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Aggressive Behavior as a Predictor of Self-Concept: A Study with a Sample of Spanish Compulsory Secondary Education Students*

El Comportamiento Agresivo como Predictor del Autoconcepto: Estudio con una Muestra de Estudiantes Españoles de Educación Secundaria Obligatoria

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Abstract. This study analyzed the relationship between aggressive behavior and self-concept in a sample of 2,022 Spanish students (51.09% males) of Compulsory Secondary Education, ranging in age from 12 to 16 years. Aggressive behavior was assessed using the *Teenage Inventory of Social Skills* (TISS), and self-concept was assessed with the *Self-Description Questionnaire II* (SDQ-II). Logistic regression analyses showed that adolescents with aggressive behavior were more likely to perceive their relationship with their parents as negative, show little interest in verbal activities, be less sincere, and have lower self-esteem than their non-aggressive peers. Furthermore, despite models varied according to sex and grade, in most cases adolescents with high aggressive behavior also showed a higher probability of perceiving their relation with peers of the same sex in a negative way, being less interested in school domains and showing higher emotional instability than their non-aggressive counterparts. Non-expected results were obtained regarding the perceptions about interactions with peers of the opposite sex and physical appearance. Results are discussed attending to their practical implications.

Keywords: adolescence, aggressive behavior, secondary education, self-concept.

Resumen. Este estudio analizó la relación entre la conducta agresiva y el autoconcepto en una muestra de 2.022 estudiantes españoles (51,09% varones) de Educación Secundaria Obligatoria (ESO) de 12 a 16 años. La conducta agresiva fue evaluada con el *Teenage Inventory of Social Skills* (TISS) y el autoconcepto mediante el *Self-Description Questionnaire II* (SDQ-II). Los análisis de regresión logística mostraron que los adolescentes con comportamientos agresivos presentaron mayor probabilidad de percibir las relaciones con sus padres como negativas, mostrarse poco interesados por las tareas verbales, ser menos sinceros y tener una autoestima más baja. Asimismo, pese a que los modelos variaron en función del sexo y el curso, en la mayoría de los casos los estudiantes con alta conducta agresiva también presentaron una mayor probabilidad de percibir de forma negativa sus relaciones con los compañeros del mismo sexo, estar menos interesados por las materias escolares y ser emocionalmente más inestables que sus compañeros no agresivos. Se obtuvieron resultados inesperados en cuanto a las relaciones con los compañeros del sexo opuesto y a la percepción de atractivo físico. Los resultados son analizados atendiendo a sus implicaciones prácticas.

Palabras clave: adolescencia, autoconcepto, conducta agresiva, educación secundaria.

Adolescence is a developmental stage characterized by important physical, cognitive and social changes. In some cases, those changes can contribute to the emergence of externalizing problems, such as aggressive

behavior to peers (Estevez, Murgui, Musitu, & Moreno, 2008a; Verona, Javdani, & Sprague, 2011). However, changes during adolescence have not only an influence on adolescents' social behavior, but also on their way of perceiving themselves, that is, in their self-concept (Gonzalez-Pianda, Nuñez, Gonzalez-Pumariaga, & Garcia, 1997). Both variables, aggressive behavior and self-concept, are considered as key factors for personal, social and academic adjustment for adolescents (Estevez, Musitu, & Herrero, 2005; Marcus, 2007; Marsh, Craven, & McInerney, 2003;

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Pastor, Balaguer, & Garcia-Merita, 2006). Therefore, the present study attempts to increase the knowledge about the relation between aggressive behavior to peers and self-concept in Spanish students of Secondary School Education. Thus, aggressive behavior is defined as any behavior that implies using coercive methods to hurt other peers in specific situations and to satisfy perpetrator's own interests (Torregrosa et al., in press; Trianes, 2000) and self-concept is defined as one's own perception of oneself. As stated by Shavelson, Hubner and Stanton (1976), a person's perception of him/herself is formed through his/her experience and is influenced by environmental reinforcement and the feedback of significant others.

Next, some reasons that stress the importance of the study of aggressive behavior and self-concept in adolescence are mentioned. Subsequently, attention is focused on those studies that analyze the relation between the aforementioned constructs. Finally, the shortages in previous research, which motivated the present study, are pointed out.

