Validation Study of the Questionnaire on School Maladjustmet Problems (QSMP)

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The aim of this study was to analyze the exploratory and confirmatory structure, as well as other psychometric properties, of the Cuestionario de Problemas de Convivencia Escolar (CPCE; in Spanish, the Questionnaire on School Maladjustment Problems [QSMP]), using a sample of Spanish adolescents. The instrument was administered to 60 secondary education teachers (53.4% females and 46.6% males) between the ages of 28 and 54 years (M= 41.2, SD= 11.5), who evaluated a total of 857 adolescent students. The first-order exploratory factor analysis identified 7 factors, explaining a total variance of 62%. A second-order factor analysis yielded three dimensions that explain 84% of the variance. A confirmatory factor analysis was subsequently performed in order to reduce the number of factors obtained in the exploratory analysis as well as the number of items. Lastly, we present the results of reliability, internal consistency, and validity indices. These results and their implications for future research and for the practice of educational guidance and intervention are discussed in the conclusions.

Estudio de validación del Cuestionario de Problemas de Convivencia Escolar (CPCE). El objetivo de este estudio fue analizar la estructura exploratoria y confirmatoria, así como otras propiedades psicométricas, del Cuestionario de Problemas de Convivencia Escolar (CPCE), con alumnos adolescentes españoles. El instrumento fue cumplimentado por 60 profesores de Educación Secundaria (53,4% mujeres y 46,6% hombres) con una edad entre 28 y 54 años (media de 41,2 y desviación típica de 11,5), que evaluaron a 857 estudiantes adolescentes. El análisis factorial exploratorio de primer orden identificó 7 factores, que explican una varianza total del 62%. Un análisis factorial de segundo orden mostró tres dimensiones que explican el 84% de la varianza. Posteriormente, se efectuó un análisis factorial confirmatorio, con el fin de reducir el número de factores obtenidos en el análisis exploratorio, así como el número de elementos. También se presentan los resultados que muestra la fiabilidad, consistencia interna y validez de los índices. Al final, se debaten estos resultados, así como sus implicaciones para futuras investigaciones y para la práctica de la orientación educativa e intervención.

Social and school maladjustment is a phenomenon that stems from multiple causes and is a serious obstacle to a person's education: it makes the teacher's work more difficult and it predicts problems for the student (Ishee, 2004). The topic attracts a great deal of interest, since the relationship between negative school performance and antisocial behavior is well documented (Calkins & Keane, 2009; Chandramouli, Steer, Ellis, & Emond, 2009; Ferguson, 2011; Isen, 2010). Students with social problems are seen as incapable of performing their class work, which in turn leads to academic indifference (Armendariz & Umbreit, 1999; Blair, Umbreit, & Eck, 2000). Research on these types of behaviors uses such terms as aggression, violence, disruption, indiscipline, academic indifference, bullying, antisocial behavior

and inadequate classroom climate (Benítez & Justicia, 2006; Coie & Dodge, 1998; Goodnight, Bater, Newman, Dodge, & Petit, 2006; Goyette, Dore, & Dion, 2000; Muschkin & Malone, 2007).

Several categories of maladjusted behaviors that threaten school relations are included in the present study and have been described in previous work (Peralta, Sánchez, De la Fuente, & Trianes, 2007). *Bullying* is a phenomenon of unjustified interpersonal violence that a person or group inflicts on peers, and it results in victimization of the receiving party. Structurally, it is a matter of power abuse among peers. *Academic indifference* consists of not carrying out school tasks assigned by teachers, whether inside or outside the classroom. *Aggressive behavior* against teachers refers to any action that threatens the teacher's physical or mental integrity. *Disruptive behaviors* interrupt the normal flow of teaching-learning processes. *Antisocial behaviors* are defined as behaviors that threaten the physical or mental integrity of others, of others' belongings, or of institutional property (Ortega, 2010; Ramírez & Justicia, 2006).

