors: *caring relationship* (4 items), *acceptance* (5 items) and *rejection* (3 items). As for the CFA results, they indicated that a correlated three-factor model is better than unidimensional scoring. More recently, Ye and Wallace (2014) addressed the same issue regarding the factor structure of the PSSM scale, studying specifically the negatively worded items in terms of measurement and method effects in the latent structure of the scale. They conducted EFA and CFA with 890 high school students and also found three substantive factors including 15 items; *identification and participation in school* (6 items), *perception of fitting in among peers* (5 items), and *generalized connection to*

teachers (4 items). According to their study, "using the total score of 18 items of the PSSM scale as one psychological variable seems inappropriate" (p. 212). In conclusion, both studies conducted specifically for examining the factor structure of the PSSM scale have yielded a multidimensional structure of the scale and drawn the attention of researchers to potential measurement errors.

Translation and Back-Translation of PSSM

During the translation process, the ITC (International Test Commission) test development and adaptation guidelines were followed (Hambleton, 2001). The author of the present research, fluent in both English and Turkish and experienced in the scale translation process, converted the English items to Turkish for use at a university in Turkey. A faculty member with a Ph.D. from the Department of Translation and Interpretation in English performed the back-translation of the scale. Also, a committee consisting of three professors of English Language and Literature examined the translated items and suggested some minor modifications. After these modifications and the committee's approval, the items of the original scale were modified to reflect the concept of school membership in terms of higher education experience. In this way, instead of the terms "school" and "here", the term "university" was used (17 items); "teachers" was replaced with "faculty members" in three items (5, 9, and 14). Instead of "… one teacher or adult…," "…one academic or administrative staff…" was used in item 7. The final Turkish version of the scale was examined by two experts experienced in educational research (see the Appendix for the Turkish version). The scale was administered to 65 Turkish undergraduate psychology students asking their opinion regarding the understandability of the items. They all agreed that the scale was easy to comprehend and related to their experience as university students. In this study, no additional cultural adaptation study was conducted because the ITC test development guidelines state that "Effects of cultural differences that are not relevant or important to the main purposes of the study should be minimized as much as possible" (Hambleton, 2001, p. 165).

Satisfaction With the University

A four-item scale was developed to determine the satisfaction level of students with the university. The statements that are frequently used in student satisfaction questionnaires were examined and one item tapping the general satisfaction (see Lent, Singley, Sheu, Schmidt, & Schmidt, 2007; Lin, Yu, & Chen, 2012) and three items tapping the relational aspect of university experience (Booker, 2004) were developed. The scale questions were as follows: (a) to what extend are you satisfied being a student at this university; (b) to what extend are you satisfied with your communication–interaction with your academic advisor; (c) to what extend are you satisfied with your communication–interaction with the faculty members; and (d) to what extend are you satisfied with your communication–interaction with other staff (Registrar's office, IT, library, etc.) at this university. The answers were recorded on a 5-point Likert-type scale (5 = *extremely satisfied*, 1 = *not satisfied at all*). The mean scale score was used in further analysis. The internal consistency of the four-item scale was Cronbach alpha = .85 in this sample.

Self-Report Sense of Belonging

In order to assess the self-report sense of school belonging among the university students, three items that are frequently used in different sense-of-belonging measures were reviewed and selected (see Cashmore et al., 2011; Willms, 2003). The items that were included in the current research were as follows: (a) I see myself as part of this university; (b) I feel I belong to this university; and (c) I feel connected to this university. The answers were recorded on a 5-point Likert-type scale (5 = *totally agree*, 1 = *totally disagree*). The mean scale score was used in further analysis. The internal consistency of the three-item scale was .92 in this sample.

UCLA Loneliness Scale

UCLA Loneliness Scale (Russell, Peplau & Cutrona, 1980; Russell, 1996) is a 20-item, 4-point, Likert-type (4 = *I often feel this way*, 1 = *I never feel this way*) self-report measure used to assess the level of perceived loneliness. The scale is highly reliable and the Cronbach alpha coefficients range from.89 to.94 across samples (Russell, 1996). In the present research, the internal consistency of the scale was calculated as Cronbach alpha = .91. Because the scale is unidimensional, the mean scale score is used in further analysis.