Aggressive behavior in Compulsory Secondary Education students

Recently, not only researchers but also professionals of Psychology, Education and allied disciplines have focused on aggressive behavior in adolescence (Dodge, Coie, & Lynam, 2006). Thus, among other reasons, the special attention paid to aggressive behavior is due to its high prevalence during that developmental stage (e.g., Diaz-Aguado, Martinez-Arias, & Martin-Seoane, 2004; Ingles et al., 2008) and the negative consequences related to such behavior. In this sense, aggressive behavior in adolescence has been significantly related to: (a) low levels of physical health (Saab & Klinger, 2010) and high consumption of legal and illegal drugs (Ingles et al., 2007); (b) low levels of emotional well-being (Saab & Klinger, 2010), and high levels of perceived stress, depressive symptoms and low life satisfaction (Estevez et al., 2005; Estevez, Murgui, & Musitu, 2008; Herrero, Estevez, & Musitu, 2006); (c) deficit in social skills (Ingles, Hidalgo, Mendez, & Inderbitzen, 2003), which in turn is related to a higher probability of being rejected and withdrawn by peers, low levels of parental support and an offensive parent-adolescents communication (e.g. Estevez et al., 2005; Ingles, Delgado, Garcia-Fernandez, Ruiz-Esteban, & Diaz-Herrero, 2010); and (d) several school problems, such as, for example, low academic performance (e.g. Jimerson & Ferguson, 2007; Loveland, Lounsbury, Welsh, & Buboltz, 2007; Torregrosa et al., in press), early school dropout (e.g., Farmer et al., 2003), negative attitudes to study, and conflictive relations with teachers (Estevez et al., 2008a; Herrero et al., 2006).

Self-concept in Compulsory Secondary Education students

Self-concept is influenced by the evaluation made by significant others (Shavelson et al., 1976). As interactions with peers get special importance in adolescence (Rubin, Bukowski, & Parker, 2006), it seems undeniable that the opinion adolescents keep about themselves could be really damaged in this period of life (Harter, 2006). Furthermore, the study of self-concept has been broadly tackled from different areas of Psychology, due to its relation with individuals' behavior. Thus, it has been confirmed the influence of certain family variables (e.g. parental communication or parental implication) on students' family and academic self-concepts in adolescence (Cava, Musitu, & Murgui, 2006; Gonzalez-Pienda et al., 2002; Musitu, Estevez, & Emler, 2007). Academic and aptitudinal variables have also shown their influence on self-concept. In this line, causal attributions and academic aptitudes have an influence on adolescents' academic self-concept (Gonzalez-Pienda et al., 2002). However, self-concept is not only influenced by other variables but it also has an influence on several behaviors, such as, for example, authority rejection or school violence (Cava et al., 2006; Musitu et al., 2007) and academic performance (Gonzalez-Pienda et al., 2002). In the same sense, correlational studies support the relationship between self-concept and socio-educational variables as, for example, peers' group acceptance, and certain physical and psychological health behaviors (Garaigordobil, Cruz, & Perez, 2003; Garaigordobil, Dura, & Perez, 2005; Rodriguez, Goñi, & Ruiz de Azua, 2006).

Self-concept and aggressive behavior in adolescence

There are numerous studies focusing on the relationship between self-concept and aggressive behavior in adolescence (Dodge et al., 2006). However, measures used to assess such constructs are varied, which makes the comparison of results provided by previous empirical evidence difficult. Therefore, this paper will only review those research studies conducted with the Self-Description Questionnaire II (SDQ-II; Marsh, 1992), which is one of the most used measures to assess self-concept and has one of best psychometric properties in adolescent population (see Guerin, Marsh, & Famose, 2003, for revision). Studies that used SDQ-II highlighted the existence of a significant relationship between self-concept domains and aggressive behavior. In that sense, Marsh, Parada and Ayotte (2004) found, in a sample of 903 Canadian students of 7th and 8th grade (12-14 years old), that aggressive behavior was significant and negatively related to physical, family, academic, social and emotional self-concepts. Such results were consistent with those

informed by Hay (2000), who analyzed the scores on SDQ-II domains by sex in a sample of aggressive adolescents. Thus, this author found that those males with aggressive behaviors showed a lower self-concept in family and academic domains and also in self-esteem, while females showed low scores in the same domains as males and also did in those referred to physical, social and emotional self-concept.

There are no studies in Spain in which SDQ-II has been used to assess the relationship between aggressive behavior and self-concept domains. However, those studies in which scales comparable to SDQ-II have been used showed similar results. Specifically, using the A Form Self-concept Questionnaire, Garaigordobil et al. (2003) found that aggressive interactions were significant and negatively related with academic and family self-concepts, whereas no significant relations were found regarding social self-concept in a sample of adolescents. Such results were similar to those informed by Estevez, Martinez and Musitu (2006), who used the Self-esteem Multidimensional Scale to state that adolescents who behave aggressively with their peers showed lower scores in family and academic self-concept, and higher scores in social and emotional self-concepts, when compared with their non-aggressive counterparts.

