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Research Article

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Coping Strategies with Boredom in Class: Scale Development and Validation

Büşra Kökçam [1]
Necmettin Erbakan University

Ayşin Satan [2]
Marmara University

Abstract

This study sought to develop a new scale of coping strategies with boredom in class (CBCS) and test its reliability and validity across subsamples of undergraduate and graduate students. The entire sample consisted of 1561 students, with more female (N = 967) than male participants (N = 594). When developing the scale, 367 undergraduate students were asked what they did when they were bored in class and whether they made any effort to focus on the lecture. The exploratory (N = 636) and confirmatory factor analyses (N =355) suggested that the CBCS demonstrated a good internal consistency, dimensionality and latent factor structure. The four factors that emerged from the exploratory factor analysis were named Cognitive Approach, Behavioral Avoidance Based on Simple Stimuli, Cognitive Avoidance and Behavioral Avoidance Based on Activating Stimuli. The CBCS also demonstrated significant convergent validity with related scales used in the literature. The CBCS is shown to be a promising measure of coping strategies with boredom in class.

Key Words

Academic boredom • Coping strategies • Scale development

[1] **Correspondance to:** Necmettin Erbakan University, Ahmet Keleşoğlu Education Faculty, Konya, Turkiye. E-mail: busra.kokcam@erbakan.edu.tr **ORCID:** 0000-0002-8329-749X
[2] Marmara University, Atatürk Faculty of Education, İstanbul, Turkiye, E-mail: aysin.satan@marmara.edu.tr ORCID: 0000-0002-9852-902X

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Emotions are critical for cognitive development and optimal learning (Linnenbrink-Garcia & Pekrun 2011; Schutz & Pekrun 2007). However, not all emotions are equally associated with academic success. Studies have shown that basic emotions (anger, sadness, fear, happiness, disgust and surprise; Ekman, 1992) are rarely experienced in learning processes and environments (Craig et al., 2008). Researchers emphasized that it was important to distinguish between "basic" and "academic" emotions (Pekrun, 2011). Academic emotions are the emotions experienced during the learning process and its outcomes. Anxiety and boredom can be given as examples of these emotions (Pekrun & Linnenbrink-Garcia, 2012). Despite a considerable amount of work done on academic anxiety (see Trassi et al., 2022), studies on other academic emotions are very limited (Ekornes, 2022; Rowe et al., 2015; Sharp et al., 2016).

The number of studies dealing with boredom in academic environments is very few compared to the prevalence of boredom in learning environments and its negative impact on learning and motivation (Pekrun et al., 2010). In education, boredom has a significant relationship with truancy (Wang, 2021), procrastination, decreased academic success (Malcolm et al., 2003; Mann & Robinson, 2009), dropping out of school (Bearden et al., 1989), deviant behavior (Wasson, 1981) and hostility toward school (Robinson, 1975). Boredom is a specific emotion that is often overlooked in schools due to its relatively inconspicuous and nondisruptive nature, especially compared to emotions such as anger and anxiety (Pekrun et al., 2010). Goetz et al. (2006) reported that boredom is experienced much more than anxiety during a class time. In the study of Larson and Richards (1991), which was conducted with the experience sampling method, they reported that the average middle school student was bored 32% of the random moments during class time and homework. In a study conducted with 5-10th grade students, researchers reported that 44% of the students were bored sometimes, mostly or always (Daschmann, et al., 2011). In studies conducted with undergraduate students, between 19-29% of students found half of a class time boring, and 17-30% found most or all of the class time boring (Demirkasimoglu, 2017; Mann & Robinson, 2009). Pekrun et al. (2010) found that undergraduate students were bored in 42.2% of academic activities. In recent studies conducted with university students, between 37-50% of students reported that they had experienced boredom at most or all a class time (Kökçam, 2019; Şimsek et al., 2019). Researchers have reported that the emotional consequences of boring activities continue even after the activity ends (Daniels et al., 2009; Demirkasimoğlu, 2017; Mann & Robinson, 2009). This shows that boredom affects the frequency of truancy after a boring class. Considering that the classes are related to each other, it is quite possible that students who frequently skip classes during the academic year will fail courses or have low academic averages (Fallis & Opotow, 2003; Mann & Robinson, 2009).

To effectively deal with the negative consequences of boredom, it is necessary to understand the potential causes of this emotion. Fisher (1993) divided the effects that cause boredom at work into three main categories: task main effects, environmental main effects (other people, organizational control practices), person main effects (capacity, personality, mental health, schema complexity). The first and second main effects include situational determinants such as the academic activities, classroom environment in boredom experiences, while the last emphasizes the tendency of the person to interpret the situation as boring (Farmer & Sundberg, 1986; Vodanovich, 2003). In addition to the main effects, Fisher also discussed an interaction effect, which she called person-situation fit. A person experiences boredom when the activity/task is not found meaningful or appropriate to his/her wants and needs

(Fisher, 1993). Csikszentmihalyi (1990) suggested that boredom for a task is experienced when a person's capacity exceeds the difficulty of a task (i.e., under-challenging), while anxiety is experienced when the difficulty of a task exceeds a person's capacity (i.e., over-challenging). Furthermore, if task difficulty is proportional to capacity (optimally challenging), flow and enjoyment occurs. This points that boredom may be induced in under-challenging situations but not in over-challenging situations. However, Pekrun (2002) and Acee et al. (2010) found that students reported feeling boredom both when they perceived task difficulty as too high and as too low.

