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Adolescent Antisocial Behaviour: A Comparative Analysis of Male and Female Variables Related to Transgression

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Abstract

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The adolescent antisocial phenomenon is an important matter for our society due to the increase in frequency and severity of deviant conducts during a developmental stage when individuals face multiple changes. Although most research focuses on male offending, gender differences in antisocial behaviour have been widely recognised. It is important to deepen our knowledge of antisocial behaviour in adolescent males and females, through its related factors and understand gender specificities.

We present a research on antisocial manifestations and their relation with gender, age, socioeconomic status, personality, social skills, self-concept, and family environment in a sample of 489 students between 9 and 17 years old (60.5% females).

Results show common factors that explain why boys and girls have higher antisocial tendencies: psychoticism and social conformity. In girls self-control was also a factor contributing to determine female antisocial tendency. Significant correlations between antisocial behaviour, age, personality, social skills, self-concept and family environment in boys and girls reveal the importance of individual dispositions.

We conclude that there is unexpected equality in contemporary male and female adolescent experiences. Nevertheless, differences in other variables correlated with antisocial behaviour indicate different personal resources and coping mechanisms in boys and that should be addressed in future interventions and longitudinal studies.

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Keywords: Adolescence; antisocial behaviour; gender differences.



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1. Introduction

Adolescence is a unique stage of human development with specific characteristics, when individuals do not only strive to adapt to the environment and seek balance, but also to build significant relations outside the family as well as their identity and autonomy, while profound physical, cognitive, moral and socioemotional changes take place (Steinberg, 2009). Therefore, antisocial behaviours that are manifested at this stage cannot be dissociated from all the complexity and significance of such profound developmental events, which must be put in context if we fully wish to interpret and understand the phenomenon.

The social context in which adolescent development takes place is an important factor to consider when studying antisocial behaviour. Several authors have suggested the existence of a negative association between socioeconomic status and antisocial behaviours, which has been generally confirmed by studies on risk factors for deviant conducts (Church II, Jagers & Taylor, 2012; Tremblay, 2010). It is possible that the effect of socioeconomic conditions on antisocial behaviours is not immediate, but through an indirect influence on deviancy, mediated by other living conditions, especially family factors (Pardini, Waller & Hawes, 2015; Thijs, van Dijk, Stoof & Notten, 2015). Furthermore, “boys and girls do not necessarily respond similarly to problems caused by socialisation in a socio-economically disadvantaged family, because they deal differently with stress and strain” (Thijs et al., 2015, p.602), with boys being more affected by low socioeconomic conditions (Moffitt, Caspi, Rutter & Silva, 2004).

There is no doubt that the role of the family is crucial for the development of social behaviours. It is in that context that they will receive reinforcements and/or punishments according to the adjustment of their conducts, allowing them to identify what sets of behaviours are acceptable and may be repeated and what behaviours should be avoided. Therefore, studying the family appears to be a key element to understanding the antisocial phenomenon, its origins and the way it manifests and develops in adolescence (Pardini et al., 2015). At this purpose, literature suggests that families tend to address their sons and daughters' education differently due to cultural expectations and social conventions. For this reason, some researchers found that adolescent girls' social conduct is more susceptible to family stressors (López, Pérez, Ochoa & Ruiz, 2008; Skeer et al., 2011), while others argue that boys may be more vulnerable to poorer family environments (Moffitt et al., 2004).

Eysenck's theory (1996) suggests that individuals are more or less predisposed to behave or react in predictable ways in specific environmental conditions, suggesting that individuals high on extraversion, psychoticism and neuroticism would be less able to react to social urges and, consequently, more prone to deviancy. In other words, individuals with antisocial tendencies present high scores on extraversion, neuroticism, and psychoticism and low scores on the Lie scale (L) from the Eysenck's Personality Questionnaire (EPQ). The lie has been considered as a measure of socialisation and social conformity: “a high score on this scale suggests that the respondent is engaging in impression management. A low score suggests indifference to social expectations and is usually interpreted as an indication of weak socialisation” (Center, Jackson & Kemp, 2005, p.397). Eysenck's assumption has been generally confirmed by recent studies (Center et al., 2005; Morizot, 2015). Again, researchers have consistently found gender differences in Eysenck's personality traits, with boys scoring higher in psychoticism and

extraversion and girls scoring higher in neuroticism (Canals, Vigil-Colet, Chico & Martin-Henneberg, 2005; Escorial & Navas, 2007; Lynn & Martin, 1997; Morgado & Vale Dias, 2014).