The present study

Previous research review focused on the relationship between aggressive behavior and self-concept is extensive but shows several limitations. First, Hay (2000) assessed self-concept of adolescents who showed persistent aggressive behavior. Nevertheless, deficits showed by those adolescents in self-concept domains may be different from the ones informed by students who behave aggressively only in specific situations, as is considered in the present study. Second, results in Spanish population research are non-existent regarding aggressive adolescents' functioning in physical domain and appear inconsistent about social domain. As Dijkstra, Cillessen, Lindenberg and Veenstra (2010) point out, peer relations are influenced by sex. Thus, Dijkstra et al. (2010) found that adolescents' aggressive behavior (either physical or relational) had a negative influence on their acceptance by same sex peers. However, only physical aggressive behaviors had a negative influence on the acceptance by opposite sex peers. Such results support the idea of a differential self-perceived relation with same sex peers and opposite sex peers. Therefore, the use of self-concept assessment measures which analyze social domain in a more comprehensive way and include physical domain, seems interesting in order to provide an enlightening view of the perception that students with aggressive behavior have about themselves in such self-concept domains. Finally, none of

the previous studies in Spanish population considered sex and age or academic grade, despite results from several research studies reveal that both variables are influencing the relationship between self-concept and aggressive behavior (e.g., Hay, 2000; Marsh, Parada, Yeung, & Healey, 2001; Hoffman, 2003). The absence of studies considering such demographical variables is remarkable as previous evidence in Spanish students of Secondary Education has systematically revealed sex and age differences in aggressive behavior (e.g., Andreu, Peña, & Ramirez, 2009; Herrero et al., 2006; Ingles, Hidalgo et al., 2003; Ingles et al. 2008), and self-concept domains (e.g., Garaigordobil et al., 2005; Gomez-Vela, Verdugo, & Gonzalez-Gil, 2007; Ingles, Pastor, Torregrosa, Redondo, & Garcia-Fernandez, 2009; Pastor, Balaguer, & Garcia-Merita, 2003).

Considering previous limitations, the aim of the present study is to analyze the influence of aggressive behavior to peers in self-concept domains measured by the SDQ-II. Taking into account previous research findings, it is expected aggressive behavior to be a negative and statistically significant predictor of self-concept domains in both sexes and every academic year.

Method

Participants

Cluster random sampling was used, choosing as primary sampling units the geographical areas (center, north, south, east, and west) of the provinces of Alicante and Murcia (Spain). Secondary units were middle and high schools of each geographical area and, finally, tertiary units were the classrooms. Twenty middle and high schools from rural and urban areas, 14 public and 6 private, made up the sample. Each geographical area was represented by an average of two schools. After the schools were selected, four classrooms were randomly chosen, with approximately 120 students per school.

The initial sample consisted of 2,267 students, from which 116 (5.12%) were excluded because their answers were incomplete or their parents did not give their informed written consent for them to participate in the study, and a further 129 (5.69%) were excluded as they were foreign nationals with major gaps in their knowledge of the Spanish language. The final sample was made up of 2,022 students (1,033 boys and 989 girls) of Secondary Education, ranging in age from 12 to 16 years ($M = 13.81$; $SD = 1.35$).

Sample distribution by academic year was: 576 in 7th grade (309 males and 267 females), 505 in 8th grade (251 males and 254 females), 502 in 9th grade (260 males and 242 females) and 439 in 10th grade (213 males and 226 females). The use of Chi-square test to evaluate homogeneity of frequencies distribution

revealed non-significant differences between the eight gender per grade groups ($\chi^2_{(3, 2022)} = 3.16; p = .37$). The ethnic composition of the sample was: 88.9% Spanish, 6.34% Latin American, 3.37% European, 0.75% Asian, and 0.64% Arabic.

Measures

Teenage Inventory of Social Skills (TISS; Inderbitzen & Foster, 1992)

The TISS assesses adolescents' positive and negative behaviors in their relations with peers. TISS is made up by 40 items, which are grouped in two scales: one assessing positive behaviors that generate peers' acceptance and another assessing negative behaviors that produce peers' rejection. Attending to item content, the authors of the present study named these scales, respectively, Prosocial behavior (e.g. "I help other guys with their homework when they ask me for help", "I thank other guys when they have done something nice for me") and Aggressive behavior (e.g. "I call classmates bad names to their faces when I am angry", "I hit other guys when they make me mad", "I push guys I do not like"). Items are scored using a 6 points *Likert* scale (1 = *does not describe me at all*; 6 = *describes me totally*). The scores of the scales are got by adding the values assigned to each of the 20 items that comprise each scale. High scores show high prosocial and aggressive behaviors.

The TISS is one of the assessment measures of social skills with better psychometric properties, both, in English and Spanish-speaking population (Ingles, Mendez, Hidalgo, Rosa, & Estevez, 2003). In the present study it was only used the Aggressive behavior scale, with an internal consistency coefficient (Cronbach's alpha) of .82. Despite the initial identification of items included in the Aggressive behavior scale was not based on a psychometric analysis of its structure (Inderbitzen & Foster, 1992), its one-dimensionality was confirmed by subsequent studies using exploratory (Inderbitzen & Garbin, 1992; Pössel & Häubler, 2004) and confirmatory factor analyses (Ingles, Hidalgo et al., 2003). Construct validity of Aggressive behavior scale was also supported by significant statistical correlations with other social behavior questionnaires (assertiveness, social anxiety, sumissiveness, aggressiveness, haughtiness and social desirability), personality variables (psychoticism) and social interaction variables (parent's relations and peers' acceptance).