While task and environmental main effects remind educators of the importance and responsibility of developing tasks and methods aimed at reducing students' boredom and increasing students' learning levels, it is clear that strategies to cope with situational (i.e., environmental main effects) and dispositional (i.e., person main effects) boredom in students' learning environment have a critical role.

According to Holahan et al. (1996), two dimensions underlie various coping strategies: The first deals with the orientation of a person and his/her activity in response to the stressor. Individuals who adopt approach strategies try to address the problem directly, whereas those who adopt avoidance-oriented strategies focus on withdrawal from an aversive situation. In the second dimension, coping strategies are also assumed to contain changes in cognition about altering one's views in response to the situation, or changes in observable behaviors intended at modifying one's environment.

Combining these two dimensions, four types of coping responses were defined: cognitive approach, behavioral approach, cognitive avoidance, and behavioral avoidance. Cognitive approach coping includes strategies for rational analysis and positive reappraisal. These strategies involve directing attention to an aspect of the situation at a given time, reflecting on alternative actions and possible outcomes using past experiences, and accepting the reality of the situation by restructuring it to find something useful in it. Behavioral approach coping includes strategies to seek support and guidance, and to focus on action to directly resolve the situation or its consequences. The behavioral approach strategy is used when the student asks the teacher to add variety to lesson or discuss on more interesting topic with class (Nett et al., 2010, 2011). Cognitive avoidance coping includes strategies to distort or deny the seriousness of a situation or its consequences, or to insulate oneself by engaging in thoughts irrelevant to the situation, such as daydreaming, sleeping, switching off and mind-wandering. Behavioral avoidance coping includes strategies involve distracting oneself from the situation by engaging in behaviors unrelated to the situation (Moos & Halohan, 2003, p.1391). The rhythmic finger/foot tapping, talking to a classmate, doodling or scribbling over a paper, playing a game on the phone, leaving the classroom for a short time can be given as examples of these strategies (D'Mello & Graesser, 2009; Mann & Robinson, 2009; Nett et al., 2010).

Self-regulated learning research shows that students face two critical challenges for optimizing their learning process: (1) to regulate motivation and emotions, (2) to minimize intrinsic and extrinsic distractions (Panadero, 2017). Therefore, successful strategies should not only serve to cope with intrinsic and extrinsic distractions that cause boredom, but also facilitate effective learning by increasing student motivation.

So far, two different scales that measure coping with boredom have been developed. Hamilton et al. (1984) developed the Boredom Coping Scale which, according to Vodanovich (2003), the scale is not based on a

comprehensive theoretical ground, and to Vodanovich and Watt (2016), the scale measures the probability of feeling bored, not the strategies for coping with boredom. A decade ago, Nett et al. (2010) developed a scale (i.e., Boredom Coping Scale) that measured strategies to cope with classroom boredom for 5-10th grade students by adapting as Holahan's classificatory framework for strategies used to cope with stress (Halohan et al., 1996). However, when we examined the items of the BCS, we saw that it was insufficient to explain the strategies of university students to cope with boredom in a class (for a number of different coping strategies undergraduate students use, see Demirkasimoglu, 2017; Mann & Robinson, 2009; Sharp et al.,2017; Şimsek et al., 2019). Therefore, we aimed to develop a scale to comprehensively evaluate students' strategies for coping with boredom in a class. In this way, we thought that it can contribute to the development of successful strategies to cope with boredom in class and will guide similar studies.

Method

Scale Development Process

Before starting to develop the scale, the relevant theoretical literature reviewed and student opinions were taken. Through Google forms, undergraduate students (N=367) were asked what they did when they were bored in class and whether they made any effort to focus on the lecture. Considering Halohan et al.'s (1996) classificatory frameworks for strategies used to cope with stress (cognitive approach, cognitive avoidance, behavioral approach, and behavioral avoidance) the first author developed 81 items. Then, seven experts in the field were asked to evaluate 81 items for content validity. 50 items that reached at least 80% consensus took place in the draft of the scale.

Draft Coping Strategies with Boredom in Class Scale (CBCS) items were initially piloted with undergraduate students (N=24), who were asked to whether there is a problem in the clarity and readability of each item, to suggest revisions. Then, these items revised by the first author. Respondents are asked to answer each of these 50 items on a 5-point Likert-type scale from "1" (never) to "5" (always).

Participants

The entire sample consisted of 1561 students, with more female (N = 967; 61.95%) than male participants (N = 594; 38.05%). The participants' age ranged from 18–36 years (M = 20.49, SD = 2.93). The majority of participants were undergraduate students (1525, 97.7%) from various faculties (dentistry, education, arts and sciences, engineering, theology, medicine, economics, health sciences, etc.), 36 participants (2.3%) were graduate students from various institutes (health science, social sciences, education sciences, and science and technology). Among the undergraduate students, 355 (23%) were 1st year, 394 (27%) 2nd year, 386 (25%) 3rd year, 340 (22%) 4th year, 50 (3%) 5th year. All data were collected in the 2018–2019 spring semester and 2019–2020 fall semester.

