SOCIAL BEHAVIOR AND PERSONALITY, 2017, *45*(10), 1745–1760

https://doi.org/10.2224/sbp.6798

DEVELOPING AND TESTING A SCALE TO ASSESS TEACHERS' ATTITUDES TOWARD PEER MEDIATION OF STUDENT DISPUTES

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We developed and tested a scale to assess teachers' attitudes toward the use of peer mediation to resolve disputes between students. Participants were 373 randomly selected teachers at North Cyprus elementary schools. Contextual validity was determined based on the opinions of specialists in the fields of psychology and counseling, curriculum development, positive psychology, and peer mediation, and also Turkish language specialists. The results of confirmatory and exploratory factor analysis determined the final version of the 2-dimensional 13-item Scale of Teachers' Attitudes Toward Peer Mediation. We assessed the internal consistency of the scale with Cronbach's alpha and the split-half method. Validity and reliability tests yielded satisfactory results, indicating that the scale can be used in the field of training in peer mediation.

Keywords: peer mediation, teachers' attitudes, student disputes, dispute resolution, North Cyprus elementary schools.

Peer mediation programs have been designed and implemented in schools as an alternative to traditional approaches to dispute resolution (Hart & Gunty, 1997; Turnuklu, Kacmaz, Sunbul, & Ergul, 2010). In general, students' difficult interpersonal disputes are resolved in one of two ways (Cohen, 1995; Cremin, 2007), namely, students resolve the problem by themselves (avoiding, overpowering, or negotiating with the disputant), or they report the issue to the school administration, whereby the judgment of a person outside the situation is made, and for which involvement of the School Authority Board, consisting of the school principal, vice principal, teachers' committee, and counselor, is also required. *Peer mediation* is an approach that sits between these two options,

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and using it encourages students to communicate effectively and develop their problem-solving skills (Dummer, 2010). Disputes mostly occur in the classroom environment and good modeling by teachers in *dispute resolution* is important (Kan, 2015; Singh, 1995).

Many educators have discussed the need for school-based preventive programs (Da Silva, Ventura, & Garcia, 2016; Smith, Daunic, Miller, & Robinson, 2002), such as peer mediation programs. These programs not only help students to improve their competencies and attitudes in school; they also empower students to resolve disputes constructively in their future lives (Bickmore, 2002; Johnson & Johnson, 2004; Selfridge, 2004).

In Turkey, peer mediation programs are implemented in schools as either cadre programs, which are designed and implemented for training students as mediators, or whole-school programs, which include basic conflict resolution skills (Baskan & Atalar, 2014; Kiran Esen, Kaya, Sezgin & Bakir Ayğar, 2017) and peer mediation training, as part of in-class instruction and activities (Schrumpf, Crawford, & Bodine, 1997). Everyone learns the negotiation and mediation steps and participates in role-playing negotiation and mediation sessions (Johnson, Johnson, & Dudley, 1992; Lane & McWhirter, 1992). Some researchers have argued for the whole-school in preference to the cadre program (Johnson et al., 1992; Lane & McWhirter, 1992; Opffer, 1997; Shepard, 1994). More recent researchers have also seen the whole-school programs as being more successful (Casella, 2003; Coleman & Fisher-Yoshida, 2004; Cremin, 2007; Johnson & Johnson, 2004; Selfridge, 2004; Smith et al., 2002).

The model for standards of conduct for student peer mediation was established in 1996, and revised by the Education Section of the Association for Conflict Resolution (2007), to provide information to disputing parties, and to promote confidence in peer mediation as a process for handling disputes. The standards include information on self-determination, impartiality, conflict of interest, competence, confidentiality, quality of the process, advertising and promotion, and advancement of mediation practice.

Effective peer mediation programs are implemented as tools for resolving disputes as a voluntary process with structured ground rules, and facilitated by neutral third parties. Mediators ensure confidentiality and guide the process toward a win-win solution for disputants (Cremin, 2007; Sellman, 2011; Tyrrell & Farrell, 1995). Youth empowerment, problem-solving skills in real-life settings, communication skills, empathy, effective listening skills, tolerance, anger control, and cultural competence are components of such programs.