Impulsivity has been widely pointed out by researchers as characteristic of individuals with antisocial tendencies (Dodge, Coie & Lynam, 2008; Farrington, 2007; Koolhof, Loeber, Wei, Pardini & D'Escury, 2007; Moffitt, 2006) and has been strongly associated with Eysenck's trait of Psychoticism (Colder et al., 2011). Impulsivity is often mentioned together with references to lack of self-control, weak constraint or failure to delay gratification. Undoubtedly, adolescence is a stage when sensation-seeking behaviours are at its highest levels and it is possible that such behaviours may be not only a characteristic of this period of development, but also "necessary to develop essential social competences to achieve independence in adulthood" (Luna, 2010, p. 333). Social skills appear to be determinant, either as protective factors or risk factors, in guiding individual's choices regarding social behaviours. It is quite consensual that the tendency to show altruism, sympathy and respect may be determinant in preventing an antisocial trajectory (Dodge et al., 2008), whereas lack of social sensitivity, empathy and perspective-taking in social interactions may put individuals at higher risk of engaging in antisocial behaviours (Joliffe & Farrington, 2011). In this scope, literature has consistently found that adolescent boys tend to show lower scores both in self-control (Chapple, Vaske & Hope, 2010; Gottfredson & Hirschi, 1990; Higgins, 2004) and empathy (Van Der Graaff, Branje, Wied, Hawk & Van Lier, 2013; Rueckert, Branch & Doan, 2011).

Change that occurs in adolescence does not only have an impact on social behaviours, but also on how individuals perceive themselves, that is, on their self-concept. Social behaviours and self-concept are not only fundamental for an adjusted personal, social, and academic development (Torregrosa, Ingles & Garcia-Fernandez, 2011), but are also believed to mutually influence each other. Positive self-concept has been related to good mental health, educational benefits, positive development in adolescence, and many adjusted psychological and social outcomes (O'Mara, Marsh, Craven & Debus, 2006), that protect against behaviour problems, while negative self-concept has been commonly associated with aggression and delinquency. The existing body of literature regarding this matter has explained some aspects of antisocial adolescents' self-perceptions. However, research has not yet allowed us to clarify if there is a particular pattern that defines a tendency of antisocial children and adolescents regarding self-concept. Some evidence supports associations between positive self-concept and aggressive behaviours, as there is evidence suggesting associations between negative self-concept and aggression. Some authors suggest that girls tend present generally poorer self-concept than boys (Orr, 2013; Wilgenbusch & Merrell, 1999), but others did not find significant gender differences (Arens & Hasselhorn, 2013).

2. Problem Statement

Although most research on antisocial behaviours focus on male offending (e.g. Farrington, 2007; Koolhof et al., 2007), gender differences in antisocial behaviour have been widely recognized (Berkout, Young & Gross, 2011; Fergusson & Horwood, 2002; Moffitt, 2006; Tremblay, 2010; Thijs et al., 2015). Such differences begin with the types of antisocial behaviour adopted by males and females,

with the former being more likely to engage in overt forms of antisocial behaviour and the latter having greater tendency to adopt covert forms, especially by the time they reach adolescence (Tremblay, 2010). The most consistently mentioned differences, though, do not refer so much to the developmental trajectories of offending as to the rate (Fergusson & Horwood, 2002) and severity (Berkout et al., 2011) of antisocial manifestations. Lanctôt (2015, p.400) argues that “this gender gap is neither constant across the spectrum of possible behaviors and settings nor is it stable over time. It seems to be wider when antisocial behavior takes more serious forms or occurs outside the family.” Therefore, it is important to further study antisocial behaviour in adolescent males and females and, not only understand its differences, but also understand differences in its related factors.

In this paper we address antisocial behaviours in a sample of adolescents, assuming differences between boys and girls in individual, social and family factors that may explain this phenomenon in this particular developmental stage, such as personality, social skills, self-concept, family environment, and socioeconomic status.

3. Research Questions

Based on literature, this research asks about male and female antisocial behaviour and related variables and sought to test the following hypotheses:

H1: Boys and girls from low socioeconomic status have significantly higher antisocial scores when compared to adolescents from medium socioeconomic status and high socioeconomic status;

H2: Adolescent boys have significantly higher antisocial scores than adolescent girls;

H3: Adolescent boys and girls present significant differences in terms of personality, social skills, self-concept, and family environment;

H4: Personality, social skills, self-concept, and family environment allow identifying boys and girls that are more likely to display higher antisocial tendencies;

H5: Antisocial tendency and its possible explanatory factors present age variations that contribute to understanding male and female developmental pathways of antisocial tendency.

4. Purpose of the Study

Our aim was to understand if there is a relation between male and female adolescent antisocial behaviour and socioeconomic status, personality, social skills, self-concept, and family environment.