Analytical Procedure

In the scale validation literature, there is a consensus to conduct an exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) on the same set of items, but with different samples (e.g., DeVellis, 2016, p.140; Worthington & Whittaker, 2006). From the study's larger data set (N=1005), two independent data sets were

randomly generated, without replacement, to ascertain and then confirm the factor structure of the Coping Strategies with Boredom in Class Scale (CBCS) with independent samples. The first data set (N=636) was used for an EFA, and the second data set (N=355) was used to cross-validate factor structure via a CFA.

Data for EFA and CFA were collected using paper forms. The first author requested permission to administer the forms during the hours of instruction of the faculty members of Marmara University, mainly the Faculty of Education and Theology. During the data collection process, in classrooms/lecture theater, the first author had read the Informed Consent Form, which included simple explanations about the purpose of the research, data analysis method, confidentiality and volunteering statements to participate in this study, and she collected data on students who agreed to participate. Finally, convergent validity was tested on 179 students by using the Boredom Proneness Scale Short-Form and the Coping Response Inventory.

SPSS 21 software was used for item analysis and EFA. Monte Carlo PCA (v.2.3) was used for Horn's parallel analysis. SPSS Amos 20 was used for CFA.

Measures

The following self-report measures were administered to measure the convergent validity of CBCS.

Boredom Proneness Scale Short-Form (BPS-SF). BPS, a 28-item self-report measure, developed by Farmer and Sundberg (1986), was revised by Struk et al. (2016) and was abbreviated as 8 items. The measure utilizes a seven-point Likert scale response format ranging from "1" (strongly disagree) to "7" (strongly agree) with a neutral midpoint (4). Koç et al. (2018) translated and validated BPS-SF in Turkish. The Cronbach alpha internal consistency coefficient of the scale was .77 in this study.

Coping Response Inventory (CRI –Adult). CRI, a 48-item self-report measure, developed by Moos (1993). These responses are measured by eight 6-item subscales using a four point Likert scale format ranging from "1" (not at all) to "4" (fairly often). The Logical Analysis, Positive Reappraisal, Seeking Guidance and Support, and Problem Solving Subscales measure approach coping. The Cognitive Avoidance, Acceptance or Resignation, Seeking Alternative Rewards, and Emotional Discharge Subscales measure avoidance coping. The cognitive method is measured by the first two subscales in each set and the behavioral method by the last two subscales. Ballı and Kılıç (2016) translated and validated the CRI's approach coping subscales in Turkish. The measure utilizes a five-point Likert scale response format ranging from "1" (not at all) to "5" (always). In this study, Cronbach's alpha for the Logical Analysis, Positive Reappraisal, Seeking Guidance and Support, and Problem Solving subscales were good (.76, .79, .74 and .73 respectively). Cronbach's alpha for the overall scale was. 88. To assessment criterion validity of Coping Strategies with Boredom in Class Scale, the Logical Analysis, Positive Reappraisal and Problem Solving Subscales were used in this study.

Results

Firstly, Exploratory Factor Analysis (EFA) and then Confirmatory Factor Analysis (CFA) were performed to test the construct validity of the Coping Strategies with Boredom in Class Scale (CBCS). Kaiser-Meyer-Olkin (KMO) and Bartlett tests were conducted to determine whether the data are suitable in terms of factorability. KMO values

were meritorious (.90 and .88) for both exploratory factor analyses. Barlett test values were $X^2(1225)= 10336.66$ and $X^2(300)= 4853.04$ ($ps<.001$). These values show that the data are good in terms of factorability.

Principal Component Analysis (PCA) is preferred because it has considerable utility in reducing a large number of variables down to a few factors. Eigen cutoff value (1.00), scree plot and Horn's parallel analysis were used to determine the number of factors. Then the next step was the rotation of factors that increase the interpretability of a solution. Since the factors are correlated with each other, Promax was preferred because it is convenient and fast among oblique rotation types (Tabachnick & Fidell, 2014).

The PCA started with 50 items. In the first analysis, the rotation was not performed and the initial solution consisted of 11 components. Therefore, it is also necessary to evaluate the factor loading matrix. The factor loading matrix is a matrix of correlations between factors and variables (Tabachnick & Fidell, 2014). 29 items that were found to be highly correlated with each factor or low correlated with each factor were excluded from the solution. PCA was repeated by adding the excluded items to the final solution one by one. 25 items out of 50 were included in the final solution.