Self-Description Questionnaire-II (Marsh, 1992)

The SDQ-II is a self-report measure designed to assess self-concept of adolescents from 12 to 18 years.

This instrument contains 102 items distributed into 11 scales: (a) Physical abilities (PAb; 8 items): assesses skills and interest in sports and physical activities (e.g. "I'm good at things like sports, gym and dance"), (b) Physical appearance (PAp; 8 items): assesses physical attractiveness (e.g. "I'm good looking"), (c) Parent relation (PR; 8 items): assesses interactions with parents (e.g. "I get along well with my parents"), (d) Same sex relations (SSR; 10 items): analyzes interactions with peers of the same sex (e.g. "It is difficult to make friends with members of my own sex"), (e) Opposite sex relations (OSR; 8 items): assesses interactions with peers of the opposite sex (e.g. "I have lots of friends of the opposite sex"), (f) Math (M; 10 items): assesses ability, enjoyment, and interest in mathematics and reasoning (e.g. "Mathematics is one of my best subjects"), (g) Verbal (V; 10 items): analyzes ability, enjoyment, and interest in Spanish and reading (e.g. "Spanish is one of my best subjects"), (h) General school (GSch; 10 items): assesses ability, enjoyment and interest in school subjects (e.g. "I'm good at most school subjects"), (i) Honesty (H; 10 items): analyzes truthfulness and dependability (e.g. "I always tell the truth"), (j) Emotional stability (ES; 10 items): analyzes emotional well-being (e.g. "I am a calm person"), and (k) General self (GS; 10 items): assesses self-satisfaction (e.g. "Most things I do, I do well"). The items are scored in a 6-point *Likert* scale (1 = *False*; 6 = *True*).

Recently, Ingles et al. (in press) studied the reliability and validity evidence for the scores of the Spanish version of SDQ-II in a sample of Secondary Education students. The results of the study supported the 11-factor structure found by the original author (Marsh, 1992), showing the preference of the 11-factor structure instead of a hierarchical structure in which factors are grouped in higher domains (i.e. social, academic, moral). Moreover, Garcia-Fernandez et al. (2006) showed a clear pattern of relations between SDQ-II scores and the *Sydney Attribution Scale* (SAS), the *Achievement Goals Tendency Questionnaire* (AGTQ) and the *Learning and Studies Skills Inventory-High School* (LASSI-HS), providing support to the construct validity of the questionnaire. In the present study, internal consistency coefficients (alpha de Cronbach) varied between .71 (ES) and .91 (M).

Procedure

An interview was held with the headmasters and school psychologists of participating high and middle schools in order to explain them the aim of the study, describe the assessment measures, ask for needed permissions and promote their collaboration. After, a meeting with parents was also conducted to explain them the study and to ask for their written consent for their children to participate. Both questionnaires were

answered collectively and anonymously in the classrooms during the second semester of school year. Research assistants supervised each administration of the questionnaires providing help when necessary.

Statistical analyses

Logistic regression analyses using the stepwise regression procedure, based on Wald's test, were conducted to analyze and quantify the influence of the aggressive behavior on self-concept domains. Logistic modelling allows one to estimate the probability that an outcome (i.e., high self-concept) will occur in the presence of one or more predictor variables (i.e., high aggressive behavior). Such probability is estimated by means of a statistic called *odds ratio* (*OR*). In order to carry out logistic regression analysis, predictor (i.e., aggressive behavior) and criterion variables (PAb, PAp, PR, SSR, OSR, M, V, GSch, H, ES and GS) were dichotomized.

The classification of students with high and low aggressive behavior was established after checking that the scores' distribution fitted the expected theoretical distribution for TISS Aggressive Behavior scale. Thus, the sample was divided in: (a) students with low aggressive behavior: scores equal or lower than 25th centil ($n_1 = 517$; 25.6%) and (b) students with high aggressive behavior: scores equal or higher than 75th centil ($n_2 = 535$; 26.5%). Self-concept scores were dichotomized as: (a) low self concept in PAb, PAp, PR, SSR, OSR, M, V, GSch, H, ES and GS: scores equal or lower than 25th centil and (b) high self-concept in PAb, PAp, PR, SSR, OSR, M, V, GSch, H, ES and GS: scores equal or higher than 75th centil.