5. Research Methods

5.1. Participants

Prior to the questionnaires' application, permissions were asked to the Ministry of Science and Education as well as to the National Committee for Data Protection. Afterwards, each school was

consulted and agreed to participate. Parents from all the students were asked to give their informed consent to allow their children to participate in the study, and were requested to answer to their part of the sociodemographic questionnaire and to CBCL. All participants that agreed, together with their parents, to participate in the study were assured of the confidentiality and anonymity of their answers. Measures were applied collectively, to small groups in the classroom.

The sample was gathered in three schools from the region of Coimbra (Portugal) and included all the individuals who, together with their parents, agreed to collaborate. 1217 requests were sent from which 40.18% consented to participate. Hence, our occasional sample included 489 individuals with the sociodemographic characteristics presented in table 1.

Table 1. Sample description

Sociodemographic Characteristics	Frequency	%
Gender		
Male	193	39.5 %
Female	295	60.5 %
TOTAL	489	100 %
Age		
9	13	2.7 %
10	81	16.6 %
11	87	17.8 %
12	66	13.5 %
13	82	16.8 %
14	68	13.9 %
15	25	5.1 %
16	40	8.2 %
17	27	5.5 %
TOTAL	489	100 %
School Year		
5	83	17.0 %
6	94	19.2 %
7	74	15.1 %
8	75	15.3 %
9	79	16.2 %
10	23	4.7 %
11	43	8.8 %
12	18	3.7 %
TOTAL	489	100 %
Socioeconomic Status		
Low	63	12.9 %
Medium	243	49.6 %
High	183	37.5 %
TOTAL	489	100 %

5.2. Measures

Variables were measured through an assessment protocol that included a set of self-report questionnaires. The choice of measures was guided by the robustness of its psychometric characteristics, the potential for collective (classroom) and anonymous data collection, its accessibility for individuals with reading skills at a basic level and the potential for replication in distinct cultural contexts (e.g. internationally).

Sociodemographic conditions were assessed through a sociodemographic questionnaire created specifically for this research, divided into two parts: one for the parents and one for their children. The parents' section included questions regarding the individuals' living conditions in order to determine

socioeconomic status, while the children's section was composed of several questions regarding their gender, age, school year and involvement in certain types of antisocial behaviour. Parents were also asked to fill the factor "aggressive behaviour" ($\alpha = .69$) of the Portuguese version of the Child Behaviour Checklist (CBCL, ; Fonseca, Simões, Rebelo, Ferreira & Cardoso, 1994), with items about lying, destroying things, aggression, etc. Adolescents filled collectively, in classroom, the "antisocial" factor ($\alpha = .78$) of the Portuguese version of the Youth Self-Report (YSR,; Fonseca & Monteiro, 1999), composed of items related to cruelty, disobedience, fights and threats, etc.

Personality was assessed through the Portuguese version of Eysenck's Personality Questionnaire for Children (Fonseca, 1989). It is a questionnaire with 81 items with dichotomous answers (yes/no), organized in four scales, as previously described: "psychoticism" ($\alpha = .77$), "extraversion" ($\alpha = .71$), "neuroticism" ($\alpha = .83$), and "lie" ($\alpha = .79$).

The Portuguese version of Piers-Harris Children's Self-Concept Scale – 2 (Veiga, 2006) was chosen to measure self-concept. In this reduced version there are 60 items with dichotomous answers (yes/no) that allow for a global self-concept measure ($\alpha = .90$), resulting from the sum of scores from 6 factors: "behavioural adjustment" ($\alpha = .80$), "intellectual/school status" ($\alpha = .72$), "physical appearance and attributes" ($\alpha = .67$), "anxiety" ($\alpha = .74$), "popularity" ($\alpha = .68$), and "happiness and satisfaction" ($\alpha = .72$).

To assess social skills, we used the Portuguese version of Social Skills Questionnaire – Student Form (Mota, Matos, & Lemos, 2011), with 39 items ($\alpha = .87$) distributed in 3 scales: "assertion" ($\alpha = .70$), "empathy" ($\alpha = .77$), and "self-control" ($\alpha = .80$). Each item could be answered according to its frequency (0=never, 1= sometimes, 2= many times) and importance (0=non-important, 1= important, 2= essential). We only used the answers regarding frequency, since those are the only allowing quantitative analysis.