Table 1

Total Amount of Variance Explained

Factors	Initial Eigenvalues			Total Factor Loads		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	5.158	20.630	20.630	5.158	20.630	20.630
2	4.090	16.362	36.992	4.090	16.362	36.992
3	1.697	6.787	43.779	1.697	6.787	43.779
4	1.512	6.046	49.825	1.512	6.046	49.825
5	.985	3.940	53.766			
…	…	…	…			
25	.353	1.410	100.000			

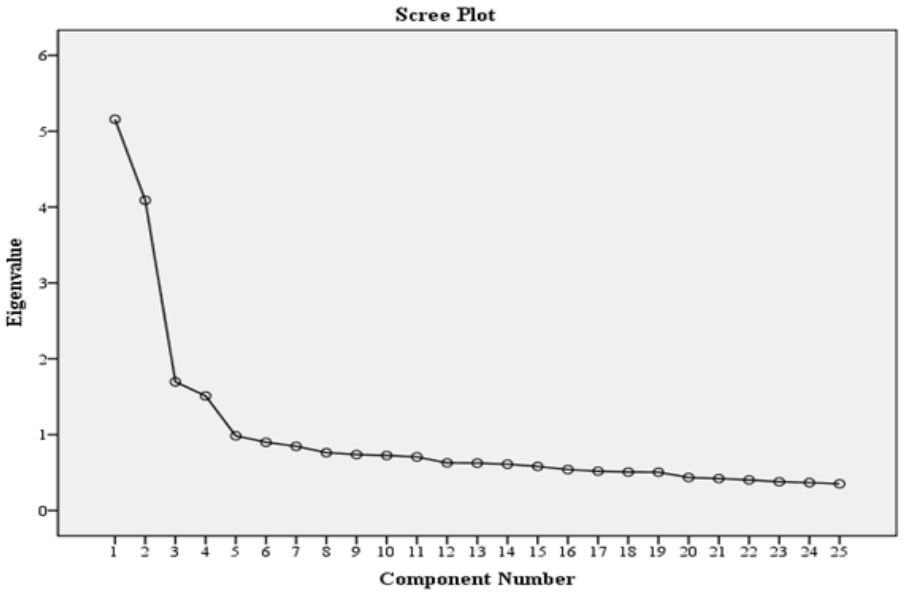

Figure 1. Scree Plot for the EFA

As shown in Table 1, the four-factor solution with 25 items explained 49.83% of the total variance. The scree plot was examined and it was seen that the trend turned horizontal after the fourth factor. The retention criterion in Horn's parallel analysis that "retain those first components with unadjusted eigenvalues greater than the corresponding mean eigenvalue of random data" (Dinno, 2014). Considering these criteria, we decided to the four-factor solution.

Table 2

Factor Correlation Matrix

Factors	1	2	3	4
1		-.21	.02	.04
2			.36	.17
3				.29

According to Tabachnick and Fidell (2014), if the correlations exceed 0.32 in the factor correlation matrix, then there is at least 10% overlap in the variance among the factors. This indicates enough variance for oblique rotation. The first factor was negatively and weakly correlated to the second factor, whereas it was not correlated to the other factors. The second factor was positively and moderately correlated to the third factor and weakly correlated to the fourth factor. The third factor was positively weakly correlated to the fourth factor.

As shown in Table 3, the load values of 25 items varied between .52 and .76. The variance of factor loadings rotated with the Promax made a high loading higher and lower loadings lower for each factor (Tabachnick & Fidell, 2014). Thus, each factor has variables (i.e. items) that are highly correlated with each other and weakly correlated

with the rest. The factors were named Cognitive Approach, Behavioral Avoidance Based on Simple Stimuli, Cognitive Avoidance and Behavioral Avoidance Based on Activating Stimuli, respectively.

After the EFA, the 25-item analysis was conducted to validate our expected four-factor solution using maximum likelihood estimation procedures. The KMO value of the sample consisting of 355 students was examined first and it was found that the distribution was normal (KMO=.90). The CFA model was an adequate fit, $\chi 2/df$ ratio = 2.22, p = .000, Comparative Fit Index (CFI) = .94, goodness-of-fit index (GFI) = .93, Tucker-Lewis Index (TLI) =.90, root mean squared error of approximation (RMSEA) = .05 (see Figure 2 for the measurement model). Tabachnick and Fidell (2014) recommended the value of $\chi 2/df$ in ranges of 1 to 2 or 1 to 3 as an indicator of a good fit. RMSEA value indicated a good fit. CFI, GFI, TLI values were close to the cutoff value (.95) suggested by Hu and Bentler (1999). The results indicated that the model was within the acceptable fit indices.

All standardized factor loadings (.45 –.77) were statistically significant (ps<.001). All variables significantly loaded onto the same factor in the CFA as they had in the EFA, which provides psychometric support for the CBCS and its factor structure (Figure 2), that particularly because the factor structure determined via EFA was replicated with an independent sample via CFA (DeVellis, 2016; Worthington & Whittaker, 2006). The pattern of association among factors in the CFA was similar to the pattern of association in the EFA (see Table 2, Figure 2). Cognitive approach (CAP) was moderately and negatively correlated to behavioral approach based on simple stimuli (BA.SS) and not correlated to cognitive avoidance (CAV). However, the pattern of association between Cognitive Approach and Behavioral Avoidance-AS was slightly different to EFA. When CAP was not correlated to behavioral approach based on activating stimuli (BA.AS) in EFA, weakly and negatively correlated to BA.AS in CFA. Avoidance dimensions (CAV, BA.SS, BA.AS) are highly positively correlated.