Existing instruments measure certain aspects: (1) *classroom climate,* such as the California School Climate and Safety Survey, CSCSS (Furlong, Chung, Bates, & Morrison, 1995; Trianes,

Blanca, De la Morena, Infante, & Raya, 2006); (2) *bullying* behaviors, including the Bully/Victim Questionnaire for Students, (Olweus, 1989), the Retrospective Bullying Questionnaire, RBQ (Schäfer, Korn, Smith, Hunter, Van der Meulen, Mora-Merchán, & Singer, 2004), the Juvenile Victimization Questionnaire (Finkelhor, Hamby, Ormrod, & Turner, 2005) and the Questionnaire on Problems in School Coexistence (Ortega & Del Rey, 2003); and (3) *socialization skills,* including scales on problem behaviors, such as The Matson Evaluation of Social Skills in Youngsters, MESSY (Matson, Rotatori, & Helsel, 1983), the Youth Self-Report, YSR (Achenbach, 1991, with adaptations by Lambert, Schmitt, Samms-Vaughan, An, Fairclough, & Nutter, 2003; Solantaus, Leinonen, & Punamäki, 2004), the Informant Report, Rating Scale Measures (Merrell, 2000), and the Strengths and Difficulties Questionnaire, SDQ (Goodman, 2001; Percy, McCrystal, & Higgins, 2008).

Even so, there are few tools that encompass all types of behaviors related to school maladjustment problems (Arcelus, Munden, McLauchlin, Vickery, & Vostanis, 2000; Carter, Trainor, Owens, Sweden, & Sun, 2010; Ortega & Rey, 2003, with adaptations by Gázquez, Cangas, Padilla, Cano, & Pérez-Moreno, 2005; Young, Sabbah, Young, Reiser, & Richardson, 2010). The *Questionnaire on School Maladjustment Problems, QSMP,* has been proposed for this purpose (Peralta, Sánchez, De la Fuente, & Trianes, 2007, 2009): to meet measurement needs not addressed by other instruments that are limited to specific age ranges or to particular behaviors (Fox & Leavitt, 1995; Hamby & Finkelhor, 2000; Kilpatrick, Acierno, Saunders, Resnick, Best, & Schnurr, 2000). Existing assessment instruments emphasize different aspects of behavior, and self-reports are the most common assessment procedure (Biggs et al., 2010; Zegarra, Barrón, Marqués, Berlanga, & Pallás, 2009). However, assessment scales completed by teachers are of particular value since this group is in constant interaction with pupils and has a direct perception of their positive and negative behaviors in various academic contexts, both during class and at other times (recess periods, arrivals, departures, etc.).

The *Questionnaire on School Maladjustment Problems* (op. cit.) assesses disruptive behaviors, indiscipline, academic indifference and interpersonal violence such as bullying and antisocial behaviors, all of these defined from the point of view of the teacher. Each teacher voluntarily completed the initial 97 items for each of his or her students, with assistance available from the authors of this study.

Objectives

The general research objective was empirical validation of the internal and external validity, reliability and criterion validity of the *Questionnaire on School Maladjustment Problems* (op. cit.). The internal structure of the questionnaire was to be refined through confirmatory factor analysis, nonexistent to date. The specific objectives follow:

1. Analyze the construct validity obtained from confirmatory factor analysis, comparing it to the validity obtained from the initial exploratory factor analysis. Complement this with a criterion validity analysis through comparison with the Social Scale (Merrell, 2000).
2. Determine the reliability of the new scales obtained from the confirmatory factor analysis.

The hypotheses drawn from these objectives are as follows:

1. There will be a reduced number of factors in the new factor structure, as compared to the exploratory factor structure. Similarly, the new scales will have adequate external validity when compared to another instrument.
2. The general scale and the subscales will have adequate reliability.

Method

Participants

The sample of participating teachers was composed of 60 persons from the province of Almeria (Spain), of which 32 were women (53.4%) and 28 men (46.6%), with ages ranging from 28 (minimum) to 54 (maximum). The mean age was 41.2, and standard deviation was 11.5 years. The frequencies of teachers grouped according to years of teaching experience varied from *more than 26 years* experience (4 teachers) to *1-5 years* experience (4 teachers), with the majority of participating teachers falling into the intermediate categories of *6-10 years* (24 teachers) and *16-20 years* (10 teachers). The sample was formed randomly from the available teachers at the schools that were accessible to the research team. Participating teachers completed the assessments on an entirely voluntary basis.