Results

Binary logistic regression analysis showed that aggressive behavior was not a significant predictor for some of self-concept domains. Thus, aggressive behavior was not a significant predictor for PAb considering sex and academic year. It was not a significant predictor either for SSR in 10th grade, GSch in 9th grade and ES in 9th and 10th grades. Furthermore, for PAp domain, aggressive behavior appeared as a predictive variable only for models in 8th and 10th grades, whereas for M and OSR domains aggressive behavior was only a significant predictor in females' sample.

The proportion of cases correctly classified by logistic models varied between: (a) 59.7% (GSch) and 79.5% (H) in males; (b) 56.6% (OSR) and 81.2% (H) in females; (c) 59.5% (ES) and 82.5% (H) in 7th graders; (d) 58.7% (PAp) and 80.6% (H) in 8th graders; (e) 61.5% (SSR) and 78.8% (H) in 9th graders; and (f) 61.1% (PAp) and 78.8% (H) in 10th graders.

Nagelkerke's R^2 varied between 1.7% (SSR) in males and 47.7% (H) in 7th grade.

As Table 1 shows, *odds ratio* (*OR*) obtained in males' models varied between 0.08 (H) and 0.60 (SSR). Thus, the probability of high self-concept in PR, SSR, V, GSch, H, ES and GS domains is, respectively, 0.21, 0.60, 0.28, 0.49, 0.08, 0.27 and 0.40 times more likely in students with high aggressive behavior than in those with low aggressive behavior. Therefore, boys with high aggressive behavior show less probability of reporting high self-concept in PR, SSR, V, GSch, H, ES and GS domains.

Logistic regression results in females point out in the same direction that those obtained by males, including the predictive value for two more domains: M and OSR (see Table 1). The *odd ratio* (*OR*) obtained in the models varied between 0.08 (H) and 1.90 (OSR). Thus, the probability of female students with high aggressive behavior to show high self-concept in PR, SSR, OSR, M, V, GSch, H, ES and GS domains is, respectively, 0.12, 0.58, 1.90, 0.48, 0.29, 0.36, 0.08, 0.30 and 0.30 times more likely, when compared with their low aggressive behavior counterparts. Such results show that girls with high aggressive behavior, compared to their non-aggressive peers, have less probability of reporting high self-concept scores in PR, SSR, M, V, GSch, H, ES and GS domains, whereas have higher probability of reporting high scores in OSR.

With regard to academic year, *odd ratio* (*OR*) obtained for 7th grade models varied between 0.05 (H) and 0.47 (ES) (see Table 2). Thus, the probability of 7th graders to inform high self-concept in PR, SSR, V, GSch, H, ES and GS domains is, respectively, 0.12, 0.37, 0.14, 0.29, 0.05, 0.47 and 0.27 times more likely in students with high aggressive behavior. Therefore, 7th grade students with high aggressive behavior, compared to their non-aggressive peers, show less probability of reporting high PR, SSR, V, GSch, H, ES and GS self-concept domains.

As Table 2 shows, *odd ratio* (*OR*) obtained in 8th grade models varied between 0.06 (H) and 2.05 (PAp). In attention to such results, the probability of showing high self-concept in PAp, PR, SSR, V, GSch, H, ES and GS domains for students with high aggressive behavior is, respectively, 2.05, 0.25, 0.40, 0.34, 0.47, 0.06, 0.33 and 0.36 times more likely, when compared with their low aggressive behavior counterparts. Thus, compared to their non-aggressive peers, the probability of reporting high scores in PR, SSR, V, GSch, H, ES and GS self-concept domains in 8th grade for students with high aggressive behavior is lower; however, those students with aggressive behavior are more likely to report higher scores in PAp.

In 9th grade sample (see Table 3), binary logistic regression analyses identified predictive models for PR, SSR, V, H and GS; *odd ratio* (*OR*) varied between 0.07 (H) and 0.39 (SSR). Thus, the probability of stu-

Table 1. Logistic regression analyses for the probability of high self-concept attending to sex