Figure 1

The Measurement Model

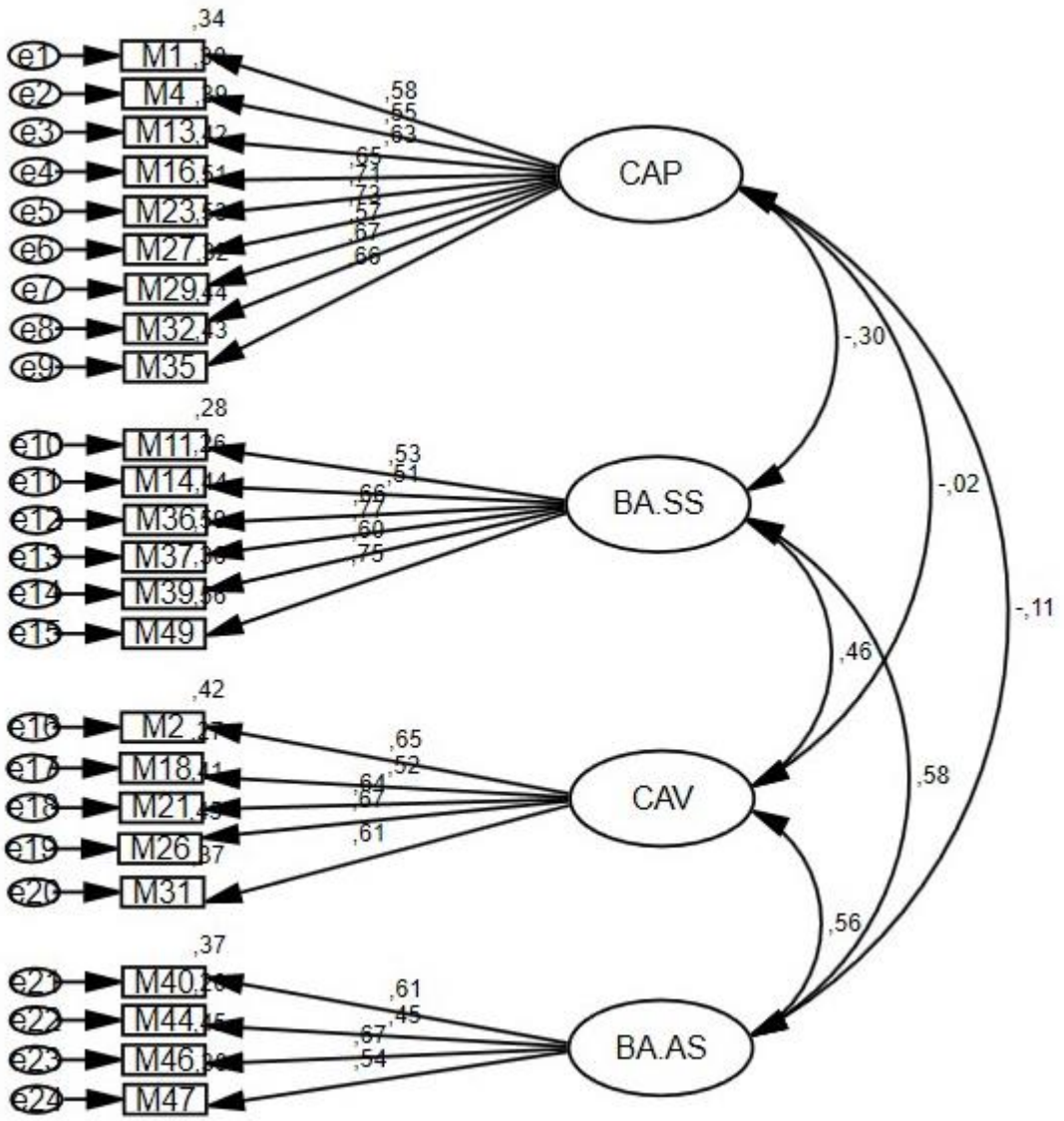

Table 3

Factor Loadings for the Items of the CBCS

Items (When I am bored in class…)	Factors			
	1	2	3	4
I try to focus on the lecture, thinking that the knowledge I will learn in the lecture is important in my professional life.	.56			
I try to focus on the lecture, reminding myself that GPA is important.	.66			
I try to focus on the lecture by thinking about the effort I spent in coming to the class.	.66			
I attempt to pay attention to the lecture by taking notes.	.67			
I concentrate my attention on the lecture, thinking about my future.	.68			
I concentrate my attention on the lecture thinking that listening to the lecturer will make it easier for me to understand the subject.	.66			
I try to focus on the lecture, thinking that I will get a low mark in the exam.	.76			
I focus on the lecture, thinking that the knowledge I will learn in the lecture will improve me.	.64			
I try to focus on the lecture by reminding myself that I may not be able to compensate for it later.	.67			
I try to focus on the lecture, thinking that I will fail the exam.	.68			
I chat with my classmate sitting next to me.		.53		
I sleep.		.52		
I play games on the phone.		.70		
I text on the phone.		.75		
I browse shopping sites.		.67		
I hang out on social networking sites (instagram, facebook etc.).		.75		
I dream.			.76	
I look around (the teacher, my classmates, things, etc.).			.61	
I think about my hobbies and interests.			.70	
I think about my problems.			.75	
I think about the meaning of life.			.68	
I read a book.				.70
I solve puzzles/sudoku.				.68
I read the news.				.58
I write about anything that occupies my mind.				.64

