A Scale Development Study about School Safety

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Abstract: *The aim of this study is to develop a mixed school safety scale by reviewing the approaches in the literature. The literature review has resulted in a 44-item pool for the scale. This initial scale has been evaluated by ten faculty members of Faculty of Education in terms of content validity and language. Pilot scheme has been applied to 257 primary school teachers in Uşak provincial center. Following item analysis, 28 items with low factor load have been dismissed, leaving 16 items in the scale. The scale is a 4- point Likert scale and all items consist of positive judgement. The scale has then been reapplied to 400 teachers in Uşak provincial center, while 320 of them have been evaluated. The reliability of the scale has been provided by item analysis, Cronbach's Alpha internal validity coefficient and split half test reliability. The structural validity of the scale has been tested by exploratory and confirmatory factor analyses respectively. Following exploratory and confirmatory factor analysis, two more items have been dismissed and the scale has been finalized with 14 items. Final scale has been seen to have an acceptable level of goodness of fit value. The scale items consist of two dimensions as police model and school climate, covering the safety models present in the literature.*

Keywords: School safety,school safetyapproaches, scale development, school safety scale

I. INTRODUCTION

There are various school safety approaches developed according to social, cultural and psychological factors in the literature.These approaches could be categorized into two as police approach and school climate. *Police approach* emphasizes on fast intervention to unwanted incidents at schools with technological support. Police approach sees having digital surveillance such as cameras, security officers and strict discipline punishments as dissuading factors against violence and other discipline incidents(Dönmez and Güven, 2003).This approach relies on the assumption of possibility of ensuring school safety with security measures (Erkan, 2003).

The other category in school safety is *school climate,* which includes making the conditions at school more appealing, bringing the relationships between schools' stakeholders to its ideal level, and strengthening school-environment cooperation.There are various approaches to increasing school safety under these two categories in the literature (table 1).

Table 1: School safety approaches

Crisis management approach	Baltimore approach
Montgomery school approach	School safety approach
Safety program approach	Cleveland schools approach
PrinceGeorge approach	Counseling approach

When compared with each other, the similarities and differences between these approaches become clear.

According to *Crisis Management Approach,* human behavior depends on emotions, is cognitive, belief-dependent and complex. Potential crises at school could either have external or psychological reasons. Crisis management keeps schools ready and prepared to potential problems such as earthquake, flood, fire, violence or suicide attempt and equipped for intervention to such problems(Sandoval,1985).

Safety Program Approach argues that the most effective way to provide school safety is to build school, family and environment cooperation, which is only possible with long term collaboration and activities. This approach can be formulized as school safety= family safety+ environmental safety. School safety cannot be provided with solely school's performance and needs to be supported by social regulations too(Hernandez,1999).

*Baltimore School Safety Approach*has emerged as a safety project after 1990 in collaboration with all school administrators in the area, National Psychology Association and John Hopkins University, when violence, offenses and drug abuse has been rising in the neighborhoods around Maryland Islands of United

States. Voluntary teachers, administrators, parents, university representatives, local administration representatives and people residing in neighboring have formed a "team". This team has aimed to reduce risk factors at schools and create projects that would provide social supportto youngsters who may potentially commit crime.The team has utilized school, family and environment collaboration channels(Sanders,1996).

Cleveland School Security Approach has developed following formation of a school safety council by members from Cleveland Police Department, non-governmental organizations and school representatives after 1980. The council has planned security activities in schools as following: September; School Safety, October: Fire safety, November: Sidewalk and pedestrian safety, December: Basic house safety, January: Safety in winter, February, March-April: First aid trainings, May-June: Earthquake safety and rescue. The activities have been carried out by drills, conferences and seminars given by experts(Buckley, 1987).

Montgomery Schools Safety Approach is a development-oriented safety approach. According to this approach, there must be reading rooms at schools, and school cafeterias should be arranged by keeping students in mind. Teachers should emphasize on extracurricular activities and guidance services. Sports facilities, internet rooms and social activity areas should be kept open all the time (Buckley, 1987).