Perception of family environment was measured with the Portuguese version of the Family Environment Scale (Matos & Fontaine, 1996), a questionnaire composed of 90 items, corresponding to 10 scales organized in three underlying dimensions: relationship – that includes "cohesion" ($\alpha = .75$), "expressiveness" ($\alpha = .19$), and "conflict" ($\alpha = .65$) – personal growth – including "independence" ($\alpha = .16$), "achievement orientation" ($\alpha = .45$), "intellectual/cultural orientation" ($\alpha = .72$), "active/recreational orientation" ($\alpha = .61$), and "moral and religious emphasis" ($\alpha = .79$) – and system maintenance – composed of "organisation" ($\alpha = .66$), and "control" ($\alpha = .34$). Items can be answered with a 6 points Lickert scale from 1 (completely disagree) to 6 (completely agree). Due to the low internal reliability of some scales, we chose to use only those above .60 (George & Mallery, 2003) and a global score of family environment ($\alpha = .88$) consisting on all the 90 items in the questionnaire (see, for example, Briere & Elliott, 1993). The items of the "conflict" scale, were inverted for this global score in order to assure that all items were in the same direction, that is, a higher score being equivalent to a general better perception of family environment.

6. Findings

Our first hypothesis was tested through a one-way ANOVA using IBM SPSS Statistics 20, as presented in table 2, separately for boys and girls. No significant results were found, except for girls in parent reported aggressive behaviour, with significant differences in aggressive behaviour between girls from low and high socioeconomic status. Table 3 presents results from Independent Samples T Tests in order to check for gender differences, which were generally confirmed.

Table 2. One-way ANOVA: Differences between socioeconomic status in behavioural measures

Gender	Dependent Variables		Sum of Squares	Df	Mean Square	F	P		
Male	YSR Antisocial	Between groups	8.86	2	4.43	.41	.67		
		Within groups	2030.37	186	10.92				
	CBCL Aggressive Behaviour	Between groups	17.23	2	8.61			1.31	.27
		Within groups	1206.95	184	6.56				
Female	YSR Antisocial	Between groups	12.03	2	6.02	1.27	.28		
		Within groups	1329.13	281	4.73				
	CBCL Aggressive Behaviour	Between groups	13.60	2	6.89			3.24	.04
		Within groups	584.17	278	2.10				

Table 3. Gender Differences in behavioural measures and individual characteristics/perceptions

Gender	Variable	Mean	Std. Deviation	T	P
Male	YSR Antisocial	3.16	3.29	5.09	.00
Female		1.88	2.17		
Male	CBCL Aggressive Behaviour	2.12	2.57	6.17	.00
Female		.97	1.46		
Male	Psychoticism	2.93	3.15	4.06	.00
Female		1.95	2.17		
Male	Extraversion	16.32	2.88	3.40	.00
Female		15.40	3.02		
Male	Neuroticism	7.30	4.51	-2.53	.01
Female		8.33	4.34		
Male	Lie	9.06	4.20	-1.77	.08
Female		9.73	3.91		
Male	Self-Control	15.17	3.92	-1.64	.10
Female		15.76	3.54		
Male	Empathy	17.33	3.50	-2.91	.00
Female		18.20	2.86		
Male	Global Self-Concept	45.83	9.66	2.39	.02
Female		43.71	9.40		
Male	Behavioural Adjustment	10.52	2.66	-1.82	.07
Female		10.96	2.49		
Male	Intellectual/School Status	9.40	2.78	-.17	.87
Female		9.45	2.62		
Male	Physical Appearance/Attributes	5.42	1.85	3.92	.00
Female		4.72	2.04		
Male	Anxiety	5.31	2.16	5.15	.00
Female		4.27	2.17		
Male	Popularity	7.90	2.10	3.34	.00
Female		7.24	2.18		
Male	Happiness and Satisfaction	7.19	1.32	1.40	.16
Female		7.01	1.47		
Male	Family Environment	333.38	35.02	-1.49	.14
Female		338.47	36.42		
Male	Cohesion	44.01	7.72	.43	.67
Female		44.32	7.61		

Male	Conflict	22.32	6.49	1.39	.16
Female		21.46	6.48		
Male	Intellectual/Cultural Orientation	34.62	7.93	-1.03	.30
Female		35.39	7.53		
Male	Active/Recreational Orientation	37.72	6.25	-.15	.89
Female		37.80	6.58		
Male	Moral Religious Emphasis	31.58	8.88	-.14	.89
Female		31.69	8.96		
Male	Organisation	40.80	6.19	-2.15	.03
Female		42.07	6.12		

Discriminant analysis was used to conduct a multivariate analysis of variance test of the hypothesis that personality, social skills, self-concept, and family environment characteristics allow to identify adolescents that are more likely to display higher antisocial tendencies. In these analyses, we chose to use only global scores of self-concept and family environment due to high colinearity between the specific factors and the global scores of Piers Harris Children's Self-Concept Scale and Family Environment Scale, respectively.