Procedure

Prior to the data collection process, required approval was obtained from the administrative board at the university under study. The data were collected among the full-time students of this Turkish university, which is located in the capital city, Ankara. The data was collected by administering a questionnaire developed specially for use in this research. The questionnaire addressing demographic data and the study scales were all administered with the help of research assistants at various departments. In detail, before a class started, a research assistant entered the classroom, read out the instructions and the consent form to include only those who volunteered to participate.

Data Analysis Strategy

To test the construct validity of the PSSM scale, both EFA and CFA were utilized. EFA is thought to be useful to see the relations between items and explore the possible factor structure that will be tested in CFA. Because the PSSM scale was reported to have three correlated factors (You et al., 2011), oblique rotation with Kaisser normalization was the preferred method in the EFA (Brown, 2012; Costello & Osborne, 2005; Gorsuch, 1983). In CFA, generalized mean square was used as the method for extraction because of high inter-item correlations in the PSSM scale (You et al., 2011).

In addition to factor analyses, the convergent and discriminant validity of the scale was also examined through the bivariate correlations between the factors of the PSSM scale and conceptually-related variables. In order to test the convergent validity of the PSSM scale, students' self-report sense of belonging and degree of satisfaction with the university scores were used. For discriminant validity, loneliness and students' intention to drop out of the university scores were used.

Results

EFA

Prior to the analysis, five negatively-worded items in the PSSM scale were reverse-coded for data analysis and interpretive purposes (items 3, 6, 9, 12, and 15). In order to cancel out the multicollinearity problem, the inter-item correlations were also examined and available upon request. It was observed that all of the correlation coefficients were under .75 (range.04–.74). KMO (Kaiser-Meyer-Olkin) measure of sampling adequacy was calculated as .88. All 18 items were included for further analysis. EFA used the first data set, where 270 students were included. The initial factor solution when no restriction was made upon factor numbers, five factors explaining the 50.59% of the total variance were obtained. The eigenvalues and percentages of the variance explained by the five factors were: 1.33 (7.41%), 5.12 (28.44%), 1.22 (6.80%), .94 (5.25%), and .83 (2.68%), respectively. The PA (Parallel Analysis) and MAP test (Minimum Average Partial) were also conducted in addition to prior theory (Goodenow, 1993; Ye & Wallace, 2014), eigenvalue (K1) analysis, and scree test (Cattell & Jaspers, 1967 as cited in Hayton, Allen, & Scarpello, 2004). The PA revealed that the first three of the raw data eigenvalues of the current data set were greater than those of random data (subjected to principal components, specified as 95% and 100 repetitions). The MAP test on the other hand produced two factors. It is known that MAP method consistently underestimates the number of major components (Ledesma & Valero-Mora, 2007; O'Connor, 2000). Because specifying too few factors has traditionally been considered a more severe error (Hayton et al., 2004), PA was found to be the most accurate among the methods analyzed (Zwick & Velicer, 1986) three-factor solution was preferred. EFA was repeated one more time with restriction to the number of factors as three. The three factors with eigenvalues over 1 accounted for 42.28% of the total variance. The eigenvalues and percentages of the variance explained by the three factors were: 4.79 (26.61%), 1.76 (9.76%), and 1.06 (5.91%), respectively. The Chi-square statistics also revealed that the data has a significant fit to the three-factor structure ($\chi^2 = 139.136$, $df = 102$, $p = .009$).

The distribution of the PSSM scale items, factor coefficients (all of the items are above.30), communalities and anti-image correlations obtained as a result of EFA are presented in Table 1. EFA results indicated that two items (PSSM10 and PSSM12) might contain some measurement errors. PSSM10 showed low communality (.17) and factor loading (.39). Similarly, PSSM 12 had a cross-loading to the factor II (.33) as well as its hypothesized factor I (.57). The correlations among three latent variables are presented in Table 2. The correlation matrix revealed a moderate correlation between three latent factors.