An important issue is constructive management of the disputes, which students need to master as part of their schooling (Karatas, Tagay, & Cakar, 2016; Stevahn, Johnson, Johnson, & Schultz, 2002). Teachers play an important role in monitoring their students in this competency (Farren, 2016). Bickmore (2002)

argued for a bond between academic achievement and peer mediation, and stressed a need for more professional development of teachers in peer mediation skills. Bickmore believes that this is best handled by professionally certified teachers rather than peer mediators. Teachers and school advisors are involved in the advancement of conflict resolution education, which is part of peer mediation (Linnemeier, 2012).

Before teachers can act as mentors for their students, they must be informed about constructive skills in relation to mediation and conflict resolution, and training opportunities, such as peace, conflict resolution, and peer mediation (European Commission, 2009), which are necessary for their students' well-being. Therefore, if teacher mentors are expected to possess and display such skills in the education environment, they also need to have constructive attitudes toward the resolution of *student disputes*. This is an important issue. Teaching and learning processes in classrooms are generally hindered by student disputes and may result in burnt-out teachers (McCarthy, Lambert, O'Donnell, & Melendres, 2009). Many researchers have examined the ways that teachers have been successful in identifying children's self-discipline problems (Critchley & Sanson, 2006) and minimizing disciplinary actions (Bodine & Crawford, 1998; Critchley & Sanson, 2006; Lane & McWhirter, 1992; Stomfay-Stitz, 1994) with peer mediation programs. However, peer mediation is not only useful for disciplinary issues in the classroom. It is also beneficial for disputes in the schoolyard, hallways, or for student conflicts that do not escalate to serious disruption in the classroom (Bickmore, 2002).

Attitude has been defined as a three-dimensional structure comprising cognitive, affective, and behavioral components (Breckler & Wiggins, 1989; Dunham, Grube, Gardner, Cummings, & Pierce, 1989; Farley & Stasson, 2003; Oreg, 2006; Piderit, 2000). As the affective and behavioral components are distinct with different features (Breckler, 1984), a specific attitude can be based on one component more than the other (Uzunboylu, Hürsen, Özütürk, & Demirok, 2015). An attitude based on the affective component is affectively based, an attitude with a dominant behavioral component, which is based on an individual's own observations and behavior, is behaviorally based, and an attitude that stems from facts rather than emotions or observations of an individual's behavior is cognitively based (Lavine, Thomsen, Zanna, & Borgida, 1998; Millar & Millar, 1990). Fishbein and Ajzen (2010) have also argued that *attitudes* are a learned predisposition, whereby an individual responds to an object in either a consistently favorable or unfavorable way. Unfavorable responses can be interpreted as negative attitudes and resistance toward desired positive attitudes. Parameters that value, challenge, and support predictive attitudes (Ajzen, 1991, 2012; Ajzen & Fishbein, 1972, 1977, 2005; Fishbein, 1967; O'Keefe, 2002; Wicker, 1969) cover the theory on which the methodology of this study was

developed. Attitudes can be measured in three categories: direct, quasidirect, and indirect. We used a direct measure in this study, whereby participants' responses toward judgment of the attitude object were analyzed (O'Keefe, 2002).

Thus, the implementation, sustainability, and satisfactory outcome of successful peer mediation programs depend on the capacity and commitment of school teachers, advisers, and administrators (Bickmore, 2002). Teachers' practice and modeling of negotiation and mediation methods are important, because they use them in conflict with their colleagues, administrators, and staff. The success of peer mediation programs thus depends on teachers' philosophy of negotiation and mediation, encouraging the incorporation of negotiation and mediation principles in the classroom curriculum, developing and applying skills, resolving conflict with other adults, and referring students who are in conflict to mediation (Thompson, Lewis, & Calkins, 2008). Likewise, teachers' attitudes toward the implementation of educational programs are important in instructional effectiveness (Guskey, 1988). In this study we sought to address the needs of teachers using peer mediation and we aimed to provide a valid and reliable scale to measure teachers' attitudes toward peer mediation programs, because currently there is no such scale.