We performed analysis for boys and girls separately given its significant differences in antisocial and aggressive behaviour scores. Groups were defined according to the normative sample's scores in YSR's antisocial factor (Fonseca & Monteiro, 1999) and to the normative sample's scores in CBCL's aggressive behaviour factor (Fonseca et al., 1994): considering normative samples' mean scores, one group was composed of boys who scored below the mean+one standard deviation and the other group included boys who scored, at least, one standard deviation above the mean of the normative sample. The same criteria were used for girls. Table 4 shows our sample and in the original normative samples' mean scores. Because in parent reported aggressive behaviour only very few individuals scored higher than one standard deviation above the mean, analysis from CBCL could not be performed. Table 5 presents the distribution of boys and girls into groups according to the criteria described above.

Table 4. Means and std. deviations obtained in original normative samples and this research

	YSR Antisocial				CBCL Aggressive Behaviour			
	Original Sample (Fonseca & Monteiro, 1999)		Research Sample		Original Sample (Fonseca et. al, 1994)		Research Sample	
	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev
Boys	3.44	3.51	3.16	3.29	4.2	3.8	2.12	2.57
Girls	1.92	2.48	1.88	2.17	2.5	2.3	.97	1.46

Table 5. Sample distribution according to YSR and CBCL scores

	YSR Antisocial		CBCL Aggressive Behaviour	
	Below mean+1std.dev.	Above mean+1std.dev.	Below mean+1std.dev.	Above mean+1std.dev.
Girls	252 (85.1%)	33 (11.1%)	270 (91.2%)	11 (3.7%)
Boys	161 (83.4%)	28 (14.5%)	181 (93.8%)	6 (3.1%)

For the test on self-reported antisocial behaviour in boys, the overall Chi-square test was significant (Wilks $\lambda = .70$, Chi-square = 61.07 , df = 2, Canonical correlation = .54, $p < .001$), confirming the hypothesis. Table 6 shows the classification function coefficients. Reclassification of cases based on the new canonical variables was highly successful: 87.7% of the cases were correctly reclassified into their original categories.

Regarding self-reported antisocial behaviour in girls, the overall Chi-square test was significant (Wilks $\lambda = .79$, Chi-square = 60.65 , df = 3, Canonical correlation = .46 , $p < .001$), confirming the hypothesis. Table 7 presents the classification function coefficients. Reclassification of cases based on the new canonical variables was highly successful: 90.2% of the cases were correctly reclassified into their original categories.

Table 6. Classification function coefficients – Antisocial (YSR) BOYS

	Groups Antisocial-AS (YSR)	
	-ASboys	+ASboys
Psychoticism	.72	1.23
Lie	.86	.67
(Constant)	-5.24	-7.85
Fisher's linear discriminant functions		

Table 7. Classification function coefficients – Antisocial (YSR) GIRLS

	Groups Antisocial-AS (YSR)	
	-ASgirls	+ASgirls
Psychoticism	1.00	1.35
Lie	.38	.15
Self-Control	1.44	1.22
(Constant)	-15.22	-11.10
Fisher's linear discriminant functions		

In order to test the fifth hypothesis, we checked for correlations between the behavioural scales, personality traits, self-concept, social skills, family environment and age, as shown in table 8.

Table 8. Pearson correlations between age, behavioural measures and individual characteristics in boys and girls

	Boys			Girls		
	Age	YSR Antisocial	CBCL Aggressive Behaviour	Age	YSR Antisocial	CBCL Aggressive Behaviour
Age	1	.16 *	.04	1	.22 **	.06
YSR Antisocial	.16 *	1	.29 **	.22 **	1	.36 **
CBCL Aggressive Behaviour	.04	.29 **	1	.06	.36 **	1
Psychoticism	.03	.59 **	.26 **	.07	.46 **	.20 **
Extraversion	.04	.12	.19 **	-.06	.09	.06
Neuroticism	.11	.39 **	.03	.23 **	.41 **	.17 **
Lie	-.41 **	-.53 **	-.17 *	-.29 **	-.47 **	-.13 *
Behavioural Adjustm.	-.04	-.63 **	-.23 **	-.13 *	-.35 **	-.17 **
Intellectual/School Stat.	-.17 *	-.40 **	-.15 *	-.21 **	-.38 **	-.12 *

Physical App/Attributes	-.07	-.06	.05	-.15 *	-.15 **	-.03
Anxiety	-.05	-.32 **	-.01	-.23 **	-.23 **	-.08
Popularity	-.20 **	-.20 **	.09	-.18 **	-.17 **	-.02
Happiness/Satisfaction	-.12	-.25 **	.03	-.26 **	-.27 **	-.09
Global Self-Concept	-.14 *	-.44 **	-.08	-.26 **	-.37 **	-.12 *
Family Environment	-.17 *	-.39 **	-.14	-.21 **	-.31 **	-.11
Cohesion	-.15 *	-.37 **	-.10	-.25 **	-.26 **	-.09
Conflict	.21 **	.37 **	.03	.27 **	.33 **	.18 **
Intellectual/Cultural Or.	-.06	-.19 **	-.20 **	-.21 **	-.20 **	-.02
Active/Recreational Or.	-.13	-.21 **	-.10	-.16 **	-.21 **	-.08
Moral/Religious Emp.	-.18 *	-.10	-.05	-.12 *	-.17 **	-.10
Organisation	-.15 *	-.41 **	-.11	-.26 **	-.30 **	-.02
Self-Control	-.12	-.37 **	-.06	-.14 *	-.42 **	-.14 *
Empathy	.02	-.27 **	-.02	.06	-.10	-.13 *