CFA

CFA was used to apply the 18-item three-factor solution extracted from EFA to the new data set obtained from 239 undergraduate university students. The test of the model fit in CFA yielded an acceptable fit, with $\chi^2/df = 1.397$, CFI = .96, RMSEA = .041 (90% CI is from.025 to.055), AIC = 305,092 (values for saturated and independence models are between 378,000 and 1484,763) and EVCI = 1.282 (90% CVI is from 1.155 to 1.443). The factor loadings of PSSM items are presented in Table 1. As in EFA, CFA results revealed relatively low factor loadings of PSSM10 and PSSM12 (both.22). By considering the results of both EFA and CFA, a model comparison was required. CFA was run once more with 16-items (PSSM10

Table 1. Pattern and structure factor coefficients of PSSM items three-factor solution obtained at EFA and standardized factor coefficients obtained at CFA.

| | EFA (N = 270) | | | | | | | | | | | CFA (N = 239) | | |
| | Pattern Matrix | | | Structure Matrix | | | Communality | Anti-image correlation | M | SD | | Acceptance by faculty members | Belonging | Acceptance by students |
PSSM Items	I	II	III	I	II	III								
5.	.73	.05	.11	.77	.31	.26	.61	.87	3.29	.99		.73		
9.	.72	.00	−.13	.72	.41	.28	.51	.85	3.79	1.12		.46		
14.	.64	.19	.12	.70	.21	.01	.57	.92	2.59	1.14		.74		
15.	.61	.04	.14	.65	.46	.37	.56	.87	3.79	.91		.56		
12.	−.57	.33	.00	.65	.26	.26	.31	.63	3.20	1.05		−.22		
11.	.53	.25	.22	.57	.32	.23	.54	.93	3.69	.94		.63		
7.	.51	.14	.11	.52	.51	.24	.36	.90	3.20	1.05		.52		
2.	.39	.37	.09	−.46	.15	−.04	.41	.89	3.61	.99		.31		
17.	.27	.75	−.10	.49	.82	.11	.74	.86	3.04	1.11			.88	
6.	−.20	.74	.15	.43	.80	.17	.55	.87	2.91	1.22			.48	
1.	.20	.74	−.02	.25	.71	−.01	.67	.85	3.28	1.06			.88	
16.	.05	.73	−.17	.07	.71	.26	.53	.87	2.44	1.25			.58	
10.	−.06	.39	.12	.09	.39	.19	.17	.89	2.81	1.17			.22	
18.	.10	.05	.83	.27	.25	.86	.75	.76	3.87	.89				.63
8.	.30	.16	.56	.45	.37	.65	.44	.88	3.74	.93				.59
4.	.19	.03	.56	.31	.21	.61	.41	.86	3.57	.94				.56
13.	.25	.26	.48	.42	.44	.58	.50	.90	3.75	1.01				.58
3.	−.31	−.22	.44	−.29	−.23	.34	.29	.73	4.04	.96				.29

Table 2. Correlations among latent factors in EFA and CFA.

PSSM Factors	Acceptance by faculty members	Belonging	Acceptance by students
1	—	.32	.19
2	.57	—	.21
3	.71	.59	—

Note. Correlations from the EFA are shown above; correlations from CFA are shown below the diagonal. All coefficients are significant at $p = .05$ level.

and PSSM12 deleted). The test of the model fit in CFA yielded an acceptable fit, with $\chi^2/$ df $= 1.493$, CFI $= .96$, RMSEA $= .048$, AIC $= 286,267$ and EVCI $= 1.203$. In order to test the difference between two models, χ^2 difference test was used. The test result showed that the difference between the two models was not significant ($\chi^2_{diff} = 10,825$, $df_{diff} = 15$, $p >.05$). Therefore, the 18-item model was determined to have acceptable psychometric properties.

Because numerous studies used the PSSM Scale's total score as a single measure of belongingness, a one-factor structure of the scale was also examined. The test of the model fit in CFA yielded a poor fit of the data to the model, with $\chi^2/df = 3.140$, CFI $= .78$, RMSEA $= .095$ AIC $= 522,786$ and EVCI $= 2.197$. The χ^2 difference test result also showed that the obtained χ^2 difference was significant ($\chi^2_{diff} = 112,694$, $df_{diff} = 101$, $p >.05$). As a result of CFA and model comparisons, all 18 items of the PSSM was retained. The first factor that 8 items were loaded under was labeled as *acceptance by faculty members,* the second factor, which was composed of 5 items, was labeled *belonging,* and the last factor, which included 5 items, was labeled *acceptance by students.*