Method

Participants

The school setting is where disputes hinder teaching and learning, and teachers' attitudes are important in the handling of disputes. As there were 1,590 North Cyprus elementary school teachers, we used a population of 1,590 with a 95% confidence interval and 5% sampling error. We calculated that 310 people were sufficient for sampling (see below). Sapnas (2004) argued for a minimum sample size of between 100 and 250. Therefore, we considered that our sample size was sufficient.

$$n = \frac{N * t^2 p * q}{(N-1)d^2 + t^2 * p * q}$$

$$n = \frac{1590 * (1.96)^2 * 0.50 * 0.50}{(1589;0.05)^2 + (1.96)^2 * 0.50 * 0.50}$$

Thus, with the aim of reducing the sampling error and increasing the reliability of our results, we included 373 elementary school teachers who volunteered as participants, and calculated the sampling error as 4.5%. We calculated examples of elements that constituted the population of random sampling compliance as equal. Thus, the weight given to each element in the calculation was the same

(Arikan, 2004). The stratified random sampling method was applied to include participants from the five main districts of northern Cyprus, and to help collect data from different educational settings. The stratified random sampling method is the selection of certain subgroups, each with the same proportion as in the total number (Fraenkel & Wallen, 2006). The largest participant group was aged between 24 and 34 years (41.29%, n = 154). Participants aged between 35 and 44 years constituted 36.46% (n = 136), those aged between 45 and 56 years constituted 19.57% (n = 73), and those aged 57 years and over constituted 2.68% (n = 10) of the sample. The majority of participants (90.35%, n = 337) had no training in the related fields of peer mediation, and the remaining 9.65% (n = 36) had received some form of training in dispute/conflict resolution. The frequency of dispute occurrence in the teachers' school environment is shown in Table 1.

Table 1. *Frequency of Dispute Occurrence in the Teachers' School Environment*

	n	%
Frequently	159	42.63
Time-to-time	92	24.66
Sometimes	91	24.40
Never	31	8.31

Instrument

We developed the Scale of Teachers' Attitudes Toward Peer Mediation (STAPM) in two parts: The first part comprised participants' demographic features (including gender and age), training related to dispute/conflict resolution, and frequency of dispute occurrence in the teachers' school environment, and the second part comprised items on attitudes toward peer mediation.

Scale of Teachers' Attitudes Toward Peer Mediation

The process of constructing the STAPM began with a literature review that included the terms, principles, and standards of peer mediation, peer mediation programs in schools, dispute/conflict resolution, and peer mediation projects. In this literature review we aimed to diagnose the problem and, accordingly, develop the aim of this study. In addition, we conducted interviews with elementary school teachers, academics who were specialists in the fields of psychology and counseling, curriculum development, positive psychology, and peer mediation, and specialists in the Turkish language to collect information on attitudes toward peer mediation. We then developed the item pool. The specialists (n = 20) examined the item pool and reexamined their views on each item. Turkish language experts (n = 10) also assessed the items to ensure that participants would comprehend them. We considered their feedback on the expression of each item and reedited items as necessary.

During the scale development, we consulted the specialists to assess reliability in regard to the answers to each question. Only questions that achieved a 90% consensus among the specialists were included. The first draft version consisted of 35 items. However, seven items were removed after consultation with the specialists, resulting in 28 items.

Data Analysis and Procedure

When researchers develop an instrument, they need to determine if there is an order among participants' responses, namely, a rating ranging from *totally disagree* to *totally agree*.

We examined the normal distribution fit of the dataset with the Shapiro-Wilk test, a powerful omnibus test of normality (Gan & Koehler, 1990), and found that the normal distribution was consistent. We then conducted exploratory factor analysis (EFA) to analyze basic components and varimax rotation. The Kaiser-Meyer-Olkin measure of sampling adequacy was .94 and was accepted as significant as it was higher than .60 (Pallant, 2013). The chi-square value of Bartlett's test of sphericity was 7229.6, which was significant. Thus, the data were suitable for factor analysis.

From the EFA results, we examined the variance explained by the factors and decided that the scale had a two-factor structure greater than the eigenvalue of 1. We removed items with factor loadings below .50 from the scale and repeated the EFA. From those results, we removed six more items. The scale then consisted of 22 items with two factors explaining 54.97% of the total variance. The percentage of variance explained by each factor is shown in Table 2 and the EFA results are given in Table 3.

Factor 1 had an eigenvalue of 10.27 and accounted for 33.80% of the total variance. Factor 2 had an eigenvalue of 1.83 and accounted for 21.17% of the total variance.

