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Article

A Turkish adaptation of a self-regulated practice behavior scale for collegiate music students

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Abstract
The purpose of this study was to examine the validity and reliability of a Turkish version of a Self-Regulated Practice Behavior Scale (SRP) for college students. The scale included measures of the theoretical constructs Social Influences, Method, Behavior, and Time management as sub-scales. The original SRP is a self-report instrument that was designed to measure the self-regulated practicing behavior of intermediate instrumental music students. An adaptation and Turkish translation of the scale for collegiate musicians resulted in a 38-item Turkish Self-Regulated Practice Behavior measure (Turkish SRPB). The Turkish SRPB was administered to 237 college students enrolled in music education programs from two Turkish universities. Results of confirmatory factor analyses revealed that an adjusted four-factor model with a factor representing each of the sub-scales listed above was the best fit to the data collected (CFI = .96, RMSEA = .04, SRMR = .08). The Cronbach's alpha coefficients for the Turkish SRPB sub-scales ranged from .62 to .90. The findings suggest that the Turkish SRPB produced valid and reliable measures of the self-regulatory practice behavior of collegiate Turkish musicians.

Keywords
college students, confirmatory factor analysis, music education, practice, self-regulated behavior

Practicing is a perennial feature of the learning process for all musicians (e.g., Hallam et al., 2012). Instrumental musicians, in particular (Jørgensen, 1997; Sloboda, Davidson, Howe, & Moore, 1996), spend extreme amounts of time in individual practice devoted to acquiring and refining musical skills and abilities. The approaches that instrumentalists take towards practicing have been widely studied and vary tremendously according to developmental stage

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(McPherson, 2005), instrument type (Jørgensen, 2002), musical tradition (Green, 2002), and level of achievement (Gruson, 1988; St George, Holbrook, & Cantwell, 2012). Nevertheless, it is crucial that musicians' practicing yields productive results if they wish to continue and/or maintain their personal musical development. Although high levels of performance achievement are often correlated with extensive amounts of accumulated practice time, the quality of one's practicing has been found to be an especially important indicator of musical success (Miksza, 2006, 2007, 2011; Williamon & Valentine, 2000).

Researchers have applied a wide variety of theoretical frameworks to examine the nature of music practice. For example, theories of parental involvement (e.g., Creech, 2010), epistemological development (Hallam, 1995; Nielsen, 2012), reflective thinking (Leon-Guerrero, 2008), cognitive memory processes (Cash, 2009; Chaffin, 2007), motor skill learning (Stambaugh, 2011, 2013), and expertise (Byo & Cassidy, 2008; Lehmann & Ericsson, 1997) have served as relatively common bases for studies of practicing. Each perspective has contributed significantly to the rapidly growing body of work regarding the nature of music practice. Self-regulation theory is a framework that lends itself particularly well to studies of how musicians may (or may not) develop as self-sufficient learners and as such, has been featured prominently among music education researchers (e.g., Austin & Berg, 2006; Hallam et al., 2012; McPherson & Zimmerman, 2011; Miksza, Prichard, & Sorbo, 2012; Nielsen, 2004).

Drawing from work in social cognitive theory (Bandura, 1977), Zimmerman and Martinez-Pons (1988) have described self-regulated learners as those who are "…metacognitively, motivationally, and behaviorally active participants in their own learning process" (p. 284). In addition, McPherson and Zimmerman (2011) describe self-regulation with respect to six dimensions believed to be important to music learning: motive, method, time management, behavior, social influences, and environment. These dimensions represent the motivational dispositions, learning strategies, social and environmental helps or hindrances, self-evaluative/metacognitive tools, and organizational approaches that an individual can engage in to demonstrate self-regulated learning.

Much of the research done on practice is informative for those wishing to understand how musicians may develop as self-regulated learners (see Miksza, 2011, for a detailed review). Several long-term studies of musicians have identified early, middle, and late periods of development during which relatively distinctive approaches to practicing have been reported. For example, musicians in early periods of development typically depend on a heavy amount of parental influence to regulate, guide, and reward practicing, whereas they are more likely to engage in self-direction and choose increasingly sophisticated strategies for practice during middle periods. Musicians in the late periods of development tend to incorporate a personalized approach to practicing and rely on intrinsic motivation (MacNamara, Holmes, & Collins, 2006; McPherson, 1997; Sosniak, 1985). Unfortunately, researchers have also documented a lack of self-regulation among beginning and intermediate musicians and have drawn connections among ineffective practice, poor performance, and attrition from music study (McPherson & Davidson, 2002; Pitts, Davidson, & McPherson, 2000a, 2000b). In contrast, advanced musicians tend to exhibit behaviors and a sense of metacognitive awareness that is more emblematic of self-regulated learning. For example, advanced musicians are more likely to demonstrate evidence of planning, problem identification, use of strategic practice behaviors, concentration, and help-seeking (Austin & Berg, 2006; Hallam, 1997; Miksza, 2010; Nielsen, 1999).