Reliability

The entire sample was used to test the reliability ($N = 509$). The internal consistency of the scale was calculated as Cronbach alpha $= .84$. The subscale reliability coefficients were as follows: *acceptance by faculty members* (8 items) $= .70$, *belonging* (5 items) $= .75$, and *acceptance by students* (5 items) $= .71$. The split-half reliability analysis revealed that the Spearman-Brown Coefficient (equal length) of the scale was .86. The correlation coefficient between the forms (PSSM1-9 and PSSM10-18) was .75. The correlation analysis also confirmed the results of the CFA; three subscales of the PSSM scale correlated moderately, suggesting that three substantial factors were within the scale. The coefficient for *acceptance by faculty members* and *school belonging* when *acceptance by students* was controlled was .47. *Acceptance by students* and *school belonging* when *acceptance by faculty members* was controlled was .12. *Acceptance by students* and *acceptance by faculty members* when *school belonging* was controlled was .34.

Convergent and Discriminant Validation

In order to test the convergent validity of the PSSM factors, their correlation with theoretically relevant variables were examined. The Pearson's r correlation coefficients indicate the scale's convergent validity, i.e., the factors of the PSSM scale are highly and positively correlated with self-report measures of school membership and satisfaction with the

Table 3. The correlations between three dimensions of the PSSM scale and convergent and discriminant variables.

PSSM Factors	Converging variables		Discriminant variables	
	Self-report sense of belonging	Degree of satisfaction with the university	Intention to drop out	Loneliness
Acceptance by faculty members	.49	.64	−.32	−.18
Belonging	.72	.51	−.57	−.29
Acceptance by students	.45	.26	−.21	−.43

Note. $N = 509$, All coefficients are significant at $p = .01$ level

university ($p < .01$). The discriminant validity of the adapted scale was examined through the correlation of the factors of the PSSM scale and two self-report measures: intention to drop out of the university and loneliness. Table 3 shows the factors of the PSSM scale correlated negatively with both of the discriminant variables ($p < .01$).

Discussion

The results of this study revealed that the Turkish version of the 18-item PSSM scale adapted for university students is a reliable and valid instrument. The findings also contribute to the recent work on the factor structure of the PSSM scale, confirming the findings that the PSSM is a multidimensional scale with three distinct and correlated factors. The three factors, *acceptance by faculty members*, *belonging*, and *acceptance by students*, are in line with the related literature where researchers obtained the school membership dimensions of school, peers, and teachers (Ye & Wallace, 2014).

The results of this study were compared, mainly with four studies that have examined the factor structure of the PSSM scale, and found to be partially consistent. A table illustrating a comparison of item distribution and factor structure of the PSSM scale obtained from the current study and four previously mentioned studies (Cheung & Hui, 2003; Hagborg, 1998; Ye & Wallace, 2014; You et al., 2011) is available upon request from the author.

Except for Cheung and Hui's study (2003), the present work and the other three studies conducted by Hagborg (1998), You et al. (2011), and Ye and Wallace (2014) reported three factors. When the number of items retained and the factor structure of the PSSM obtained as a result of this study were examined, it was observed that there is a close similarity between the findings of the current work and the results obtained in Ye and Wallace's study. Both studies reveal three-factors, regardless of the negative wording effect, and the factor structure is almost identical, except for deleted items. In both studies, 15 items were identical, with the same factor structure. The difference in 3 items is due to the deleted items. Ye and Wallace removed items 2, 11, and 15 and they explain that the expression "people" (in PSSM2 and 15) was probably a vague statement as students considered it as both students and teachers. In the current study, three items that were deleted by Ye and Wallace and were loaded under the *acceptance by faculty members* factor. The possible reason for this difference is due to the sample characteristics: The present study was conducted with university students, meaning that the sample characteristics are expected to be qualitatively different from other studies. When these three items are examined closely, it is possible to argue that these items might have a high relevance to the university students' sense of school membership, and university students consider "people" as faculty members but not students.

When the results of the current study were compared with You et al.'s findings (2011), it was seen that, of the 12 items they retained, all 4 items of the *caring relationship* dimension (named *acceptance by faculty members* in the current research) are identical (items 5, 7, 9, and 14). Of the 5 items under the *acceptance* dimension (named as *acceptance by students* in the current research), 3 items are common (items 4, 13, and 18). Because the results of the current study did not reveal a dimension that can be called *rejection,* nor any factor that is composed of only negative items, in this respect the results of this study are not consistent with that of Hagborg (1998) and Cheung and Hui (2003). The original contribution of the present study is examining the PSSM scale's convergent and discriminant validity within a university student sample. The PSSM factors' positive correlations with converging factors were as expected and in line with the related literature (e.g., Cashmore, Scott, & Cane, 2011; Sheldon et al., 2001).