Confirmatory factor analysis (CFA) is a statistical procedure used in most applied research as it provides data analysis required by the researchers (Brown, 2006). The 22-item scale determined by the EFA was tested by CFA to determine if there was a sufficient relationship among the identified factors, and if the factors were sufficient to explain the model (Özdamar, 2004). On the basis of the CFA results, we removed a further nine items and the result was the final 13-item STAPM.

The fit indices determined in the CFA result are shown in Table 4. The model fit indices were examined; χ^2/df was calculated as 2.29. Chi-square is a fit index that tests if the covariance matrix of the original variable is different from the proposed matrix. The ratio of the calculated chi-square value to the degrees of freedom is very important. In statistical calculations, a ratio below 3 indicates a perfect fit and a ratio below 5 is a moderate fit (Kline, 2011).

Table 2. *Factor Variance Results for Scale of Teachers' Attitudes Toward Peer Mediation*

Component	Initial eigenvalues			Extraction SS loadings			Rotation SS loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
Peer mediation	10.27	46.67	46.67	10.27	46.67	46.67	7.44	33.80	33.80
Disputes	1.83	8.30	54.97	1.83	8.30	54.97	4.66	21.17	54.97

Table 3. *Explanatory Factor Analysis Results for Scale of Teachers' Attitudes Toward Peer Mediation*

Item	Factor I	Factor 2
3. I trust myself in behaving equal to all parties who have disputes.	.76	
6. I believe that disputes enable students to develop different perspectives.	.75	
7. I believe that disputes create real opportunities for learning and development.	.75	
5. I care about students who are involved in disputes.	.74	
8. I am self-confident in supporting disputing students to express their feelings toward each other.	.73	
9. I think disputant students should get closer to each other.	.72	
27. I believe that peer mediation training reduces absence at school.	.70	
28. I trust myself to be neutral when resolving disputes.	.68	
11. I believe that disputes with prejudice can be solved peacefully.	.67	
2. I accept disputes to be a part of natural life.	.67	
4. I support students in solving their disputes with their peers.	.67	
10. It is important to determine from where the dispute originates.	.63	
14. I accept individual differences as richness in my school.	.60	
1. I believe that unresolved disagreements among students have a negative impact on schools and society.	.54	
22. I am concerned about the relationship and the problem in dispute resolutions.	.80	
21. I believe that disagreements can be resolved through peer mediation.	.75	
19. I do not believe that there are right or wrong parties in disputes.		.72
26. I believe that student disputes resolved by peer mediation enable teachers and administrators to engage more in teaching issues.		.71
23. I take other parties' benefits into account in the dispute resolution process.		.66
24. I do not negotiate on attitudes in dispute resolutions.		.63
25. I support peer mediation because it contributes to a resolution of disputes that students are not willing to share with their teachers and parents.		.62
20. I would like to send students to peer mediation when they are engaged in a dispute.		.49