A good deal of research regarding musicians' practice has also been conducted from the social cognitive perspective of self-regulated learning, specifically. Studies of musical self-regulation tend to consist of case studies of beginning (e.g., Bartolome, 2009; Moore, Burland, & Davidson, 2003) or advanced instrumentalists (e.g., Nielsen, 1999), direct observations of

modest samples of instrumentalists' practicing (e.g., Leon-Guerrero, 2008; Miksza et al., 2012), and/or analyses of self-reports from relatively large groups of musicians via questionnaire (e.g., McCormick & McPherson, 2003).

Many of the studies incorporating a quantitative, self-report methodology have employed an adaptation of Pintrich and Degroot's (1990) Motivation and Self-regulated Learning Questionnaire (MSLQ). Overall, the findings from questionnaire-based studies suggest that more self-regulated students tend to demonstrate higher levels of musical competence (Hallam et al., 2012; McPherson & McCormick, 2000) and that the degree of self-regulation in practice tends to be positively related to amounts of time spent practicing (Austin & Berg, 2006; Miksza, 2012).

However, there are several notable limitations to the research incorporating adaptations of the MSLQ for music practicing. For example, the MSLQ was designed for academic contexts and although item-wordings are typically adapted to fit musical contexts in practice research, there may be important differences in the types of learning approaches and dispositions that are critical in self-regulated practicing when compared to academic studying. In addition, reliability analyses of sub-scales representing dimensions of self-regulated music learning often yield marginally acceptable internal consistency coefficients. Lastly, exploratory factor analyses incorporated in the previous research often yield contrasting underlying factor structures and sub-scales with very similar sets of items.

In an effort to address some of the concerns described above, Miksza (2012) investigated the psychometric properties of a self-report measure designed to capture intermediate instrumentalists' self-regulated learning tendencies. In this study, items were adapted from the previous literature (Austin & Berg, 2006; McCormick & McPherson, 2003; McPherson & McCormick, 1999, 2000, 2006; Miksza, 2006; Nielsen, 2004; Schmidt, 2007) or created by the researcher and grouped according to sub-scales representing the motive, method, time management, behavior, and social influences dimensions as described by McPherson and Zimmerman (2011). Miksza (2012) administered the questionnaire to 302 middle-school wind and percussion students from the southwestern United States. Confirmatory factor analyses indicated that a 4-factor solution was the best fit to the data collected, with factors representing motive, time management, social influences, and the method and behavior dimensions combined as a single factor. Reliability for the sub-scales corresponding to the 4-factor solution was demonstrated via measures of internal consistency and consistency over time. Significant correlations between several of the sub-scales and reported practice habits (e.g., ratings of practice efficiency, time spent practicing, formal practice) suggested preliminary evidence of predictive validity. However, it is uncertain as to whether the measure developed by Miksza (2012) could serve as valid among musicians with more competence than intermediate students or among musicians from other cultures.

The purpose of this study is to examine the validity and reliability of a version of the Self-Regulated Practice Behavior Scale developed by Miksza (2012) for collegiate students in Turkey. Given this purpose, we focused on the following primary goals: 1) to translate the original scale and create a viable Turkish adaptation for collegiate musicians and 2) to analyze the psychometric properties of a Turkish version of the scale.

Method

Participants

A volunteer sample of college students from music education departments in two state universities in Turkey was employed in this study. A questionnaire containing the items of the Turkish

SRPB as well as was an established Turkish adaptation of Pintrich's Motivated Strategies for Learning Questionnaire (MSLQ-TR) (Altun, 2005; Pintrich et al., 1991) was administered to 252 participants out of the possible population of 347 students. This resulted in complete questionnaire responses from a final *N* of 237 students to run statistical analyses. As such, a response rate of 68% was achieved. The MSLQ-TR was included for the purposes of examining criterion validity of the Turkish SRPB measure. The participants consisted of female (*n* = 132) and male (*n* = 105) undergraduates: 25.3% freshmen, 35.9% sophomore, 26.6% junior, and 12.2% senior. The age range of the participants was as follows: 38% were between 17 and 20 years old (*n* = 90); 49% were between 21 and 24 years old (*n* = 116); 12% were between 25 and 28 years old (*n* = 28); 0.8% were between 29 and 32 years old (*n* = 2), and 0.4% was between 33 and 36 years old (*n* = 1). Most participants' primary instruments were violin (25%), guitar (11%), flute (9%), cello (9%), piano (9%), or viola (8%), whereas a small percentage of participants reported specializing on zither, oud, tuning pin, caval, squash violin, tambour, clarinet, and voice.