7. Conclusions

Overall, our assumptions on antisocial behaviour were confirmed. Nevertheless, some interesting – and surprising – facts were also evident. In our sample of adolescents from the general population, with mild antisocial characteristics, there were no significant differences in behaviour according to the individuals' living conditions. In fact, more than the living conditions themselves, it appears that our focus should be on the other variables that play a role on adolescent antisocial behaviour (Pardini et al., 2015). However, significant differences in aggressive behaviour between low and high socioeconomic girls suggest, contrary to literature, that females may be more susceptible to suffer from the effects of family disadvantaged on their social behaviour.

Gender differences were confirmed in some dimensions, providing important indications regarding different coping mechanisms and resources in boys and girls related to antisocial trajectories. In line with previous research (Van Der Graaf et al., 2014; Thijs et al., 2015), boys showed higher psychoticism (positively correlated with antisocial tendency) and lower empathy scores (negatively correlated with male antisocial tendency), whereas girls had significantly higher neuroticism scores. Although not significantly correlated with antisocial behaviour, boys also showed higher extraversion scores. The absence of significant gender differences in self-control was surprising and suggests that boys and girls may be more similar in terms of risk-seeking than what literature suggests, possibly due to increasing gender equality in socialisation. Chapple et al. (2010) claim that boys are taught to be risk-taking while girls are taught to be risk-averse as a result of gendered socialisation. Likewise, results on family environment also suggest that there are fewer differences between boys' and girls' perceptions of their families. With these results we may question if, in the Portuguese population, there is increasing gender equality in family environment, that is, on social expectations and the way boys and girls are raised to behave socially. In the same sense, the absence of significant differences in self-control contradicts some previous research (Wong, Slotboom & Bijleveld, 2010) but corresponds to the assumptions of self-control theory (Gottfredson & Hirschi, 1990) and more recent findings from Thijs et al. (2015).

The fact that boys presented a generally better self-concept than girls may offer important clues regarding the role of self-concept as a coping resource in boys, as self-concept negatively correlates with antisocial tendency. However, physical self-concept was not correlated with antisocial behaviour in boys and it may be possible that good physical self-concept may be reinforced by antisocial conducts. In other words, to perform some deviant acts, individuals need to be in good physical shape, which may reinforce one's perception of his physical abilities and appearance (Torregrosa et al, 2011). Moreover, the fact that boys tend to present less anxiety may also promote the continuation of antisocial behaviours, possibly due to overly positive self-confidence and lack of "fear" of potential negative consequences.

Discriminant analysis revealed interesting clues on which individual characteristics we should have in mind when defining preferential targets for intervention. Indeed, results suggest that boys and girls show similar vulnerabilities in terms of antisocial tendency. In both genders, psychoticism and lie differentiated between higher and lower antisocial tendency and, in girls, self-control also contributed to the distinction between higher and lower antisocial tendency. These results show that, if we wish to target those adolescents more prone to engage in antisocial paths, impulsivity (present in psychoticism and self-control) and attitudes towards social rules are important dimensions to assess.

Psychoticism stood out as a risk factor in both male and female antisocial tendency showing us that the components of this trait should be assessed universally when it comes to the identification of adolescents who may be more vulnerable to follow antisocial trajectories. Furthermore, the inexistence of significant correlations between psychoticism and age suggest that this is a stable factor during adolescence and, thus, may be less permeable to change with interventions. Results made it clear that, in both boys and girls, a personality trait related to aggressiveness, egocentrism, toughness and impulsivity combined with indifference to social expectations and weak socialisation reflect vulnerability of engaging in antisocial behaviour. In girls, self-control, a social skill related to psychoticism, is also important to identify vulnerabilities.