		<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>OR</i>	<i>C.I.</i> 95%	
Boys								
PR	High aggressive behavior	-1.55	.27	32.68	.00	0.21	0.12	0.36
	Constant	0.68	.22	9.10	.00	1.97		
SSR	High aggressive behavior	-0.51	.25	5.06	.04	0.60	0.37	-0.99
	Constant	-1.27	.27	21.39	.00	0.28	0.16	-0.48
GSch	High aggressive behavior	-0.70	.27	7.01	.01	0.49	0.29	-0.83
	Constant	-2.53	.29	73.63	.00	0.08	0.04	-0.14
H	High aggressive behavior	-0.71	.21	11.41	.00	2.03		
	Constant	-1.30	.29	2.02	.00	0.27	0.15	-0.48
ES	High aggressive behavior	1.22	.25	24.05	.00	3.38		
	Constant	-0.92	.27	11.49	.00	0.40	0.24	-0.68
Girls								
PR	High aggressive behavior	-2.10	.29	53.99	.00	0.12	0.07	-0.21
	Constant	1.02	.16	39.64	.00	2.77		
SSR	High aggressive behavior	-0.55	.27	4.20	.04	0.58	0.34	-0.98
	Constant	0.87	.17	26.47	.00	2.38		
OSR	High aggressive behavior	0.64	.25	6.55	.01	1.90	1.16	-3.10
	Constant	-0.74	.25	8.40	.00	0.48	0.29	-0.79
M	High aggressive behavior	-1.23	.26	21.89	.00	0.29	0.17	-0.49
	Constant	1.01	.16	39.93	.00	2.75		
GSch	High aggressive behavior	-1.03	.25	16.94	.00	0.36	0.22	-0.58
	Constant	-2.57	.30	73.26	.00	0.08	0.04	-0.14
H	High aggressive behavior	1.88	.20	91.66	.00	6.53		
	Constant	-1.20	.27	19.83	.00	0.30	0.18	-0.51
ES	High aggressive behavior	0.45	.14	9.90	.00	1.58		
	Constant	-1.19	.27	19.19	.00	0.30	0.18	-0.52
GS	High aggressive behavior	0.63	.16	16.17	.00	1.87		
	Constant							

Note. *B* = coefficient; *SE* = standard error; *p* = significance; *OR* = odd ratio; *C.I.* = confidence interval 95%; PR = Parents relations; SSR = Same sex relations; OSR = Opposite sex relations; M = Math; V = Verbal; GSch = General school; H = Honesty; ES = Emotional stability; GS = General self.

dents in 9th grade with high aggressive behavior to show high self-concept in PR, SSR, V, H and GS domains is, respectively, 0.11, 0.39, 0.31, 0.07 and 0.35 times more likely, when compared with their low aggressive behavior counterparts. Therefore, the probability of reporting high scores on PR, SSR, V, H and GS self-concept domains in 9th grade students with high aggressive behavior is lower than that for their low aggressive behavior peers.

Finally, for 10th graders (see Table 3), data allowed to set predictive models for six of the self-concept domains assessed by SDQ-II, *odd ratio* (*OR*) varied between 0.07 (H) and 2.43 (PAP). Attending to such results, the probability of showing high self-concept in PAP, PR, V, GSch, H and GS domains for students with high aggressive behavior is, respectively, 2.43, 0.19, 0.22, 0.28, 0.07 and 0.40 times more likely when compared with their low aggressive behavior counterparts. Therefore, 10th grade students with high aggressive behavior have high probability of reporting high self-concept in PAP domain and low probability of reporting high self-concept in PR, V, GSch, H and GS domains.

Discussion

The aim of the present study was to analyze the influence of aggressive behavior to peers on several self-concept domains using a representative sample of Compulsory Secondary School students. The hypothesis posed in the present study postulated that aggressive behavior would be a negative and significant predictor of self-concept domains. Results confirm that high scores on aggressive behavior have a negative and significant influence on high scores in the Parent relations, Verbal, Honesty and General self domains, in both boys and girls and every secondary academic year. Such results are consistent with those reported in previous research (Estevez et al., 2006; Garaigordobil et al., 2003; Hay, 2000; Mash et al., 2004), pointing out that students with aggressive behavior, compared with their peers with low aggressive behavior, have a higher probability to perceive their relationships with their parents in a negative way, show little interest in verbal tasks, be less honest and have lower self-esteem. Furthermore, despite models vary according to sex and academic grade, in most cases, students with high

Table 2. Logistic regression analyses for the probability of high self-concept attending to 7th and 8th grades

		<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>OR</i>	<i>C.I.</i> 95%	
7 th grade								
PR	High aggressive behavior	-2.12	.35	37.03	.00	0.12	0.06	-0.24
	Constant	1.29	.25	26.32	.00	3.65		
SSR	High aggressive behavior	-0.99	.31	1.14	.00	0.37	0.20	-0.68
	Constant	0.64	.23	7.46	.01	1.89		
V	High aggressive behavior	-1.98	.39	26.07	.00	0.14	0.06	-0.29
	Constant	1.87	.31	36.44	.00	6.50		
GSch	High aggressive behavior	-1.23	.33	13.36	.00	0.29	0.15	-0.57
	Constant	0.97	.23	17.09	.00	2.64		
H	High aggressive behavior	-3.08	.41	57.26	.00	0.05	0.02	-0.10
	Constant	1.60	.27	36.09	.00	4.94		
ES	High aggressive behavior	-.76	.32	5.48	.02	0.47	0.25	-0.88
	Constant	0.55	.23	5.76	.02	1.73		
GS	High aggressive behavior	-1.32	.32	16.54	.00	0.27	0.14	-0.50
	Constant	0.84	.23	12.68	.00	2.31		
8 th grade								
PAp	High aggressive behavior	0.72	.33	4.72	.03	2.05	1.07	-3.93
	Constant	-0.69	.24	8.33	.00	0.50		
PR	High aggressive behavior	-1.40	.35	16.41	.00	0.25	0.12	-0.48
	Constant	0.67	.25	7.18	.01	1.96		
SSR	High aggressive behavior	-0.90	.33	7.60	.01	0.40	0.21	-0.77
	Constant	0.78	.26	8.86	.00	2.19		
V	High aggressive behavior	-1.07	.34	9.74	.00	0.34	0.17	-0.67
	Constant	0.78	.26	8.86	.00	2.19		
GSch	High aggressive behavior	-0.75	.33	5.15	.02	0.47	0.25	-0.90
	Constant	1.24	.26	22.87	.00	3.47	0.03	-0.12
H	High aggressive behavior	-2.87	.39	53.69	.00	0.06		
	Constant	1.24	.26	22.87	.00	3.47		
ES	High aggressive behavior	-1.09	.33	1.95	.00	0.33	0.17	-0.64
	Constant	0.48	.23	4.37	.04	1.61		
GS	High aggressive behavior	-1.02	.34	8.88	.00	0.36	0.18	-0.70
	Constant							