Instruments

MSLQ-TR. To determine criterion validity of the Turkish SRPB, we used Altun's (2005) Turkish adaptation of the MSLQ developed by Pintrich et al. (1991). The MSLQ-Turkish form (MSLQ-TR) has 5 subscales: the "Metacognitive Self-regulation (MSR)" scale consists of 10 items and the "Time and Study Environment (TSE)" consists of 8 items each, while the subscales "Help-Seeking (HS)", and "Effort Regulation (ER)" consist of 4 items each, and the subscale "Self Efficacy for Learning and Performance (SEFLP)" consists of 8 items. The items of the MSLQ-TR are paired with 7-point Likert scales ranging from 1 (not at all true for me) to 7 (absolutely true for me). The internal consistency for the total of the 35 item MSLQ-TR was found to be .93 with sub-scale coefficients of MSR = .83, TSE = .69, ER = .44, HS = .60, and SEFLP = .92 for the five subscales, respectively.

Turkish SRPB. Miksza's (2012) Self-Regulation Practice Behavior Scale (SRP) consisted of 47 items and 5 hypothesized sub-scales: "Self-Efficacy/Motive" (10 items); "Method" (14 items); "Behavior" (7 items); "Time Management" (6 items); and "Social Influences" (10 items). Participants responded to each item with 5-point, Likert-type scales ranging from strongly disagree to strongly agree. For each sub-scale, inter-item correlations were significant (*p* < .01) and item-total correlations were *r* = .30 or greater. The retest reliability coefficients across the subscales ranged from *r* = .75 to .91 and Cronbach's alpha internal consistency coefficients ranged from α = .76 to .90. Pearson correlations among the five hypothesized self-regulation subscales were significant and ranged from *r* = .19 to *r* = .78.

Construct validity of the SRP was examined via confirmatory factor analysis (Miksza, 2012). Several factor structures were compared and fit statistics were generally good for each model, however, the best fit was found for a four-factor model (CFI = .94, SRMR = .07, RMSEA = .05, X2 = 1,881.89/*df* = 939). The other models' fit statistics were: two factor model (CFI = .92, SRMR = .08, RMSEA = .08, X2 = 2,327.43/*df* = 944), three factor model (CFI = .94, SRMR = .07, RMSEA = .06, X2 = 1,928.99/*df* = 942), five factor model (CFI = .95, SRMR = .07, RMSEA = .05, X2 = 1,875.27/*df* = 935). The results of model comparison tests between the four-factor model and the other models showed that the four-factor model that included self-efficacy, method/behavior, time management, and social influences was the best fit to the data (Miksza, 2012).

Adaptation and translation of the Turkish SRPB

To generate the Turkish SRPB, the authors first considered which of the 47 items from the original SRP scale would be appropriate for the collegiate level. As such, we approached the item selection and scale development from a rational and statistical perspective (Butt & Fiske, 1968). Several items were redesigned to fit the context of more advanced musical studies at the collegiate level. For example, items referring to intermediate school contexts were adapted or deleted. In addition, some redundancies among items were eliminated. For example, the social influences item "Ask for feedback from orchestra teachers" was deleted due to its similarity to the item " I ask my orchestra teacher to listen to me and give me his/her feedback when I am practicing difficult music." In other cases, items were created to expand the breadth of meaning captured in the original item set. For example, the social influences item "Hesitate to seek musical advice from others" was expanded into two items – "I do not tell the others about my troubles in music" and "I hesitate to seek musical advice from others." Similarly, the method item "Work to improve whenever practicing" was expanded into two items –"I am aware of the sounds that I played when I practice" and "I think about how much better I can play my instrument when I practice." In addition to these revisions, the method item "Practice challenging music" was expanded to "When I practice challenging music, I use my special strategies to achieve it."

In order to focus on self-regulatory behaviors, specifically, and to reduce the overall administration time necessary, the authors removed the 10 items pertaining to the "self-efficacy/ motive" subscale. Theoretically, a multitude of motivational constructs could potentially be measured alongside behavioral elements of self-regulation (e.g., self-efficacy, achievement goal orientation, attributions). However, the adaptation of the self-regulation questionnaire pursued in the current study was specifically focused on examining the measurement of behavioral components of self-regulation. The final version of the Turkish SRPB consisted of 38 items. The participants responded to each item with 7-point Likert-type scales ranging from never agree to absolutely agree.