Prince George School Safety Approach aims to let students help each other.The schools that apply this approach establish student consultancy councils, where dialogue with students is maintained continuously. First intervention to any incidence where any student is exposed to violence or offense and needs urgent helpis made at school too. The objective of this approach is to plan activities that would equip students with responsibility and form a school conscience. (Ertukel,1974).

According to *Social School Approach,*spare time at schools is not scarce, resultingin both loss of energy and bored the students. A safe school targets academic success and healthy socialization of the students. What brings trust to school about safety concerns is the importance given by the school to social activities. Providing social activities in spare times and extra-school times creates a positive perception about the school (Blatchford,1998).

According to *Student Counseling Approach*, schools tend to neglect self-respect, self-adequacy, and self-esteem in favor of academic success. This approach underlines the importance of developing counseling services in order to take schools away from boring and routine atmosphere and make them more effective. It also argues that apart from school guidance services, student counseling by successful students from upper classes is possible under patronage of experienced teachers (Baginsky,2004).

As seen above, some of the school safety approaches emphasize on making schools safer and more livable, while others try to form a stronger school culture and more positive school climate. The objective of this study is to synthesize these different approaches in the literature in order to develop an overall scale.

II.   METHODOLOGY

This study is a quantitative study in survey model. Studies in survey models try to describe a present or past situation as is. Any event, individual, or object that becomes the subject of the study is defined under its own circumstances and as is (Karasar, 2013).

Working group

The population of the study consists of primary school teachers serving at Uşak provincial center. Pilot study has been conducted by 227 teachers. After re-evaluation, the scale has been distributed to 400 primary teachers in all primary schools at Uşak provincial center through their school administrators. 320 of the scales have been fully answered. 127 of the respondents were male, while 193 of them were female.

Scale Development Process

The first step of scale development has been literature review about various approaches to school safety. An item pool of 46 judgements that covers all these safety approaches has been formed. This 46-item experimental scalehas been submitted to seven Educational Sciences and three Turkish grammar experts for their opinions of necessity. The experts have shown their opinions for each item as "necessary", "partially necessary" and unnecessary" on a provided form and these forms have been evaluated in order to determine the items approved by the experts, yielding to content validity of each item. Content validity ratio has been calculated for each item by subtracting the ratio of positively answering experts to overall number of experts from 1. Two items with content validity ratio greater than 0.80 have been dismissed, yielding to the 44-item pilot scale. The 4 point Likert scale prepared following this step has consisted of positive expressionsof*"very necessary", "necessary", "not necessary but good to have"* and *"unnecessary"*. The scale items have consisted of two dimensions as "police approach" and "school climate" in order to reflect the school security approaches in the literature.

III.   FINDINGS

Reliability Studies on Scale

Test-retest, item analysis, split-half test reliability and Cronbach's Alpha internal validity analyses have been performed during scale development procedure. When Z-values of the items have been calculated, all 44 items have been seen to have values between -3 and +3. After evaluating the initial answers received from 227 teachers, 28 items with low factor load have been dismissed. Final scale has been re-applied with 16 items and has been evaluated according to the answers received from 320 teachers.

Table 2 shows the 28 items with item load factor lower than 0.60 that have been dismissed.

Table 2: Item analysis table

Pilot Application				Last Application	
Items	Items Factor Load	Items	Items Factor Load	Items	Items Factor Load
P1	,078	**P26**	,273	**P1**	,882
P2	,102	**P27**	,226	**P2**	,879
P3	,261	**SC1**	,334	**P3**	,879
P4	,297	**SC2**	,333	**P4**	,877
P5	,105	**SC3**	,236	**P5**	,882
P6	,140	**SC4**	,694	**P6**	,888
P7	,335	**SC5**	,697	**SC1**	,877
P8	,305	**SC6**	,621	**SC2**	,878
P9	,130	**SC7**	,794	**SC3**	,877
P10	,337	**SC8**	,657	**SC4**	,879
P11	,335	**SC9**	,650	**SC5**	,881
P12	,243	**SC10**	,606	**SC6**	,884
P13	,095	**SC11**	,387	**SC7**	,883
P14	,137	**SC12**	,703	**SC8**	,883
P15	,298	**SC13**	,718	**SC9**	,883
P16	,694	**SC14**	,332	**SC10**	,883
P17	,349	**SC15**	,636		
P18	,244	**SC16**	,274		
P19	,283	**SC17**	,273		
P20	,695				
P21	,629				
P22	,688				
P23	,799				
P24	,681				
P25	,219				