Cronbach's alpha for the Cognitive Approach, Behavioral Avoidance based on Simple Stimuli, Cognitive Avoidance, Behavioral Avoidance based on Activating Stimuli subscales were .88, .81, .81 and .70, respectively. Cronbach's alpha for the overall scale was. 86. Additionally, item total correlations and item discrimination analyses were also performed in the context of reliability. Item-total correlations ranged from .27–.59 and all items significantly correlated with the scale (p<.001). According to results of the t-test for all items, the mean of the top 27% of the participants was also significantly higher than that of the bottom 27% (p<.001). These results showed that CBCS was discriminative for individuals who had high scores and those who had low scores.

Table 4

Convergent validity of the CBCS

	Cognitive Approach	BA based on SS	Cognitive Avoidance	BA based on AS	Overall Scale (CRI-A)	Positive Reappraisal	Problem Solving	Logical Analysis	BPS-SF
Overall Scale (CBCS)	.56***	.49***	.56***	.67***	.22**	.22**	.11	.20**	.02
Cognitive Approach		-.31***	-.12	.02	.45***	.37***	.47***	.39***	-.11
BA based on SS			.39***	.55***	-.17*	-.13	-.21**	-.13	.10
Cognitive Avoidance				.44***	-.12	-.04	-.27***	-.10	.20**
BA based on AS					.04	.07	-.08	.05	-.04

Note. Coping Response Inventory-A (Only Approach Set), BA: Behavioral Avoidance, SS: Simple Stimuli, AS:Activating Stimuli, BPS-SF: Boredom Proneness Scale Short-Form. *p<0,05; **p<0,01; ***p<0,001

Discussion, Conclusion & Suggestions

The current research involved the development and evaluation of a new measure of Coping Strategies with Boredom in Class Scale (CBCS). We developed the 25-item CBCS and showed via psychometric analyses that this scale consisted of four factors and items with an adequate internal consistency. The results of the CFA indicated that a four-factor model had the acceptable fit indices, so allowing us to conclude that the CBSC had four distinct coping strategies.

We had developed a draft scale, assuming that strategies for coping with boredom consisted of cognitive approach, cognitive avoidance, behavioral approach and behavioral avoidance subscales, as in coping strategies with stress and boredom (Lazarus & Folkman, 1984; Moos, 1993; Moos & Halohan, 2003; Nett et al., 2010). However, the results of the EFA showed that the items in the draft scale to measure the behavioral approach did not emerge a factor. According to studies conducted on high school and undergraduate students, only 6% of students used behavioral approach strategies in classes (Nett et al., 2011; Şimşek et al., 2019). In a study by Tze (2011), in which Canadian and Chinese college students were compared according to their strategies to cope with boredom, Canadian students used behavioral approach strategies primarily, but behavioral approach was not used much among Chinese

students. According to Daniels et al. (2015), this may be due to Canadian students paying for their college education. In such a case, Canadian students may think that they have the right to demand from the instructors to reduce their boredom. According to Nett et al. (2010, 2011), the low use of these strategies may be due to the insensitivity of teachers/instructors to students' wishes. Teachers/instructors need to be aware that students who express their boredom have no intention of offending them and that the student is actively trying to overcome their boredom, and should support the student's efforts to participate in classes.

In addition to cognitive approach and cognitive avoidance factors, there were two other factors. Items in both factors were initially included to measure behavioral avoidance. However, they were separated from each other by EFA. We examined these items and concluded that they consisted of different types of stimuli.

With regard to stimulation and boredom in the behavioral sense, Fromm (1973) mentions two types of stimuli: simple stimulus and activating stimulus. Fromm states that simple stimuli are simple and immediate, arising from neurophysiological organization of a person and a reacting person does not go beyond the minimum-required activity. When responding to these stimuli, a person is almost automatic, reacting without thinking too much. Simple stimuli induce immediate and passive responses. Simple stimuli lose their effect if they are repeated beyond a certain threshold. To become a stimulant again, their intensity must be increased or their content must be changed. According to him, “the person who is in constant need of ever changing, "flat" stimuli is chronically bored”, but s/he is not aware of her/his boredom as long as s/he compensates for it (Fromm, 1973). Behavioral avoidance based on simple stimuli items include playing or texting on the phone, talking to a classmate, browsing shopping and social media sites.