The adaptation and translation process was as follows: (a) translation of items into Turkish – the 38-item scale was translated into Turkish by 4 bilingual educational researchers and a bilingual music educator; (b) validation of the translated items by two bilingual translators; (c) completion of back-translation – two researchers who earned their PhD's from an educational institution in the USA did back-translations, then one of the authors and an educational faculty member who worked as an assistant professor at a state university in USA worked on the items until consensus regarding the semantic and conceptual equivalence between the original SRP and the Turkish SRPB was achieved; (d) a final check of the adapted scale – a Turkish language expert and music educators from a state university in Turkey checked the last version of the scale for validity of the items and their suggestions were integrated into the final version of the scale. The items from the Turkish translation and the Original version of the SRP are presented in Appendix 1.

Ultimately, the final version of the 38-item Turkish SRPB scale consisted of four hypothesized subscales: Method, 15 items (2, 5, 8, 13, 15, 20, 21, 26, 27, 29, 30, 32, 33, 37, 38), Behavior, 7 items (4, 7, 11, 12, 14, 17, 31), Time Management, 6 items (6R, 9R, 16R, 19, 22R, 34R), and Social Influences, 10 items (1, 3, 10, 18, 23, 24R, 25R, 28, 35, 36). The "R" listed in association with some item numbers refers to negatively worded items that were reverse-scored for analysis. This final versions of the Turkish SRPB and the MSLQ-TR were administered to collegiate music education students.

Table 1. Means, standard deviations, Cronbach's α coefficients, and interscale correlations for the 38-item Turkish SRPB.

Factor	1. Method	2. Behavior	3. Time management	4. Social influence
1. Method (15 items)	1.0	.483**	.144*	.376**
2. Behavior (7 items)		1.0	.313**	.494**
3. Time management (6 items)			1.0	.339**
4. Social influences (10 items)				1.0
M	4.98	5.05	4.73	5.16
SD	1.46	.96	1.13	1.15
α	.90	.71	.62	.86
Skewness	−.221	−.060	−.113	−.295
Kurtosis	−1.225	−.656	−.239	−.694

*$p < .05$; **$p < .01$.

Results

The data were screened for cases of improper scale completion and outliers. The statistical analysis was administered with data from 237 survey responses, and SPSS, version 19, was used for the preliminary correlations, descriptive statistics, and reliability and item analyses (IBM SPSS, 2010). Lisrel, version 8.7, was used to determine the factor structure of Turkish SRPB via confirmatory factor analyses (Jöreskog & Sörbom, 2004).

Descriptive statistics and correlation analyses

Sub-scale means, standard deviations, Cronbach's alpha reliability coefficients, and correlations were calculated as an initial assessment of the scale's psychometric properties. The descriptive statistics for the Turkish SRPB sub-scales are shown in Table 1. Internal consistency reliability for Turkish SRPB sub-scales ranged from acceptable to excellent ($\alpha = .62$ to .90). The Cronbach alpha coefficient for the total scale scores was .91. The subscales were significantly correlated with each other ($p < .05$), with coefficients ranging from .144 to .494. Skewness and kurtosis values for each subscale were not extreme and as such it could be assumed that the scores were normally distributed.

Altun's (2005) Turkish adaptation of Pintrich et al.'s (1991) MSLQ served as an indicator of criterion validity for the Turkish SRPB. Correlations between MSLQ-TR's subscales and those of the Turkish SRPB are presented in Table 2. It can be seen that the four scales of the Turkish SRPB were each, significantly positively correlated with the five scales of the MSLQ-TR ($r = .16$ to .44) with one exception. There was no significant correlation between the time management subscale from the Turkish SRPB and the effort regulation subscale from MSLQ-TR.

Construct validity and confirmatory factor analyses

Confirmatory factor analyses were conducted to assess the construct validity of the Turkish SRPB. We examined factor models similar to those tested in Miksza's (2012) study with the exception of alterations in the current study that were necessary due to the deletion of the self-efficacy/motive sub-scale (described above). The first model hypothesized the two factors of Method/Behavior/Social Influences combined and Time Management. The second model hypothesized three factors, Method/Behavior combined, Social Influences, and Time

Table 2. Correlations between the Turkish SRPB and MSLQ-TR sub-scales SRPBS-TR's factors.

SRPBS-TR's factors / MSLQ-TR's factors	Method	Behavior	Time management	Social influences
Metacognitive self-regulation	.282**	.382**	.212**	.427**
Time and study environment	.219**	.306**	.181**	.426**
Help-seeking	.229**	.329**	.159*	.304**
Effort regulation	.161*	.336**	.079	.275**
Self-efficacy for learning and performance	.295**	.413**	.232**	.446**

*p < .05; **p < .01.

Management. The third model hypothesized four factors, one for each hypothesized sub-scale: Method, Behavior, Time Management, and Social Influences. An adjusted version of the four-factor model was also tested as a result of modification indices and two poor item loadings (item 9, and 19 on the latent variable Time). Aside from those items, factor loadings ranged from .30 to .79, which is good. Maximum likelihood estimations and model chi-square tests were used to determine which model was the best fit to the data. Goodness of fit indices for each the four models that were compared are presented in Table 3.