The assessment was carried out on 857 students from two public secondary schools in Almeria province (Spain). Their ages ranged from twelve to seventeen years (M= 14.37; SD= 1.33), with 18.30% of students in 7th grade, 30.00% in 8th grade, 30.50% in 9th grade, and 21.12% in tenth. There was a slight majority of males, with 437 male subjects representing 51.0% of the sample, as compared to 420 females (49.0%). A chi-squared test for homogeneity of the frequency distribution was used to determine whether there were statistically significant differences between the four groups of pupils (gender $\times$ age), with negative results.

Measures

The *Questionnaire on School Maladjustment Problems, QSMP* (Peralta et al., 2007 and 2009), includes a total of 97 items in its original version, grouped into three dimensions and seven factors through an exploratory factor analysis. The items are scored on a scale from 1 (never) to 4 (always). Cronbach's alpha coefficient ranges from .98 for the total scale, for dimension 1 (antisocial behavior and bullying) and factor 1 (Aggressive, antisocial behavior and bullying, to .65 for factor 5 (antisocial: stealing and deception).

The *School Social Behavior Scales,* SSBS, (Merrell, 2000) presents three factors: 1) Interpersonal skills, with 14 items that describe important skills for establishing positive relationships and obtaining social acceptance from one's peers; 2) Self-management skills, with 10 items that refer to cooperation and acceptance of the demands, rules and expectations of school; and 3) Academic skills, with 8 items related to competent performance and involvement in academic tasks. Items are rated on a scale from 1 (never) to 5 (frequently). The instrument shows adequate psychometric properties (Crowley & Merrell, 2003).

Procedure

The *Questionnaire on School Maladjustment Problems, QSMP,* was drafted and studied in three phases. The *first phase* consisted

of examining the individual demerit slips given to students for breaking rules. Demerit slips are written by teachers and kept on file in the office of the Head of Studies during one school year. In the *second phase,* a category system was designed in order for two independent judges to classify the behaviors. The judges showed an agreement of Chi-square= 439.25 (Kendall's W= .76, significant at p<0.0001). Five categories of inadequate behaviors were produced: a) Indiscipline (16 items), b) Antisocial (38 items), c) Bullying (17 items), d) Disruptive (15 items) and d) Academic indifference (11 items). In order to improve the wording of some items, six teachers participated in a preliminary application with five students each.

In the *third phase,* the teachers evaluated the students by completing the questionnaire on an individual basis, with assistance from members of the research team. Teachers participated in this task voluntarily. The average time for applying the instrument was about 3 to 5 minutes.

Statistical analyses

In order to determine *construct validity,* factor analyses were performed: exploratory analysis of principal components with varimax rotation, and confirmatory analysis. We have used the varimax rotation after finding that the level of correlation between factors was low. *Internal consistency* was calculated using Kendall's W coefficient and *reliability* using Cronbach's Alpha coefficient.

For *criterion validity,* we analyzed the associative relationship of interdependence with Scale A, *Social Competence,* from the *School Social Behavior Scales,* SSBS (Merrell, 2000). The procedure involved dividing the subjects into three groups using cluster analysis (high, medium and low) as a function of social competence scores assessed by the teachers. Afterward, a multivariate analysis of variance was performed, using total score for social competence as the independent variable, and the five factors from the maladjustment questionnaire as dependent variables.

Statistical analysis was carried out using the Statistical Package for the Social Sciences, SPSS (1999), version 15, and the AMOS Program, version 16 (Arbuckle, 2007).

Results

Construct validity of the exploratory version

The conceptual structure of the initial version of the QSMP (op. cit., 2007, 2009) was obtained using classic exploratory factor analysis, and Principal Components analysis, varimax rotation. Bartlett's sphericity test yielded a chi-square of 85870.15 (p= 0.000), meaning that the correlations matrix was not an identity matrix, and the KMO index was 0.977, adequate for performing factor analysis.