Correlation analysis revealed significant correlations between personality and antisocial tendency in both genders. We found strong positive correlations of antisocial behaviour (self-reported) with psychoticism and strong negative correlations with the lie scale (a measure of social sensitivity) in both genders and, more modestly, between antisocial behaviour and neuroticism. Parent-reported aggressive behaviour also correlated in the same directions with psychoticism, lie and neuroticism (only in girls) although more modestly. Extraversion only correlated significantly with aggressive behaviour in boys with a small effect. The positive correlation between personality and antisocial behaviour evidences the relevance of Eysenck's original assumption that higher antisocial individuals present higher scores in all three personality traits and concurs with "extensive empirical evidence showing that personality traits can predict individuals' concurrent and future adaptation" (Morizot, 2015, p.141). Results on the lie scale also demonstrate the importance "of the degree to which one is disposed to give socially expected responses to certain types of questions" (Center & Kemp, 2002, p. 356), proving the importance of motivational aspects, social engagement and sense of belonging on behavioural choices.

Self-concept also revealed significant negative correlations with antisocial tendency in girls and boys, with stronger effects in boys' self-reported behaviours. All its dimensions revealed significant

correlations with self-reported behavioural measures except for physical appearance/attributes in the case of boys. Again, between these dimensions and parent-reported behaviour there were fewer significant relations and with very modest effects: aggressive behaviour was only correlated with global self-concept in girls and with behavioural adjustment and intellectual/school status in boys and girls.

As expected, family environment was significantly and negatively correlated with antisocial behaviour in both genders but, again, only in self-reported scores (with the exception of conflict in boys and intellectual/cultural orientation in girls). Independent of potential causalities that were not assessed in this context, these results show, in line with previous research (Pardini, et al., 2015) that the family's involvement in prevention and intervention can contribute to its success because adolescents' perceptions of the quality of their family relations, of the opportunities that the family provides for growth and its organisation may have an important role on behaviours towards others.

Self-control was significantly and negatively correlated with antisocial behaviour in boys and girls while empathy as only significantly correlated with antisocial behaviour in boys. These results confirm the assumption that social skills play an important role in antisocial tendency, with self-control, related to impulsivity, having a considerable relation with behavioural measures, particularly in the case of girls, for whom this is also an indicator of vulnerability as demonstrated by discriminant analysis results.

Analysis on the relation between age, antisocial behaviour and individual factors reveal, as expected, that as children develop into mid-adolescence, their behaviours become less adjusted (according to self-reports only), while conformity to social rules, family environment perceptions, self-concept and self-control tend to decrease. These results point towards a possible mediating effect of conformity to social rules, self-concept and family environment on the role of age, since these dimensions, which are negatively correlated with antisocial tendencies, also tend to diminish with age in boys and girls. The same applies to neuroticism and self-control in girls, dimensions that are positively correlated with both antisocial behaviour and age in females. The fact that extraversion psychoticism and empathy were not significantly correlated with age call our attention to the fact that these may be more stable during development and, thus, need a different approach. In addition, the fact that age presented more significant correlations with neuroticism, self-control and specific self-concept and family environment factors in girls also suggests that females may go through developmental change at a faster pace in this age group than boys and that those who display higher antisocial tendencies may be more influenced by developmental change.

7.1. Implications

This study offers a novel contribution to existing literature because it addresses gender differences in antisocial behaviour, relating such differences with differences in some of their related factors. We believe that these results open the path for new preventive approaches that focus mainly on the individual and his/her perceptions. Of course, when we discuss an individual's the inner world we cannot ignore his perceptions of family environment, which must not be neglected, as our results also suggest. We demonstrate the importance of differences and similarities between boys and girls in

adolescent antisocial behaviour and of the necessity to address this issue taking into account gender specificities and vulnerabilities, acknowledging that “boys and girls may indeed differ in their coping mechanisms” (Thijs et al., 2015, p.610). Although, ideally, interventions should be holistic and address as many dimensions of the individual’s existence as possible, a more individual centred approach may offer cost and time effectiveness, which is crucial for primary and secondary prevention plans. In addition, the fact that the same essential indicators allow anticipating which boys and girls may be more vulnerable to higher antisocial tendencies offers powerful information to identify those adolescents who may be at higher risk of following an antisocial path. This also suggests that there may be more gender equalities in the underlying risk factors for antisocial behaviour than previously anticipated.

The developmental paths of antisocial behaviour and of its factors reveal the importance of addressing some dimensions as early as possible in development in order to prevent them from making adolescents more vulnerable to antisocial behaviours. Therefore, intervention programs should include activities that promote a positive development regarding self-concept, identification with social rules, and social skills such as understanding other people’s perspectives, while encouraging interpersonal debate on anticipating consequences, delaying gratification and engaging in positive and prosocial interactions with others. For example, also working with peers and the community could help antisocial adolescents to receive the adequate reinforcements for engaging in healthier, more prosocial behaviours. It is equally important to include families in such preventive efforts, capacitating them to establish clear structure, positive relations, while, at the same time, capacitating them to provide their children with the necessary opportunities for personal development and intellectual/ cultural/ recreational stimulation. In fact, adolescence is a developmental stage when individuals tend to spend less time with their families as interactions with peers increase in frequency, and, in many cases, occur without adult supervision. This is a critical moment for the development of interpersonal relations, which may affect the development of social skills and also of one’s perceptions of himself.