The minimum fit function Chi-square tests for each model suggests that none were a "perfect" fit to the data. However, it is commonly understood that this particular test is extremely sensitive to sample size and as such additional absolute (root mean squared error of approximation – RMSEA, standardized root mean square residual – SRMR) and incremental (comparative fit index – CFI) fit indices are reported. When considering criteria for good model fit, we adopted a cut-off value of .08 for RMSEA, .08 for SRMR, and .90 for CFI (Bentler, 1990; Bentler & Bonett, 1980; Browne & Cudeck, 1993). Model comparison Chi-square tests were also conducted to determine the best fit among the three competing models. A path diagram of the adjusted four-factor model is presented in the Appendices.

The two-factor model yielded the poorest fit (CFI = .96, RMSEA = .04, SRMR = .11), whereas the three-factor model analyses resulted in marginally acceptable fit values (CFI = .93, RMSEA = .06, SRMR = .09). The goodness of fit statistics for the four-factor model suggested it was the best fit of the three (CFI = .95, RMSEA = .05, SRMR = .08). In addition, the model comparison Chi-square tests indicated that the four-factor model was a superior fit when compared to the other two as well. An adjusted four-factor model was examined that eliminated items with poor factor loadings on the latent variable Time Management. As a result, the adjusted four-factor model was determined to yield the best fit (CFI = .96, RMSEA = .04, SRMR = .08).

Discussion

The purpose of the current study was to investigate the development of a collegiate adaptation and Turkish translation of Miksza's (2012) Self-regulated Practice Behavior Scale (SRP) for music education students in Turkey. The research consisted of two major components: (a) an extensive adaptation and translation process involving multiple independent reviewers from Turkish and American academic contexts and (b) a psychometric examination of the reliability, construct validity, and criterion-related validity of the adapted measure. This study can be regarded as the first study to examine the SRP in another language and for collegiate level students. This research also addresses a practical need in that there was no cross culturally validated scale for measuring the self-regulated practice behaviors among music students in Turkey. Ultimately, the results of this study revealed evidence suggesting that the Turkish version of the scale may be a valid and reliable scale for collegiate-level Turkish music students.

Table 3. Goodness of fit statistics for all models estimated.

Model	χ^2	df	p	RMSEA	p Close	SRMR	CFI	$\Delta\chi^2$	Δdf
Adjusted four-factor model	910.78	588	<.001	.04	.55	.08	.96		
Four-factor model	1084.94	659	<.001	.05	.24	.08	.95	174.16	71
Three-factor model	1365.36	662	<.001	.06	<.001	.09	.93	280.42	3
Two-factor model	2798.56	664	<.001	.11	<.001	.11	.88	1433.2	2

Note. χ^2 = Minimum fit function chi square; RMSEA = Root mean square error of approximation; CFI = Comparative fit index; SRMR = Standardized root mean square residual; $\Delta\chi^2$ = Difference between Adjusted four-factor chi-square value and each comparative model.
Two-factor model = Method/Behavior/Social influences, Time management; Three-factor model = Method/Behavior, Social influences, Time management; Four-factor model = Method, Behavior, Social influences, Time management; Adjusted Four-factor model eliminates poorly loading items on the latent variable Time management.

Confirmatory factor analyses revealed that an adjusted, four-factor model featuring factors that represented each of the hypothesized sub-scales (method, time management, behavior, social influences) and the removal of two poorly loading items was the best fit to the data. The best-fitting factor structure represents the model that was also the most consistent with the underlying theory of self-regulation the measure was based on (McPherson & Zimmerman, 2011). However, the best-fitting model arrived at in this study was somewhat different than that reported in Miksza's (2012) study with intermediate, American wind players and percussionists. In Miksza's (2012) study, a combined factor suggesting that the method and behavior dimensions of the self-regulation processes were operating as a single latent construct was included in the best-fitting model. The differences in age and experience between the participants in the current study and those in Miksza's (2012) study may explain this discrepancy. For example, younger musicians tend to report a relatively less-sophisticated view of self-regulated processes (McPherson & Davidson, 2002; Pitts, Davidson, & McPherson, 2000a, 2000b) and have generally not been observed demonstrating strategic approaches to planning and practicing (Leon-Guerrero, 2008; Miksza et al., 2012). As such, it could be expected that their self-reports about how they engage in the self-regulated processes inherent in practicing would be less nuanced than those of more experienced and older musicians. In addition, Miksza's original SRP included a sub-scale representing the motivational construct self-efficacy. No such measure was included in this current adaptation and the absence of those items could also have contributed to the differences in underlying factor structure identified. Further research aimed at clarifying how the behavioral dimensions of the collegiate, Turkish version scale might be related amidst the inclusion of a self-efficacy measure or other motivational constructs relevant to self-regulation (e.g., achievement goal orientations, attributions) is important.