P: Police Approach,   SC: School Climate

The 16-item scale that has been re-applied after the dismissal of 28 items has been re-applied, and has resulted in each of the 16 items having factor loads greater than 0.80 (Table 2). Split-half test reliability has been applied to this 16-item scale, which had been answered by 320 teachers (Table 3).

Table3: Splithalf test reliability

Scale	School Climate	Police Approach
Police Approach	.529[**]	1
School Climate	1	.529[**]

[**]$p < 0.01$

Two factor average value of the scale has been calculated, yielding to a medium-level and positive significant correlation (r=.53) between the two factors. The final reliability analysis applied to the 16-item scale has been internal validity analysis. Cronbach's Alpha value for the items about police approach factor has turned out to be as high as 0.891, while the same value has been calculated as 0.869 for school climate, and 0.888 for overall (Table 4).

Table 4: Internal consistency of the scale

Scale	Cronbach Alpha
Police Approach	.891
School Climate	.869
School Safety	.888

Cronbach's Alpha values for each dimension and the overall scale have proven to be high and consistent with each other.

Validity of Scale

The extent and face validity of the school safety scale have been tested by expert opinions, while structural validity has been tested by exploratory and explanatory factor analyses. After reviewing the literature about school safety, an item pool consisting of 44 items that includes all approaches has been formed. Content validity of the scale has been provided by the opinions of five experts from Educational Sciences department and two experts from Educational Programs department, totaling in seven experts. The scale has also been reviewed by three experts from Turkish teaching department in terms of language and expression.

KMO and Barlett test results of the scale about exploratory factor analysis right before its final application are shown in Table 5.

Table 5: Exploratory factor analysis first rotation

Scale	KMO	Barlett Test
School Safety	.834	.000

It has been seen that KMO value of the scale is high and Barlett test result is significant. 6th and 10th items of the scale about the school climate has been found to have factor loads lower than 0.35 and they have been dismissed (Büyüköztürk, 2014)(Table 6).

Table 6: Exploratory factor analysis factor loads

Items	Item Factor Load
P1	,574
P2	,761
P3	,655
P4	,801
P5	,651
P6	,467
SC1	,570
SC2	,606
SC3	,677
SC4	,582
SC5	,520
SC6	,244
SC7	,360
SC8	,392
SC9	,497
SC10	,272

P: Police Approach,   SC: School Climate

Variance explanation ratio of the scale at present situation has seen to be at 53%. KMO and Barlett values of the scale after the dismissal of the two items(sc16, sc10) have been shown at Table 7.

Table 7: Exploratory factor analysis second rotation

Scale	KMO	Barlett Test
Police Approach	.821	.000
School Climate	.860	.000
School Safety	.843	.000

It has been seen that KMO values for two dimensions and the overall scale have increased, while Barlett test results have remained significant. Table 8 shows the final item factor loads.

Table 8: Second rotation factor loads

Items	Item Factor Loads
P1	,577
P2	,760
P3	,657
P4	,801
P5	,653
P6	,474
SC1	,561
SC2	,608
SC3	,681
SC4	,589
SC5	,590
SC7	,449
SC8	,473
SC9	,577

P: Police Approach,　　SC: School Climate

The remaining items have been calculated to have factor loads greater than 0.35 after the dismissal of two items. Table 9 shows that the finalized scale consists of two factors.

Table9:Exploratoryfactor analysis

Items	Factors Load of Police Approach	Factors Load of School Climate
School Climate 1	,683	
School Climate 2	,752	
School Climate 3	,813	
School Climate 4	,759	
School Climate 5	,765	
School Climate 6	,668	
School Climate 7	,654	
School Climate 8	,648	
Police 1		,734
Police 2		,849
Police 3		,766
Police 4		,870
Police 5		,795
Police 6		,688

It has been seen that police approach factor consists of 8 items and school climate factor consists of 6 items, totaling 14 items of the scale.