The score as to self-report sense of belonging showed a highly strong correlation (.72) with the *belonging* factor. In addition, its correlations with *acceptance by students* (.45) and *acceptance by faculty members* (.49) confirmed the PSSM scale's convergent validity. The second converging variable in this study, the degree of satisfaction with the university, was also positively correlated with the factors of the PSSM. The strongest relationship among these factors, the one between the satisfaction level and *acceptance by faculty members* (.64), however, deserves additional attention. This shows that "School belonging and connection are directly related to interpersonal interactions that students have in school" (Booker, 2004, p. 140). In examining the university students' sense of school membership, special emphasis needs to be given to the student-professor relationship, particularly in fields where close student-professor contact is required. Levett-Jones, Lathlean, Higgins, and McMillan (2009) examined this relationship among nursing students and stated that the staff-student relationship, such as the staff's receptiveness, recognition, and appreciation influenced the nursing students' belonging and learning.

Negative correlations between the three factors of the PSSM and intention to drop out show the scale's discriminant potential. Among the three factors of the PSSM scale, the strongest correlation was observed between the intention to drop out and *belonging* (−.57). This result is also consistent with previous research findings. For example, in their meta-analytical study, Lotkowski et al. (2004) included 109 post-secondary retention studies and stating that social involvement—defined as "extent to which a student feels connected to the college environment, peers, faculty, and others in college, and is involved in campus activities" (p. 9)—has a positive relationship with student retention. The negative correlation of the intention to drop out with *acceptance by students* (−.21) and *acceptance by faculty members* (−.32) also supported this relationship.

The results regarding the relationship between belonging and loneliness are also in line with the literature (Hagerty et al. 1996), showing the strongest negative relationship with *acceptance by students* (−.43), correlating moderately with *belonging* (−.29), and weakly with *acceptance by faculty members* (−.18). The negative relationship between loneliness and the sense of school belonging is such an expected relationship that, in some studies, loneliness has been regarded as the opposite end of the belongingness. For example, "I feel lonely" is one the eight items on the belongingness scale of PISA (Willms, 2003). As expected, university students tend to feel lonelier when they sense their surroundings do not accept them.

The final point that needs to be discussed is the possible role of cultural values on sense of belonging. By definition, belonging is associated with the feeling of connectedness, which

includes ones' perceived feeling of relatedness. Although, on an individual level, the degree to which a person feels connected to another person or group of people (i.e., community, is shaped by more personal characteristics, such as extraversion and self-esteem), one can argue that, on a social level, cultural context might affect the degree of feeling connected to others. As it was stated earlier in this article, several empirical evidence show that Turkish university students tend to show more individualism than collectivisim in their self construals and values, while retaining relatedness (Aygün & İmamoğlu, 2002; İmamoğlu, 1987, 1998, 2003; İmamoğlu & Karakitapoğlu-Aygün, 2004; Uskul et al., 2004).

Social psychologists, such as Kağıtçıbaşı (1996) and Hodgins, Koestner, and Duncan (1996) have extensively examined this balanced stance. Kağıtçıbaşı argued that autonomy is not incompatible with relatedness. In other words, one's standing on the self–other relations does not predict the person's dependency on others. Researchers conclude that even if a person is more dependent upon others as in collectivist cultures (e.g., Japan and India) (Markus, Mullally, & Kitayama, 1997), this stance does not necessarily mean that the person is closer to the relatedness construal (Ng et al., 2003; Koestner & Losier, 1996). Although it is beyond the scope of the current research, based on the findings of the related literature, the author argues that the effect of culture—specifically the Turkish culture here—on sense of belonging is not easy to pinpoint. Because the difference in independent and interdependent self-construals of individuals from different cultures needs to be investigated empirically (Raeff, 1997), further research, which specifically address the relationship between self-construal and sense of belonging, is required.

Limitations and Suggestions for Future Research

A primary limitation of this study is that the sample was drawn from a single Turkish university. No translation invariance test of the adapted PSSM was conducted. This study fails to examine the possible university effect (Ma, 2003) as well.