Activating stimuli stimulates a person to be active. “Such an activating stimulus could be a novel, a poem, an idea, a landscape, music, or a loved person.” None of these stimuli produce a simple reaction, but rather encourage the person to respond by actively and sympathetically relating oneself to them. A “live” person encountering the “same” activating stimulus always sees a different side of the stimulus that s/he does not see by becoming more awake and more aware. This stimulus makes her/him active and productive. Unlike the simple one-way relationship between the simple stimulus and the person, there is a mutual relationship between the activating stimulus and the person. According to him, “the person who is capable of responding productively to activating stimuli is virtually never bored. But they are the exception in cybernetic society.” (Fromm, 1973, p.243). Behavioral avoidance based on activating stimuli items include reading books, solving sudoku/puzzles, and writing about any subject that occupies one’s mind.

Kökçam (2019) found that there was a positive correlation between the level of attendance in class and the frequency of using cognitive approach strategies. The use of cognitive approach strategies enables students to focus on lectures. These strategies increase a class' subjective value level for a student (Green-Demers et al., 1998; Pekrun et al., 2010). It can be stated that the subjective value toward a class affects a student's achievement and subjective control over learning positively. As a result, the student experiences less boredom in a class and the level of attendance increases (Pekrun et al., 2010). Nett et al. stated that cognitive approach strategies can also be effective in

preventing boredom. These strategies may make students less bored. As proof of this, they showed use of these strategies by students whether or not they experienced boredom (Nett et al., 2011).

In Nett et al.'s study (2011), students used cognitive avoidance strategies to some degree in 36% of a class time. Cognitive avoidance was negatively correlated to the Problem Solving subscale of the CRI and positively correlated to the boredom proneness. This study's results showed that as students' use of problem solving strategies decreases, the use of cognitive avoidance strategies in coping with boredom increases. As the tendency toward boredom increases, the use of cognitive avoidance strategies increases. Considering that boredom is a negative academic emotion that pacifies an individual (Pekrun & Linnenbrink-Garcia, 2012), it is quite reasonable for people with a high tendency toward boredom to use cognitive avoidance strategies frequently.

Nett et al. (2011) reported that students used behavioral avoidance strategies to some degree in 46% of a class time. Many studies have revealed that behavioral avoidance strategies are frequently used in classes (Mann & Robinson, 2009; Pekrun et al., 2010; Şimşek et al., 2019). Boredom was positively associated with the use of these strategies (Nett et al., 2011). In this study, behavioral avoidance based on simple stimuli (BA-SS) was negatively correlated with problem solving, but not correlated with boredom proneness.

Behavioral and cognitive avoidance strategies were highly correlated. Although it is difficult to separate these strategies from each other, the distinction between the two was made by examining at the dominant aspect (i.e. behavioral or cognitive). According to the researchers, while most cognitive avoidance strategies do not recognize by teacher or not interrupt a class, behavioral avoidance strategies are more behaviorally dominant and more likely to interrupt a class. Avoidance strategies are the least effective in coping with academic boredom (Nett et al., 2010). Kökçam (2019) found that students who had reported higher frequency of truancy used avoidance type strategies more frequently. According to the researchers, there are differences in the source of boredom between those who primarily use cognitive approach coping and those who primarily other coping strategies. While students who primarily use cognitive approach strategies think that they are bored, students who use other strategies primarily think that the teacher, lesson, etc. are boring (i.e., locus of boredom). This can be summarized by a quote by Charles-Joseph Lamoral, 7th Prince de Ligne: "I am not bored, but others bore me." (Fenichel, 1951; Nett et al., 2010). Thus, the former try finding new things in the current situation by changing their perspective, while the latter expect the environment to change, offer something new to them, and give over to the passive nature of boredom. Nett et al. (2010) suggest supporting students to take responsibility by offering psychoeducational programs on their causal attributions, such as attributional retraining (e.g., Haynes et al., 2010).

Behavioral avoidance-AS (BA-AS) are based on activating stimuli, but also include avoidance strategies. While BA-AS were not correlated with cognitive approach strategies, were highly positively correlated with cognitive avoidance and behavioral avoidance-SS (BA-SS). Although cognitive approach strategies (CAP) were negatively and moderately correlated to BA-SS, CAP were not correlated (in EFA and convergent validity study) or to weakly and negatively correlated (in CFA) to BA-AS, indicating that we are dealing with two different constructs. Additionally, Kökçam (2019) found statistically significant a weak positive correlation between the frequency of use of cognitive approach strategies and GPA, and a weak negative correlation with the use of avoidance strategies

including BA-AS and GPA. Further research is needed to develop a better understanding of these constructs, particularly BA-AS, their relationship with constructs measuring motivation and learning strategies in class (e.g., The Motivated Strategies for Learning Questionnaire, Garcia & Pintrich, 1996) can be examined. This may improve our understanding of the nature of the relationship between learning and coping with boredom.

Boredom is affected by a student's subjective perception of value toward the lecture. Students will be reluctant to use cognitive approach strategies when they consider that a class/lecture is not important for them. For this reason, it may be beneficial for a lecturer to clearly state the outcomes of the lecture to students. Students can be encouraged to explore the possible benefits of a lecture/class. But also, student readiness and capacity (i.e., person-situation fit) need to be considered for an optimal learning experience.