Note. *B* = coefficient; *S.E.* = standard error; *p* = significance; *OR* = odd ratio; *C.I.* = confidence interval 95%; PAp = Physical appearance; PR = Parents relations; SSR = Same sex relations; V = Verbal; GSch = General school; H = Honesty; ES = Emotional stability; GS = General self.

aggressive behavior also showed a higher probability to perceive their same sex peer relations in a negative way, be less interested in academic tasks and be emotionally less stable than their non-aggressive counterparts. However, the maintenance of the aforementioned hypothesis was not possible for Physical abilities, Physical appearance and Opposite sex relations. In this sense, data showed that girls with high aggressive behaviors tend to perceive their relations with males in a more positive way than their non-aggressive companions. Such result is consistent with the data reported by Marsh et al. (2001), who stated that female students reporting problematic behaviors in their 13s-14s (8th grade) reported a more positive perception of their relations with opposite sex peers at 15-16 years old (10th grade). Aggressive behavior is socially considered as a masculine feature (Diaz-Aguado & Martin-Seoane, 2011; Lopez-Saez, Morales, & Lisbona, 2008), so, the positive perception that girls with aggressive behavior report about their relationship with boys may be related to gender role orientation. In fact, as Young and Sweeting (2004) state, ado-

lescent females who show male features (e.g. strength or aggressiveness) have more friends among boys. Thus, it is possible that girls who show aggressive behaviors (more related to male gender) feel a higher affinity with their male companions and perceive themselves as more accepted by boys. Despite such results do not match up with those informed by Dijkstra et al. (2010), it should be stressed that they are not necessarily inconsistent. Those authors analyzed “real” acceptance of students with aggressive behaviors by their group of peers, whereas the present study analyzes “self-perception” about students’ relations with their peers. Therefore, future research should try to confirm if the perception of aggressive girls with respect to their relations with male companions really match with a higher acceptance by boys, with the aim of identifying if intervention programs should be directed to those aggressive students’ self-concept or also to the behavior of their reference group (in that case, their male counterparts).

With respect to Physical appearance, it has been shown that adolescents with high aggressive behavior

Table 3. Logistic regression analyses for the probability of high self-concept attending to 9th and 10th grades

		<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>p</i>	<i>OR</i>	<i>C.I.</i> 95%	
9 th grade								
PR	High aggressive behavior	-2.17	.39	3.72	.00	0.11	0.05	-0.25
	Constant	0.95	.29	11.09	.00	2.59		
SSR	High aggressive behavior	-0.95	.34	7.71	.01	0.39	0.20	-0.76
	Constant	0.53	.26	4.03	.04	1.70		
V	High aggressive behavior	-1.16	.34	11.41	.00	0.31	0.16	-0.61
H	High aggressive behavior	-2.63	.39	45.01	.00	0.07	0.03	-0.15
	Constant	1.31	.27	22.97	.00	3.71		
GS	High aggressive behavior	-1.06	.37	8.01	.01	0.35	0.17	-0.72
10 th grade								
PAP	High aggressive behavior	0.89	.42	4.39	.04	2.43	1.06	-5.56
PR	High aggressive behavior	-1.64	.39	17.45	.00	0.19	0.09	-0.42
	Constant	0.62	.27	5.23	.02	1.86		
V	High aggressive behavior	-1.50	.41	13.35	.00	0.22	0.10	-0.50
	Constant	0.57	.27	4.30	.04	1.76		
GSch	High aggressive behavior	-1.25	.43	8.31	.00	0.28	0.12	-0.67
	Constant	0.93	.33	8.09	.00	2.54		
H	High aggressive behavior	-2.60	.46	31.56	.00	0.07	0.03	-0.18
	Constant	1.55	.33	21.91	.00	4.73		
GS	High aggressive behavior	-0.92	.43	4.68	.03	0.40	0.17	-0.92