Seven factors with a weight higher than one were obtained: these explain 62.028% of the total variance and justify 93 of 97 items. Items 10, 15, 30 and 36 were eliminated since they did not obtain saturation indices above 0.30. The first factor, QSMP _F1 "*Aggressive and antisocial behavior (Bullying)*", with a variance of 27.4%, includes 34 items related to aggressive and antisocial behaviors or bullying, for example, "threatening other classmates", "abusing a victim" or "repeatedly insulting victims". The second

factor, QSMP_F2, "*Disruptive-undisciplined behavior, academic indifference*" explains 11.4% of the variance and contains 26 items that describe behaviors related to interrupting in class, not following the rules or rejecting school work, for example, "not bringing books, notebooks or other materials to class". The third, QSMP_F3, "*Intimidating the teacher and inappropriate sexual behaviors*", explains 8.3% of the variance and comprises 18 items that describe behaviors intended to intimídate the teacher or inappropriate sexually related behaviors such as "drawing obscene pictures". The fourth factor, QSMP_F4, "*Drug use*" explains 5.9% of the variance and contains 6 items, for example, "consuming or carrying drugs". Factor number 5, QSMP_F5, "*Saying bad things about a classmate*" explains 3.4% of the variance and comprises 3 items, such as "speaking badly about classmates". Factor 6, QSMP_F6, "*Antisocial behavior, stealing and deception*", explains 3.1% of the variance and comprises 4 items; these have to do with inappropriate behaviors related to property damage (e.g. "stealing from teachers, other pupils or from the school"). Finally, factor 7, QSMP _F7, "*Being the victim of bullying*", with 2.4% of the variance, contains 2 items, for example, "being insulted by bullies".

A second order factor analysis yielded three dimensions. The first, "*Antisocial behavior and Bullying*" explains 45% of the variance and includes three first-order factors, 1, 3 and 4, with a total of 58 items. The second dimension, "*Undisciplined behavior, disruptive behavior, and academic indifference*", explains 22.7% of the variance and includes two first order factors (2 and 7); it contains 28 items. The third dimension, "*Saying bad things about others, stealing and deception*" explains 17% of the variance, includes factors 5 and 6, and is made up of 7 items.

Construct validity of the confirmatory version

In order to obtain a final version of the QSMP, confirmatory factor analysis was carried out, and confirmed the factor structure of the five large factors obtained through the interjudge analysis (*Indiscipline, Antisocial Behavior, Bullying, Disruptive Behavior* and *Academic Indifference*). The following fit indicators were studied: χ^2= 3098.72; degrees of freedom (*df*)= 424 and its associated probability (*p*)= 0.000, Root Mean Square Error of Approximation (*RMSEA*)= .086, the normed fit index (*NFI*)= .88, the non-normed fit index (*NNFI*)= .89 and the Comparative Fit Index (CFI) = .90.

Table 1
Factor structure from the second order factor analysis, principal components and Varimax rotation, of the Questionnaire on School Maladjustment Problems (QSMP) (n=857)

Dimension	Variance explained	Accumula-ted variance	Variables	Saturation	Commu-nality
QSMP _D1	44.972	44.972	Cpce_F3	.912	.876
			Cpce_F1	.907	.899
			Cpce_F4	.833	.784
QSMP _D2	22.734	67.706	Cpce_F2	.825	.870
			Cpce_F7	.535	.780
QSMP _D3	16.198	83.903	Cpce_F5	.945	.924
			Cpce_F6	.539	.740

Probability levels of the χ^2 statistic were less than 0.01, indicating inadequate fit. However, this value should be considered cautiously, because the χ^2 goodness of fit statistic is overly dependent on sample size. In order to consider other goodness of fit indicators, the NFI, NNFI and CFI indices were calculated, where values equal to or greater than 0.90 are interpreted as a good model fit. In our case the values are in this vicinity, so we may consider them adequate.

The CMIN/GL index yielded a value of 7.3. A recommended value for this index is less than 5. We should also consider Hoelter's index, which is below 200, and produced the following values: Default Model p<.05= 131; p<.01= 137; Independence model p<.05= 17; p<.01= 18.

These indices are not exactly an example of SEM best fit, but it has been recently demonstrated that the determination of cutoff values depends on model specifications, degrees of freedom, and sample size (v.gr. Chen et al., 2008). Therefore, the model can be considered defensible and valid in global terms, if we appeal to the fact that our sample size is small and data variability is limited because we are dealing with low frequency events.