Our research is subject to a number of limitations that suggest avenues for further investigation. First, how often the students were bored in classes and the frequency of the strategies they used were as far as the students remembered. The volatile nature of emotions, the co-occurrence of different emotions can make it difficult for a person to remember what emotion s/he was experiencing at the time. To minimize these factors, the experience sampling method can be used in future studies (Larson & Csikszentmihalyi, 2014).

Second, boredom occurs not only in the classroom but also in other academic activities (e.g., while doing homework, studying). Future research could further validate the CBCS by examining coping boredom relates to other academic contexts and situations. Additionally, coping profiles can be determined to identify effective and counterproductive patterns of coping strategies (see Daniels et al., 2015; Eren, 2013; Nett et al., 2010; Tze et al., 2013), examined in terms of their frequency of occurrence of boredom, academic achievement, locus of boredom (e.g., classroom environments, teaching strategies), motivational dispositions (see Atkinson, 1957, 1964; McClelland, 1961/2016) and intrinsic motivation levels (see Vallerand, 2000). Since effective patterns of coping strategies minimize the negative outcomes associated with boredom, researchers' further studies of boredom experience, boredom-coping, and other academic concepts will make it easier for practitioners to design and implement programs aimed at reducing boredom.

Ethic

The present study was conducted in accordance with the Declaration of Helsinki.

Author Contributions

This paper was derived from the first author's master thesis. The second author is the thesis advisor.

Conflict of Interest

The authors declare that this research was conducted in the absence of any commercial or financial relationships that could be interpreted as a potential conflict of interest.

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Appendix

Coping Strategies with Boredom in Class (Turkish Form)

No	Açıklama: Bu formda derste can sıkıntısı yaşadığınız zamanlarda nasıl tepki verdiğinizi belirlemeye yönelik ifadeler bulunmaktadır. İfadeleri okurken ne sıklıkla o ifadeye uygun hareket ettiğinizi "hiçbir zaman (1), nadiren (2), bazen (3), çoğunlukla (4) ve her zaman (5)" seçeneklerinden birini seçerek optik forma kodlayınız. **Derste sıkıldığımda…**	Hiçbir zaman	Nadiren	Bazen	Çoğunlukla	Her zaman
1	Derste öğreneceğim bilgilerin meslek hayatımda önemli olduğunu düşünerek dikkatimi derse yoğunlaştırırım.	1	2	3	4	5
2	Hayal kurarım.	1	2	3	4	5
3	Not ortalamamın önemli olduğu düşüncesiyle derse odaklanmaya çalışırım.	1	2	3	4	5
4	Yanımda oturan sınıf arkadaşımla sohbet ederim.	1	2	3	4	5
5	Derse gelmek için harcadığım çabayı düşünerek dikkatimi derse yöneltirim.	1	2	3	4	5
6	Uyurum.	1	2	3	4	5
7	Not alarak derse yönelik dikkatimi arttırmaya çalışırım.	1	2	3	4	5
8	Etrafı (hocayı, sınıf arkadaşlarımı, eşyaları vs.) incelerim.	1	2	3	4	5
9	Hobilerim ve ilgi alanlarıma dair şeyler düşünürüm.	1	2	3	4	5
10	Geleceğimi düşünerek dikkatimi derse yoğunlaştırırım.	1	2	3	4	5
11	Sorunlarım hakkında düşünürüm.	1	2	3	4	5
12	Dersi dinlemenin konuyu anlamamı kolaylaştıracağını düşünerek dikkatimi derse yöneltirim.	1	2	3	4	5
13	Sınavdan düşük not alabileceğimi düşünerek derse odaklanmaya çalışırım.	1	2	3	4	5
14	Hayatın anlamı hakkında düşünürüm.	1	2	3	4	5
15	Derste öğreneceğim bilgilerin beni geliştireceğini düşünerek dikkatimi derse yoğunlaştırırım.	1	2	3	4	5
16	İşlenen konuyu daha sonra telafi edemeyebileceğimi kendime hatırlatarak derse odaklanmaya çalışırım.	1	2	3	4	5
17	Telefonda oyun oynarım.	1	2	3	4	5
18	Telefonda mesajlaşırım.	1	2	3	4	5
19	Alışveriş sitelerinde gezinirim.	1	2	3	4	5
20	Kitap okurum.	1	2	3	4	5
21	Bulmaca/sudoku çözerim.	1	2	3	4	5
22	Dersten kalabileceğimi düşünerek derse odaklanmaya çalışırım.	1	2	3	4	5
23	Haberleri okurum.	1	2	3	4	5
24	Zihnimi meşgul eden herhangi bir şey hakkında yazı yazarım.	1	2	3	4	5
25	Sosyal paylaşım sitelerinde (instagram, facebook vs.) takılırım.	1	2	3	4	5

Cognitive Approach: 1, 3,5,7,10,12,13,15,16,22

Behavioral Avoidance based on Simple Stimuli: 4,6,17,18,19,25

Cognitive Avoidance: 2,8,9,11,14

Behavioral Avoidance based on Activating Stimuli: 20,21,23,24