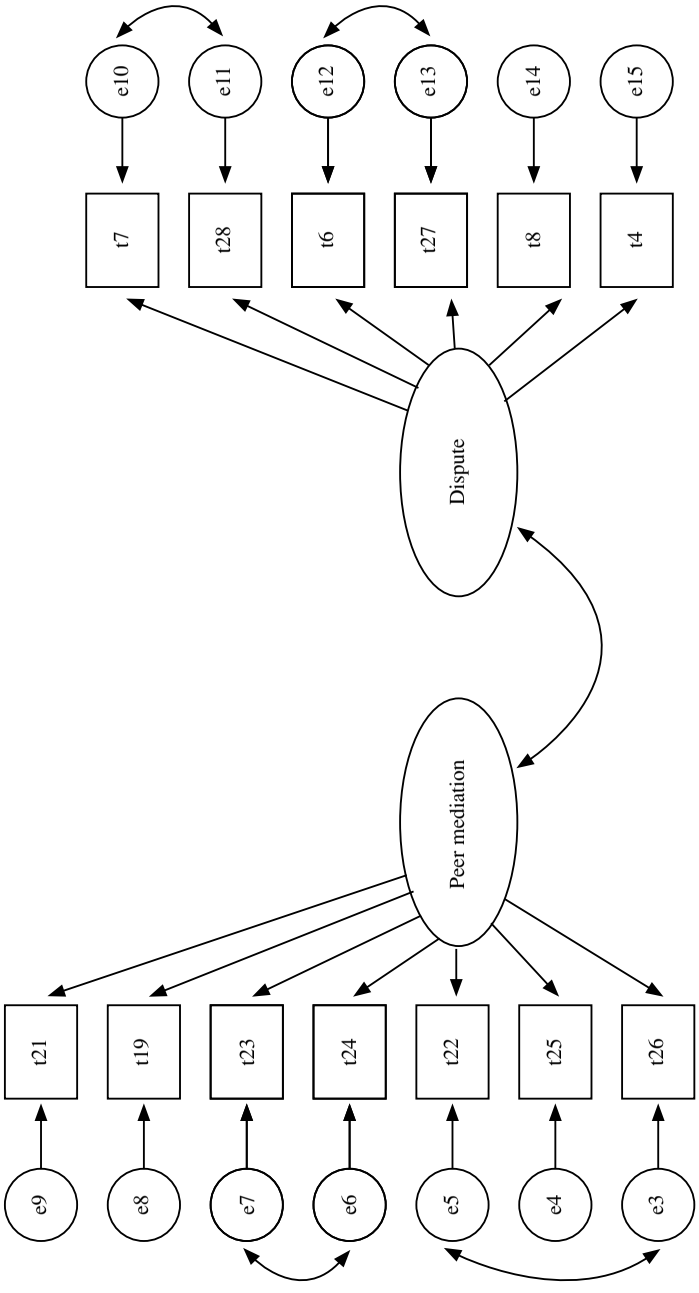

Figure 1. *The path diagram of the model.*

The root mean square error of approximation (RMSEA) is a fit index that measures how closely a model fits the population covariance matrix. A calculation between .00 and .05 indicates a perfect fit and a calculation between .05 and .08 indicates a good fit (Brown, 2006). In the CFA result, the RMSEA was .06, which is an acceptable compatibility.

The goodness-of-fit index (GFI) shows how the model measures the covariance matrix in the sample, and is accepted as explained variance (Çokluk, Şekercioğlu, & Büyüköztürk, 2010). GFI is a value between 0 and 1. A value between .95 and 1.00 indicates a perfect fit, and between .90 and .95 an acceptable fit (Namlu & Odabasi, 2007; Sumer, 2000). In the CFA result, the GFI was .95, which indicates perfect compatibility.

The normed fit index (NFI) is an evaluation of the model in a comparison of the value of χ^2 in the independence model (the model that predicts no relationship among latent variables) with the value of model χ^2. A good fit is between .90 and 1.00 (Tabachnick & Fidell, 2001). As the NFI value for our model was .96, it had a good fit.

The comparative fit index (CFI) is a comparison between the covariance matrix produced by the independence model and by the proposed structural equation model. The values for this index range from .97 to 1.00 for a good fit and from .95 to .97 for an acceptable fit (Loo, 1979; Pett, Lackey, & Sullivan, 2003; Tabachnick & Fidell, 2001; Velicer & Fava, 1987, Velicer & Jackson, 1990). We calculated the CFI value to be .98, which indicates a perfect fit.

Comparisons of the χ^2/df, NFI, GFI, and CFI fit indices obtained from the construct validity factor analysis showed that the STAPM model had a perfect fit when compared with the expected values for the relevant indices. According to this result, each factor was correctly represented in the items that formed it.

The path diagram of the model indicates that the model consists of two dimensions: peer mediation and disputes. Items 19, 21, 22, 23, 24, 25, and 26 of the scale form the peer mediation subdimensions. Items 4, 6, 7, 8, 27, and 28 form the disputes subdimensions.

Results

Validity and Reliability Analysis

The validity and reliability of the scale were tested with internal consistency tests, Cronbach's α, and the split-half method. Cronbach's α is the most efficient measure of scale reliability (Cronbach, 1951; Ozdamlı, 2009). Use of the split-half method enables researchers to calculate the correlation coefficient for the two sets of scores. Scoring is done separately for the two halves of the scale for each participant. The correlation coefficient indicates the degree to which the

two halves show the same results, indicating test internal consistency (Fraenkel & Wallen, 2006). In addition, we preformed item-total point correlation analysis. The results indicated that the Spearman Brown coefficient was .81 and the Guttman split-half coefficient was .80. As a result of the Cronbach's α test, we calculated Cronbach's α as .92 for the whole scale, .89 for the subscale for Factor 1, and .90 for the subscale for Factor 2.