The reliability estimates for the four sub-scales identified in the Turkish SRPB were acceptable, with a range of α = .62 to α = .90. The method and social influences sub-scales demonstrated particularly strong internal consistency with alphas of .86 and .90, respectively. However, the time management sub-scale was only marginally acceptable with the result α = .62. Further development of the time management sub-scale that explores additional items and perhaps an expanded conceptual perspective would be valuable. Overall, the reliability estimates found in the current study are comparable to those reported by Miksza (2012) with the exception of the time-management sub-scale. The correlations among the individual sub-scales were small to moderate (r = .14 to .49) and, accordingly, suggested an adequate degree of divergent validity among the constructs that each represented. In contrast, Miksza (2012) found a

strong correlation (r = .78) between sub-scales representing a method/behavior dimension combined and social influences.

Criterion-related validity of the Turkish SRPB was assessed by examining correlations with Altun's (2005) Turkish adaptation of Pintrich & DeGroot's (1990) Motivation and Self-regulated Learning Questionnaire (MSLQ-TR). As expected, small to moderate significant correlations were found between almost all sub-scales from each measure. The weakest correlations were found between the time management Turkish SRPB sub-scale and the MSLQ-TR sub-scales. This may be a result of relatively weak internal consistency of the time management sub-scale as well as the lack of a sub-scale in the MSLQ-TR that emphasizes time management exclusively. For example, the MSLQ-TR sub-scale "time and study environment" is intended to capture more than the sense of time use and efficiency that the "time management" sub-scale of the Turkish SRPB emphasizes. Overall, this suggests that although the self-regulated processes emphasized by each measure are related, the Turkish SRPB is indeed likely to be capturing variance that is unique to music-specific self-regulation tendencies.

There are several limitations to the current study that are important to note. The translation and adaptation of the SRP completed in this study was for collegiate-level music students and was only examined with participants from two Turkish universities. Generalizations of the results from this study to younger and/or less experienced Turkish musicians may not be appropriate. In addition, generalizations to collegiate-level musicians with demographic characteristics beyond those in the current sample should be made with caution as well. Furthermore, it is important to recognize that the adaptation of the SRP involved two steps: adjustments of items for the Turkish language, and adjustments of the items for suitability among collegiate musicians. Determining whether a back-translation of this scale for American collegiate musicians would be valid or reliable would require further development and research.

The findings of this study present preliminary evidence of the reliability, construct validity, and criterion-related validity of a self-report measure of Turkish musicians' practicing. The factor structure determined to be the best fit in this study was consistent with the theoretical underpinnings of self-regulated music learning presented by McPherson and Zimmerman (2011). Although continual improvements can be made, the Turkish SRPB is a viable measure for researchers exploring practice tendencies and self-regulated activities of collegiate musicians in Turkey. This initial adaptation and translation study has also resulted in a measure that could also be useful to music educators in the collegiate context. The employment of this measure in combination with other data gathering techniques (e.g., observation, verbal think-alouds) could yield valuable information about Turkish musicians' learning tendencies and practice habits that could be used to guide instructional feedback and intervention.

Funding

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Appendix 1. Turkish SRPB items in both, English and Turkish.

Questionnaire item number	Sub-scale designation, English wording, Turkish wording
Q1	SOC5 – I talk to my orchestra teacher about things that make my practice better. Orkestra öğretmenimle daha iyi bir uygulama için sık sık fikir alışverişi yaparım.
Q2	METH11 – When I practice challenging music, I use my special strategies to achieve it.* Zorlandığım müzik parçasını pratik ederken, basarılı olmak icin kendime özgü stratejilerimi kullanırım.
Q3	SOC6 – I look up definitions for unfamiliar terms and symbols when practicing. Pratik yaparken karşılaştığım yabancı terim ve sembollerin anlamına sözlükten bakarım.
Q4	BEH4 – I think about pieces I'm practicing by singing them through in my mind. Pratik yaptığım parçaları kafamda tekrar ederek onlar hakkında düşünürüm.
Q5	METH1 – I mark trouble spots in music when practicing. Pratik yaparken zorlandigim yerleri işaretler, not alırım.
Q6R	TIME5 – I daydream when practicing alone. Tek başıma pratik yaparken hayallere dalarım.
Q7	BEH7 – When I'm practicing I stop playing and try to think about the best way to work out a problem. Pratik yaparken sorun yaşadığım yerlerde durup, problemli kısmı en iyi nasıl düzelteceğimi düşünmeye çalışırım.
Q8	METH10 – I practice at least a little bit every day. Her gün az da olsa pratik yaparım.
Q9R	TIME2 – I have difficulty concentrating when practicing for extended periods of time. Uzun sureli uygulamalarda konsantre olma problemi yaşıyorum.
Q10	SOC4 – I use orchestra teacher's advice when practicing. Pratik yaparken orkestra öğretmenin tavsiyelerini hatırlar ve kullanırım.
Q11	BEH3 – I listen to my own playing while I practice to make sure I am not reinforcing bad habits. Kötü alışkanlıklarımı sürdürmediğimden emin olmak için pratik yaparken kendi çaldığımı/söylediğimi dinlerim.
Q12	BEH5 – If I can't play a piece correctly I stop to think about how it should sound. Bir parçayı doğru olarak çalamadığımda/söyleyemediğimde, nasıl olması gerektiğini düşünmek için durur ve düşünürüm.
Q13	METH12 – I spend some practice time sight-reading new music. Yeni müzikleri bakarak çalmak için bir zaman ayırırım.