Note. *B* = coefficient; *S.E.* = standard error; *p* = significance; *OR* = odd ratio; *C.I.* = confidence interval 95%; PAP = Physical appearance; PR = Parents relations; SSR = Same sex relations; V = Verbal; GSch = General school; H = Honesty; GS = General self.

in 8th and 10th grades tend to perceive themselves more positively in that domain than their low aggressive companions do. This positive perception of aggressive adolescents in physical domain is consistent with Salmivalli's (1998) results in adolescent bullies. The influence of aggressive behavior on physical attractiveness in 8th grade could be related with the onset of romantic relationships. In male adolescents' case, physical attractiveness perception is related, in several occasions, to their aggressive behaviors (Becker & Luthar, 2007), which make problematic male adolescents to be more attractive for their female counterparts (Elboj, Flecha, & Iñiguez, 2009). Thus, it is possible that adolescents with aggressive behaviors perceive themselves as more physically attractive than their non-aggressive companions. Furthermore, the influence of aggressive behavior in physical attractiveness during 10th grade could be related to Compulsory Education end. At this grade, students have to face the decision of keeping studying or reorientate their life to working world, what make academic results especially important. As results of the present study show, adolescents with aggressive behaviors have a lower perception of themselves in academic domain than their companions do, therefore, it is possible that aggressive adolescents try to improve their self-perception focusing on other domains (Taylor, Davis-Kean, & Malanchuk, 2007). As Dijkstra, Lindenberg, Verhulst, Ormel and Veenstra (2009) state, aggressive behavior is positive and significantly related to physical attrac-

tiveness, which in turn influences popularity. Thus, as school results are very important in that academic year, it is possible that students behave aggressively in order to be perceived as more attractive and reach the popularity that they think could not be got through their academic results. Future studies should look at this relationship between aggressive behavior and physical appearance according to age or academic year more in depth, contrasting the hypotheses posed here and verifying if those results found regarding academic year are the same for males and females, in order to provide more conclusive data to guide future interventions.

The present study shows some limitations that should be addressed by future research. First, the questionnaire used to assess aggressive behavior in the present study was one-dimensional and, therefore, do not consider types or dimensions that are part of such behavior (see Torregrosa, Ingles, Estevez, Musitu, & Garcia-Fernandez, 2011, for revision). Previous studies point out a differential relation between the several aggressive behavior's types (i.e. relational vs. physical) and self-esteem or emotional self-concept (e.g., Barry, Grafeman, Adler, & Pickard, 2007). That is why it would be recommended for future research to consider types of aggressive behavior in the analysis of the relations between such behaviors and self-concept dimensions. Second, in the present research there have only been used self-report measures which may cause social desirability biases. This aspect is particularly outstanding in the assessment of aggressive behavior,

as adolescents tend to minimize such behavior (e.g., Dodge et al., 2006). In that sense, it would be interesting for future studies to use different assessment procedures, such as, for example, sociometric nominations and rating scales for peers and teachers. Finally, the use of a cross-sectional design hinders the establishment of “causal” inferences about the relationship between aggressive behavior and self-concept. It would be advisable that future studies use longitudinal designs to deal with the relation among those variables, as previous studies provide non-conclusive results to that matter (Hoffman, 2003; Marsh et al., 2001).

Despite the aforementioned limitations, it is necessary to point out the usefulness of the present study, as it shows the importance of physical appearance for aggressive adolescents and clarifies social self-concept functioning in adolescence, stressing the need of considering the sex of the students with whom the social interaction is established. Furthermore, the results of the present research have interesting implications in the field of community and school intervention. Nowadays, preventive programs are focused on aggression among peers and improvement of school climate, trying to promote collaboration, cooperative work and positive interactions among peers (Alvarez-Garcia et al., 2007; Felix, Soriano, Godoy, & Martinez, 2008; Morales & Costa, 2001). The relationship between aggressive behavior and self-concept stated in the present research shows that it is probably that preventive interventions, focused on the improvement of social interaction among peers, have also an impact on students' perception about themselves, which in turn would influence positively their well-being (Estevez, Murgui, Musitu, & Moreno, 2008b; Fernandez-Millan, 1998). Likewise, intervention programs in aggressive adolescent population may need to tackle specifically the self-concept of those students who show difficulties in that area. In this sense, the use of a questionnaire that considers the self-concept of Spanish adolescents in a more specific way than previous studies (Estevez et al., 2006; Garaigordobil et al., 2003) would permit the optimization of interventions, because, as Craven, Marsh and Burnett (2003) state, those interventions aimed to improve self-concept are more effective if they are focused on the specific domains in which individuals show difficulties.

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Authors' note

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