The relationship between the factors from both analyses is as follows. Factor 1 from the exploratory factor analysis (*Aggressive and antisocial behavior*) corresponds to Factor 1 (*Bullying*) and Factor 5 (*Antisocial behavior or severe violence*) from the confirmatory factor analysis. Factor 2 from the exploratory factor analysis of the questionnaire (*Indiscipline and Academic Indifference*) splits into two well-differentiated factors on the confirmatory analysis: Factor 2 (*Academic Indifference*) and Factor 4 (*Disruptive and Undisciplined Behavior*). Factor 3 from the exploratory analysis (*Intimidating the teacher and inappropriate sexual behavior*) corresponds to Factor 3 in the confirmatory analysis (*Aggressive behavior against teachers*). Factors 4 (*Drug use*), 5 (*Saying bad things about others*), 6 (*Stealing and deception*) and 7 (*Being the victim of bullying*), from the exploratory factor analysis, are not integrated in any of the factors of the confirmatory analysis.

The five original categories are completely integrated in the confirmatory factor analysis. The rational category *Indiscipline* is integrated in Factor 4 (*Disruptive and Undisciplined Behavior*). The *Antisocial* category is integrated in Factor 3 (*Aggressive behavior against teachers*) and Factor 5 (*Antisocial behavior or severe violence*). The rational category *Bullying* is integrated in

Table 2 Items of QSMP (review version)		
Factor	**Original**	**Item**
F1	44	Disorder when leaving or entering the classroom
F1	02	Physical assault or attempted assault
F1	22	Threatening classmates
F1	28	Treating classmates rudely
F1	53	Provoking classmates physically
F1	59	Getting into someone else's things
F1	69	Not letting classmates participate
F1	83	Slapping a classmate upside the head, or something similar
F1	90	Directly addressing the teacher by a nickname
F1	92	Threatening, coercion or cockiness toward classmates
F2	18	Refusing to do the assignment
F2	31	Not bringing books, notebooks or other class material
F2	37	Not doing school activities
F2	43	Not taking out the material for class work
F2	82	Refusing to follow instructions (sit down, stop bothering someone, etc.) or do an assignment
F3	62	Answering back, "smart" remarks
F3	35	Derogatory remarks
F3	95	Threatening, coercion or cockiness toward the teacher
F4	13	Throwing things in class
F4	03	Repeated insults toward a certain victim
F4	11	Walking around the class for no reason
F4	07	Marking on the desks or the walls
F4	05	Defiance or lack of respect
F4	04	Disturbing or interrupting in class
F4	08	Damaging someone else's personal property
F4	81	Annoying remarks about the assignment
F4	38	Moving the furniture around
F5	40	Throwing objects out of the classroom windows
F5	70	Taking things away from a classmate
F5	79	Blackmailing or extorting money, assignments or objects

Table 3
Means, standard deviations, and F values for the groups with low (1), medium (2) and high (3) Social competence as a function of the score obtained on each of the factors (confirmatory FA) from the Questionnaire on School Maladjustment Problems

Factors	Low n= 177 M (sd)	Medium n= 554 M (sd)	High n= 126 M (sd)	Partial F (Pillai trace)	p	total F p< (Pillai trace)
F1: Bullying	1.91 (.91)	1.37 (.65)	1.15 (.44)	F (2.854)= 75.770****	1>2>3**** 2>3***	
F2: Academic indifference	2.35 (.95)	1.62 (.79)	1.20 (.47)	F(2.854)= 87.126****	1>2>3**** 2>3****	
F3: Aggressive behavior toward teachers	1.78 (.79)	1.33 (.56)	1.18 (.39)	F (2.854)= 53.649****	1>2>3**** 2>3***	F(10.1702)= 18.917****
F4: Disruptive or undisciplined behavior	2.26 (.55)	1.58 (.72)	1.24 (.55)	F (2.854)= 84.004****	1>2>3**** 2>3****	
F5: Antisocial behavior or severe violence	1.41 (.70)	1.16 (.40)	1.08 (.32)	F (2.854)= 24.062****	1>2>3****	