Appendix 1. (Continued)

| Questionnaire item number	Sub-scale designation, English wording, Turkish wording
Q14	BEH1 – I try to get one section of music perfect before practicing the next. Sonraki kısımlara geçmeden önce, parçanın bir kısmını mükemmel olarak çalmaya çalışırım.
Q15	METH9 – I set specific practice goals. Özel uygulama amaçları oluştururum.
Q16R	TIME1 – I can only concentrate for short periods of time when practicing. Pratik yaparken ancak kısa zaman aralıkları için konsantre olabilirim.
Q17	BEH6 – I practice to see how much better I can actually get at music. Müzikte daha iyi ne kadar olabileceğimi görmek için pratik yaparım.
Q18	SOC1 – I think about things I learn in orchestra when practicing. Pratik yaparken orkestrada öğrendiklerimi düşünürüm.
Q19	TIME6 – It is easy for me to remain focused on my music when practicing alone. Tek başıma partik yaparken konsantremi devam ettirmek benim için kolaydır.
Q20	METH8 – I am aware of the sounds that I played when I practice.* Pratik yaparken çaldığım seslerin ve parçanın tümünün farkında olurum.
Q21	METH9 – I think about how much better I can play my instrument when I practice.* Pratik yaparken nasıl daha iyi çalabileceğim üzerine düşünürüm.
Q22R	TIME4 – Thoughts about non-musical things run through my head while I practice. Pratik yaparken kafamdan müzikle ilgili olmayan şeyler geçer.
Q23	SOC2 – I ask my orchestra teacher to listen me and give me his/her feedback when I am practicing difficult music pieces.* Orkestra öğretmenimden zor müzik parçalarını pratik ederken beni dinlemesini ve geri bildirim vermesini isterim.
Q24R	SOC8 – I do not tell the others about my troubles in music.* Kimseye müzikle ilgili sıkıntılarımı anlatmam.
Q25R	SOC9 – I hesitate to seek musical advice from others.* Kimseden müzikle ilgili tavsiye almaya gerek duymam.
Q26	METH5 – I practice difficult spots very slowly. Zor kısımları yavaş yavaş çalışırım.
Q27	METH13 – I work hard when practicing. Pratik yaparken sıkı çalışırım.
Q28	SOC10 – I look to books for musical information that helps me learn. İşime yarayacak müzikle ilgili bilgilere kitaplardan bakarım.
Q29	METH14 – I practice with a metronome. Metronom eşliğinde pratik yaparım.

Appendix 1. (Continued)

Questionnaire item number	Sub-scale designation, English wording, Turkish wording
Q30	METH6 – I begin each practice session with warm-ups. Her pratiğe ısınmayla başlarım.
Q31	BEH2 – I spend time in each practice session reviewing music. Her pratikte parçayı gözden geçirmeye zaman ayırım.
Q32	METH2 – I carefully look through a new piece before practicing. Yeni bir parçayı çalışmaya başlamadan onu önce dikkatlice gözden geçirir anlamaya çalışırım.
Q33	METH7 – I practice the day after a rehearsal or lesson. Bir prova ya da dersin ertesi günü pratik yaparım.
Q34R	TIME3 – I am easily distracted when practicing. Pratik yaparken kolayca dikkatim dağılır.
Q35	SOC3 – I listen carefully to orchestra teacher's practice advice. Orkestra hocasının uygulamaya yönelik tavsiyelerini dikkatlice dinlerim.
Q36	SOC9 – I listen to musical recordings to help me learn. Öğrenmeye yardımcı olacak müzik kayıtlarını dinlerim.
Q37	METH4 – I come well prepared to music rehearsals and lessons. Müzik prova ve derslerine iyi hazırlanmış olarak gelirim.
Q38	METH3 – I spend practice time on things I cannot do very well. Çok iyi yapamadığım şeyler üzerine pratik yapmaya zaman harcarım.