Confirmatory Factor Analysis

Following exploratory factor analysis, confirmatory factor analysis has also been applied to the school safety scale. The results of confirmatory factor analysis are in Figure 1.
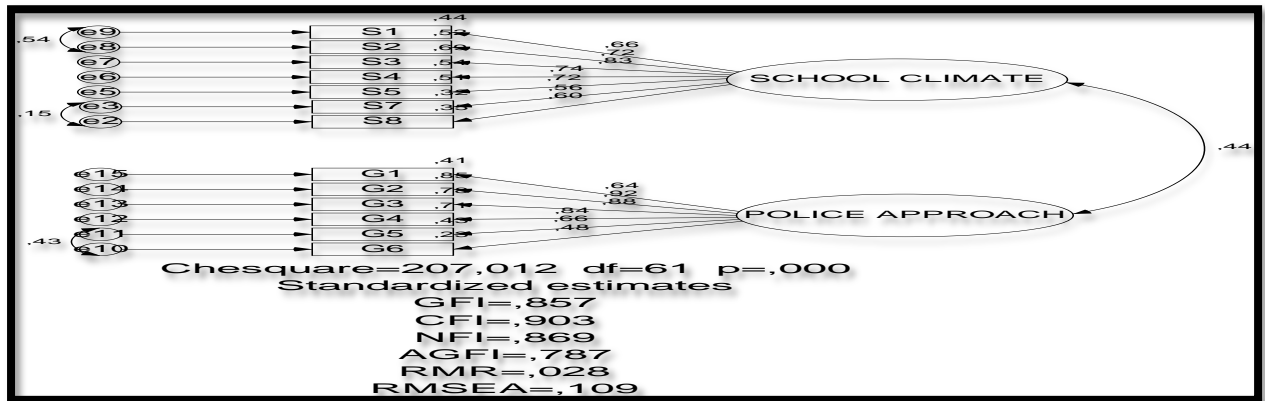
Figure 1: Confirmatory Factor Analysis

Confirmatory factor analysis of the scale has resulted that the scale has two factors and there is a positive correlation (r= .44) between the factors.Goodness of fit values of the scale have come out to be acceptable (Bentlerand Benet, 1980).

IV. RESULTS

Approaches to school safety in the literature could be classified either under school climate or police approach. This developed scale also consists of two factors, one being school climate and other being police approach. Mean value for the items in police approach has been calculated as ($\overline{X} = 3.38$:very necessary), while mean value for the items in school culture has been calculated as ($\overline{X} = 3.10$:very necessary). The teachers have emphasized on togetherness of physical safety and positive climate of the school. According to police approach, safety of a school could be ensured by good physical conditions, strength of the buildings, digital surveillance and other security related measures (Sandoval,1985), while school climate approach emphasizes on ensuring safety by providing a positive educational atmosphere and making school more fun and appealing (Blatchford,1998). According to this newly developed scale, the teachers highly agree with the idea of having physical safety as well as an appealing environment. This finding could be evaluated as confirmation of the two main approaches to school safety in the literature.Teachers emphasizing on measures like first aid, emergency evacuation, earthquake and emergency rescue drills could be related to the concerns in the society. The unique side of this newly developed scale could be evaluated as combining factors in police approach with factors in school climate approach.

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APPENDIX

SCHOOL SAFETY SCALE

	Very Necessary (4)	Necessary (3)	Not necessary but good to have (2)	Unnecessary (1)
Having emergency exit stairs and doors at school				
Having earthquake drills conducted under authorities' supervision at designated times.				
Having emergency rescue drills under authorities' supervision at designated times.				
Having first aid demonstrations by authorities at designated times.				
Providing seminars about state of emergency management to families at school.				
Providing first aid training to students and teachers.				
Arranging drawing, poster and logo competitions within school with prizes				
Arranging sports competitions within school with prizes				
Arranging traditional school trips				
Arranging school spring fests				
Arranging school movie days				
Each student having a peer coach from upper classes.				
School having traditional graduation ceremony				
Having activities about social responsibility at school				