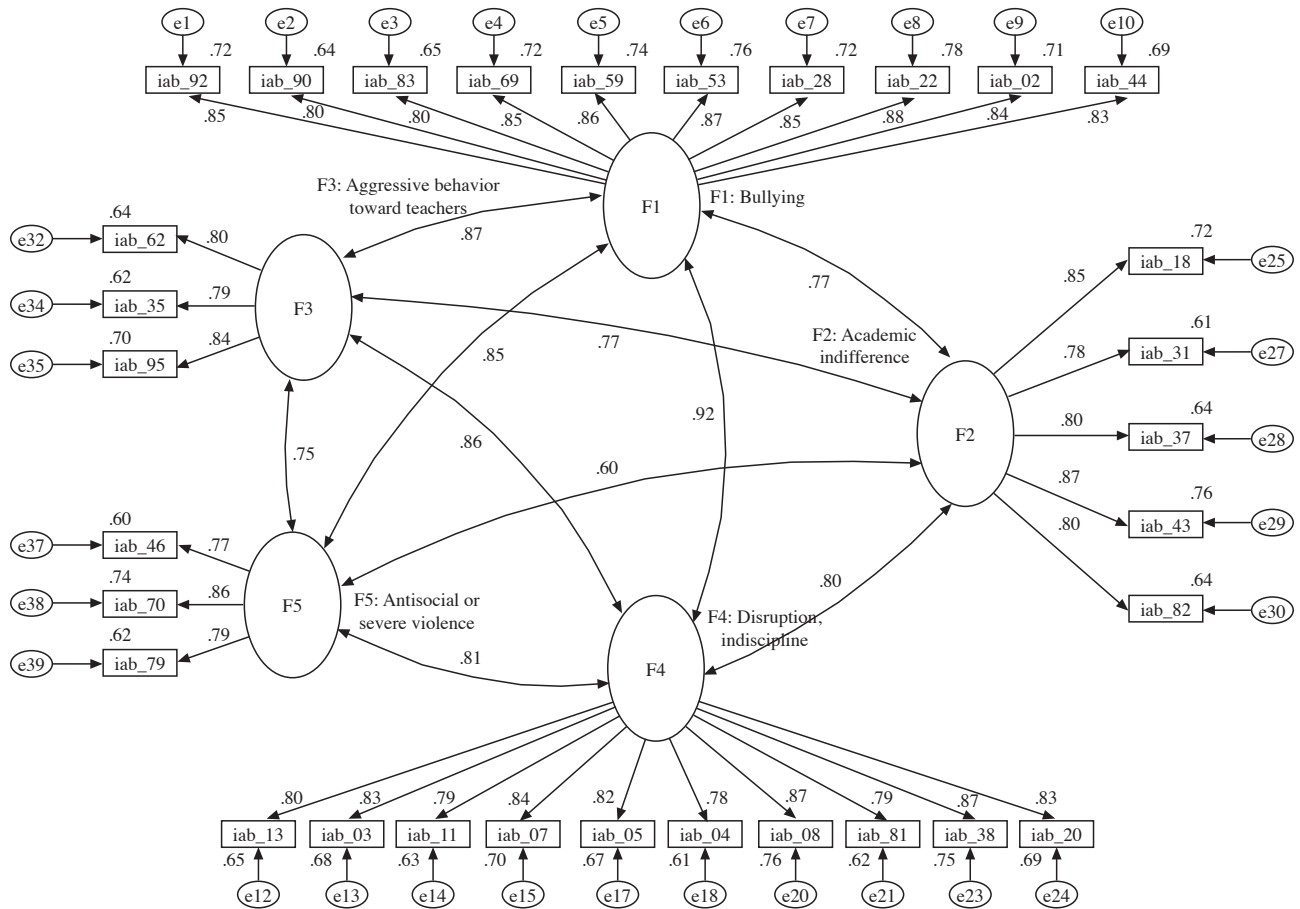* p<.05; ** p<.01; *** p<.001; **** p<.0001

Figure 1. Confirmatory structure and statistical weights from the QSMP questionnaire

Factor 1 (*Bullying*). The rational category *Disruptive* is integrated in Factor 4 (*Disruptive and Undisciplined Behavior*). Finally, the rational category *Academic Indifference* is integrated in Factor 2 (*Academic Indifference*) in the confirmatory factor analysis. See Table 2 and Figure 1.