The item-total correlation coefficients shown in Table 4 were between .57 and .73, and each item was statistically significant. In addition to the split-half and Cronbach's α tests, the item-total item correlation coefficients results were acceptable. Therefore, we removed no items from the scale, which was found to be reliable.

Table 4. *Values of Fit Indices for Scale of Teachers' Attitudes Toward Peer Mediation*

χ^2/df	2.29
Root mean square error of approximation	.06
Goodness-of-fit index	.95
Normed fit index	.96
Comparative fit index	.98

Table 5. *Item-Total Correlation Coefficients for the Scale of Teachers' Attitudes Toward Peer Mediation*

Item	Item-total correlation coefficients
19. I do not believe that there are right or wrong parties in dispute situations.	.68*
21. I believe that disagreements can be resolved through peer mediation.	.72*
22. I am concerned about the relationship and the problem in dispute resolutions.	.57*
23. I take other parties' benefits into account in the dispute resolution process.	.62*
24. I do not negotiate on attitudes in dispute resolutions.	.63*
25. I support peer mediation because it contributes to the resolution of disputes that students are not willing to share with their teachers and parents.	.66*
26. I believe that students' disputes resolved by peer mediation enable teachers and administrators to engage more in teaching issues.	.62*
4. I support students in resolving disputes with their peers.	.64*
6. I believe that disputes enable students to develop different perspectives.	.73*
7. I believe that disputes create real opportunities for learning and development.	.72*
8. I am self-confident in supporting disputing students to express their feelings toward each other.	.62*
27. I believe that peer mediation training reduces absence at school.	.67*
28. I trust myself to be neutral when resolving disputes.	.72*

Note. * $p < .05$.

Discussion

Because, to our knowledge, there is no scale to assess teacher attitudes toward peer mediation of student disputes, we developed a 13-item scale for this purpose.

Factor one was peer mediation, with statements such as "I trust myself in behaving equal to all parties who have disputes." This indicates impartiality, which is one of the main standards in peer mediation (Association for Conflict Resolution, 2007). The statements "I believe that disagreements can be resolved through peer mediation" and "I take other parties' benefits into account in the dispute resolution process" are supported by many findings that show that 90% to 100% of the conflicts brought to peer mediators result in agreements accepted by both parties (Bell, Coleman, Anderson, Whelan, & Wilder, 2000; Johnson & Johnson, 2001; Johnson et al., 1996; Schellenberg, Parks-Savage, & Rehfuss, 2007; Smith et al., 2002). Statements such as "I believe that students' disputes resolved by peer mediation enable teachers and administrators to engage more in teaching issues" indicate that preventive programs like peer mediation can reduce teacher stress and improve class instruction (Turnuklu et al., 2010). Statements such as "I do not negotiate on attitudes in dispute resolutions" refer to attitudes toward the origin of the disputes rather than toward resolving the dispute. It is significant that the focus should be on the need of the disputants to be able to resolve the dispute, and not on the attitudes that escalated the dispute (Schrumpf et al., 1997). These are the important standards and principles of the peer mediation approach.

Factor two was disputes and consisted of statements such as "I support students in solving their disputes with their peers." A focus on this statement strengthens relationships between students by creating a division of labor in which they assume the role of peer mediators and disputants (Sellman, 2011). Statements such as "I believe that disputes create real opportunities for learning and development" indicate the belief that taking part in peer mediation helps students to improve their problem-solving and leadership skills. A statement such as "I believe that peer mediation training reduces absence at school" indicates the belief that peer mediation reduces the rate of school dropout (Korkut, 2004). Statements such as "I am self-confident in supporting disputing students to express their feelings towards each other" and "I trust myself to be neutral when resolving disputes" indicate impartiality, which is a standard in peer mediation (Association for Conflict Resolution, 2007).

The limitation in the scale development was that participants included only elementary school teachers in North Cyprus. As our results indicated that the scale was reliable and consistent in its structure, we expect that it will provide reliable findings. Further, we expect this scale to be of value to countries where peer mediation programs have not been implemented or such programs are new.

Moreover, where there are peer mediation programs in use that lack teacher involvement, the operators of these programs can also benefit from the STAPM. We recommend that future researchers apply the scale to teachers who are employed at secondary and tertiary levels of education.

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