Future studies are required to test the language invariance of the scale. As institutional conditions affect the student outcomes in higher education (Tinto, 2010), future studies should include participants from different universities. Future studies are also required to examine the emotional correlates of sense of school belonging among university students and specific behavioral outcomes because students' belonging to learning environments is associated with higher enjoyment, enthusiasm, and positive emotions, whereas feeling isolated is associated with anxiety and negative emotions (Furrer & Skinner, 2003). Similarly the role of other psychological variables, such as stress and coping, on students' sense of university membership needs to be further examined (Braxton, Bray, & Sullivan, 1999). Finally, because the results showed a strong relationship between the students' drop-out intention and sense of belonging, future studies can examine the actual drop out behaviors and the university students' psychological sense of school membership with its subscales. Moreover, the relationship between the dimensions of the PSSM scale and other possible personal variables such as personality characteristics and coping styles (McGaha & Fitzpatrick, 2005) needs to be examined to explore the possible interaction between PSSM dimensions and personal variables on students dropping out of the university.

In conclusion, the Turkish language PSSM scale for university students is a reliable and valid instrument and can be used by practitioners and researchers. The PSSM scale can be utilized to define student profiles and assess their needs to develop intervention programs in

order to help them to better adapt to university life and optimize their university experience (Lent et al., 2007). Student retention programs can be developed and implemented in order to improve the sense of school belonging and perceived acceptance by university professors and other students. The validation of the scale in Turkish enables future cross-cultural studies, where university students' psychological sense of belonging can be researched even further in terms of several academic and nonacademic factors. Furthermore, culture specific and universal dimensions of school membership as well as possible differences in the profiles of university students can be examined across different universities.

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Appendix

English Items of the PSSM Scale for University Students	Turkish items of PSSM Scale for University Students
1. I feel like a real part of "name of the university."	1. Kendimi bu üniversitenin bir parçası olarak görüyorum.
2. People at this university notice when I'm good at something.	2. Bu üniversitede, birşeyleri iyi yaptığımda, diğer insanlar bunu fark ediyorlar.
3. It is hard for people like me to be accepted at this university.	3. Benim gibi insanların bu üniversitede kabul görmesi zordur.
4. Other students in this university take my opinions seriously.	4. Üniversitemdeki diğer öğrenciler, fikirlerimi ciddiye alırlar.
5. Most faculty members at this university are interested in me.	5. Üniversitedeki hocalarımın çoğu banimle ilgilenirler.
6. Sometimes I don't feel as if I belong to this university.	6. Bazen kendimi bu üniversiteye ait hissetmiyorum.
7. There's at least one teacher or other adult from the academic or administrative staff of this university I can talk to if I have a problem.	7. Üniversitemde, bir problemim olduğunda konuşabileceğim en az bir hoca ya da idari personel var.
8. People at this university are friendly to me.	8. Bu okuldaki insanlar bana arkadaşça / dostça davranıyorlar.
9. Faculty members here are not interested in people like me.	9. Üniversitemdeki hocalar bana benzeyen/benim gibi öğrencilerle ilgilenmiyorlar.
10. I am included in lots of activities at this university.	10. Üniversitedeki pek çok etkinliğe katılıyorum.
11. I am treated with as much respect as other students.	11. Burada, en az diğer öğrencilere gösterildiği kadar saygı görüyorum.
12. I feel very different from most other students at this university.	12. Bu üniversitedeki pek çok öğrenciden çok daha farklı olduğumu hissediyorum.
13. I can really be myself at this university.	13. Bu üniversitede kendim (olduğum gibi) olabiliyorum.
14. The faculty members at this university respect me.	14. Üniversitedeki hocalarım bana saygı gösteriyor.
15. People at this university know I can do good work.	15. Bu üniversitedeki insanlar benim başarılı olabileceğimi biliyorlar.
16. I wish I were in a different university.	16. Keşke başka bir üniversitede öğrenci olsaydım.
17. I feel proud of belonging to "name of this university."	17. Bu üniversitenin öğrencisi olduğum için gurur duyuyorum.
18. Other students at this university like me the way I am.	18. Bu üniversitedeki öğrenciler beni olduğum gibi kabul ediyorlar