Internal consistency and reliability of the confirmatory version

The internal consistency of the QSMP shows agreement of chi-squared= 439.251, with a Kendall W coefficient of .763, significant at p<0.0001. We further analyzed the degree of correlation between the items from each factor and the five factors, and between the items and the scale total. As for scale reliability, coefficients obtained for the entire sample (n= 857) are: Total School maladjustment problems= .97; F1: Bullying= .95; F2: Academic Indifference= .91; F3: Aggressive behavior toward teachers= .88; Disruptive or Undisciplined Behavior= .95; and F5: Antisocial behavior or severe violence= .86.

Criterion validity of the QSMP

The multivariate analysis of variance, using the overall level of social competence (high-medium-low) as independent variable, and the five factors obtained in the confirmatory factor analysis as dependent variables, showed several significant interdependence relationships. See Table 3.

Discussion and conclusions

In general, the specific objectives and hypotheses addressed in this study have been covered, considering that (1) construct validity enabled a reduction in the number of factors, and (2) acceptable reliability indices were obtained. This study has presented a questionnaire on school maladjustment problems with high social validity as an added value, being based on demerit slips recorded by teachers during one academic year at the participating schools. Since the category system is strongly rooted in the reality of teaching practice, it considers school maladjustment problems as a heterogeneous set of behaviors, all of which share the effect of making teaching more difficult and of hindering the normal flow of the teaching-learning process in the classroom.

Regarding the first objective and hypothesis, examining the instrument's psychometric properties proved its utility, the initial structure being confirmed through *confirmatory factor analysis,* even if the *exploratory analysis* modified the instrument's initial structure of three dimensions and seven factors. The *first dimension* has very high explanatory power; it assesses antisocial and aggressive behaviors, and incorporates the content of the original category of antisocial behavior. The *second dimension*, with half the explanatory power of the first dimension, addresses problems of indiscipline, indifference and academic failure, including disruptive behaviors, and also incorporates the situation of bully

victims. Three of the original instrument categories are included here: undisciplined behavior, academic indifference and disruptive behavior. The *third dimension* specifies various forms of harmful behavior. With its lower explanatory weight, it incorporates saying bad things about others, stealing and deception. Speaking badly about others, being offensive and insulting all represent markedly social, aggressive behaviors, characteristic of aggressive students with antisocial, maladjusted behavior.

Confirmatory factor analysis was a very powerful statistical procedure for eliminating the less consistent items and factors from the questionnaire, producing a smaller questionnaire with 31 items. The seven factors obtained from the exploratory factor analysis were reduced to five very consistent factors.

The construct validity of the QSMP differs somewhat from that obtained by the exploratory factor analysis, but it resembles the *a priori* rational analysis and has the same number of factors (5). Construct validity confirms that the internal questionnaire structure changes somewhat from that of the original QSMP questionnaire (op. cit., 2007) and generally concurs with the rational categories drawn up *a priori*. Malecki and Elliot (2002) found that social competence in primary students is a powerful predictor of present and future school performance and vice versa, although these results vary as a function of social and cultural group.

The results have important implications for future research studies, since the resulting categories of inadequate behaviors make it possible to implement specific intervention programs with pupils, and they help to optimize teacher training in terms of the different categories of problems encountered.

Nonetheless, this study has its limitations. First, the sample included pupils only from Spain, so multi-cultural studies are needed. Further work is also needed in order to adapt the QSMP using confirmatory factor analysis to produce a student version. Self-statements and self-reports can be valuable instruments for investigating to what extent teachers and/or students perceive themselves as responsible for certain aspects of the school social climate (Justicia, Benítez, Fernández, Pichardo, Berbén, & Fernández, 2007; Orte & March, 1998; Orte, 1999). New research should also be designed to verify how well the QSMP might adapt to the age range of primary education or even to secondary education with pupils at high risk.

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