Note. Method (METH) (Metod): 2, 5, 8, 13, 15, 20, 21, 26, 27, 29, 30, 32, 33, 37, 38; Behavior (BEH) (Davranış): 4, 7, 11, 12, 14, 17, 31; Time management (TIME) (Zaman Yönetimi): 6R, 9R, 16R, 19, 22R, 34R; Social influences (SOC) (Sosyal Etkiler): 1, 3, 10, 18, 23, 24R, 25R, 28, 35, 36; R = reverse scored; Item numbers correspond with item numbers in the factor models presented in Appendices 2 through 5.
*Items that were created or adapted for the Turkish SRPB that differ from those in Miksza's (2012) SRP.

Chi-Square = 910.78, *df* = 588, *p* value = 0.0001, RMSEA = 0.048
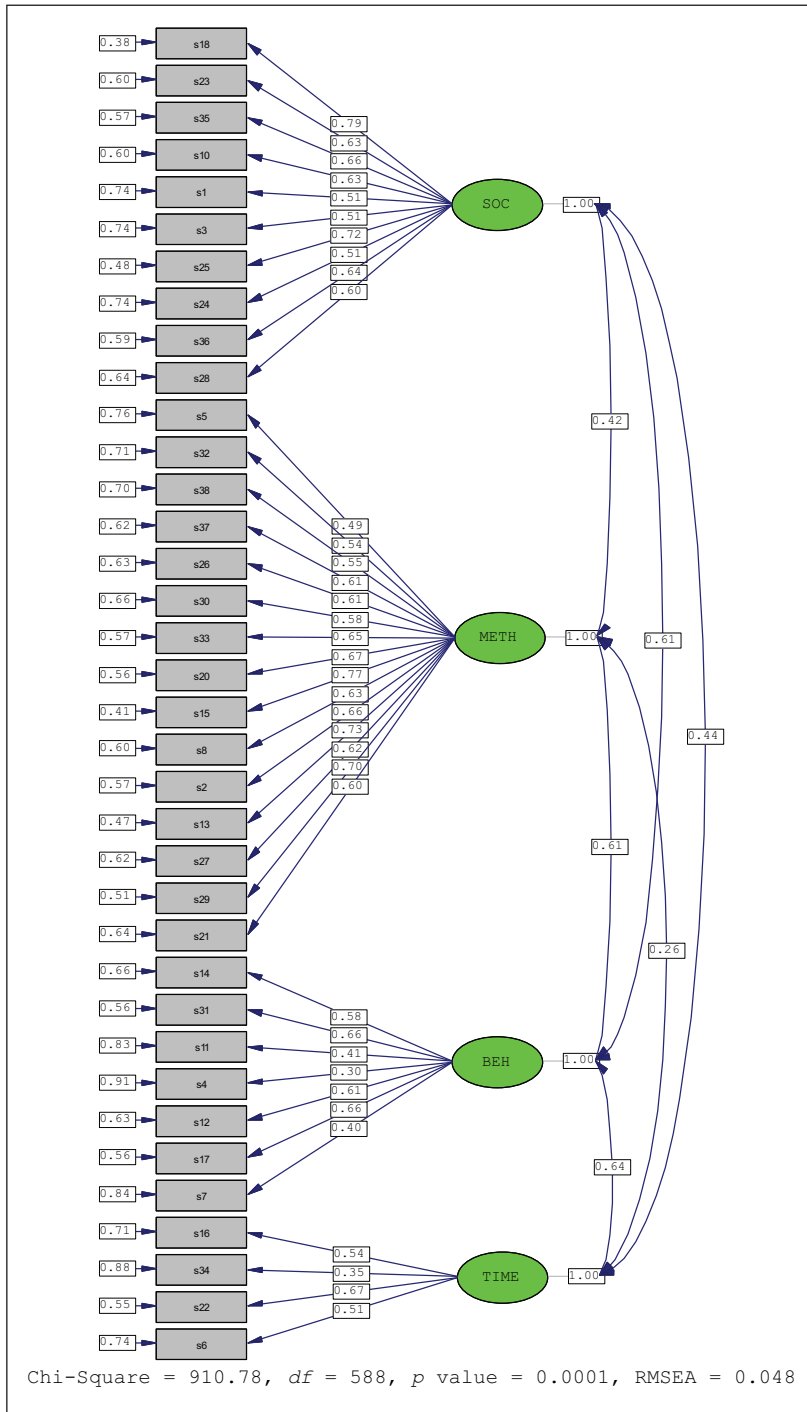
Appendix 2. Adjusted four-factor model