We acknowledge some limitations in this study. Psychological and developmental deficits were not assessed, neither was drug and alcohol consumption, which could have had some unaccounted effects. In addition, we could not establish causalities due to the cross-sectional design of our study. Furthermore, the sample was not random, since we were dependent on parents’ permission for participation, which may also bring some restrictions to the generalisation of results to the population. Nevertheless, the large size of our sample and the combination of self-report and parents’ reports regarding behavioural dimensions offers some confidence on conclusions drawn from the gathered data and its validity.

We highlight the fact that results based on parents’ reports were less significant and possibly have undervalued, in our sample, the actual behaviour displayed by adolescents. As the comparison between our sample and the original normative sample for the Portuguese population shows, our sample’s means and standard deviations were very similar to the original sample in self-reported antisocial behaviour but the same did not apply to parent reported aggressive behaviour. Indeed, in parent-reported aggressive behaviour, only 3.7% of girls and 3.1% of boys scored one standard deviation above the mean of the normative sample. This may suggest some lack of parents’ knowledge regarding

their children's behaviours. Hence, although parent reports may be important to balance the subjectivity of self-report measures, results reveal that in our sample there is a discrepancy between parent and children's perceptions of the latter's behaviours. Abar, Jackson, Colby and Barnett (2015) argue that parent reports may offer useful information if discrepancies between parents and children are included as variables themselves. Nevertheless, we believe that other sources of information could have been used (peers, teachers) to obtain a more accurate perspective of reality and understand to what degree parents are actually aware of their children's behaviour. Hence, instead of attempting to mitigate the inevitable subjectivity that comes from the use of self-report measures, this study acknowledged and embraced such subjectivity in order to verify if new and important findings could emerge, which, in our opinion, was the case.

In the future, it would be interesting to study the predictors of antisocial behaviour with a longitudinal design with individuals between late childhood and early adulthood, to verify the evolution of antisocial trajectories. It would be equally useful to replicate the current study with other sources of information to confirm the reliability of parental perceptions regarding their children's behaviour.

Overall, we conclude that psychoticism and social conformity are important risk factors for male and female adolescent antisocial behaviour. Personality, social skills, self-concept and family environment are generally related to both male and female antisocial behaviour although with different magnitudes. Gender differences put in context the fact that boys are more prone to engage in antisocial behaviours and that boys and girls demonstrate vulnerabilities in different dimensions. We were able to define which variables may be more important in defining likelihood to engage in antisocial paths and preferential targets for intervention. It became clear that, with age, individuals tend to show less social conformity and self-control, poorer family environment perceptions and more negative self-concept, while becoming increasingly more prone to antisocial behaviours. This calls our attention to the importance of preventing such aspects from decreasing as early in development as possible, in attempts to prevent adolescent antisocial behaviours, especially with girls, undergoing developmental change at a faster pace.

In sum, results suggest that the same underlying factors determine vulnerability in boys and girls, and that some dimensions correlated with antisocial behaviour do not differ between genders, indicating some equality in contemporary male and female adolescent experiences. Nevertheless, differences in some variables correlated with antisocial behaviour may indicate different resources and coping mechanisms in boys (lower neuroticism and higher self-concept) and girls (lower psychoticism, higher family organisation), that should be addressed in future research and intervention.

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References

- Abar, C., Jackson, K., Colby, S., & Barnett, N. (2015). Parent-child discrepancies in reports of parental monitoring and their relationship to adolescent alcohol-related behaviors. *Journal of Youth and Adolescence*, 44, 1688-1701. <http://dx.doi.org/10.1007/s10964-014-0143-6>
- Arens, A. K., & Hasselhorn, M. (2013). Age and gender differences in the relation between self-concept facets and self-esteem. *Journal of early adolescence*, 34(6), 760-791. <http://dx.doi.org/10.1177/0272431613503216>
- Berkout, O. V., Young, J. N., & Gross, A. M. (2011). Mean girls and bad boys: Recent research on gender differences in conduct disorder. *Aggression and Violent Behavior*, 16, 503-511. <http://dx.doi.org/10.1016/j.avb.2011.06.001>
- Briere, J., & Elliott, D. M. (1993). Sexual abuse, family environment, and psychological symptoms: On the validity of statistical control. *Journal of Consulting and Clinical Psychology*, 61(2), 284-288. <http://dx.doi.org/10.1037/0022-006X.61.2.284>
- Canals, J., Vigil-Colet, A., Chico, E., & Martí-Henneberg, C. (2005). Personality changes during adolescence: The role of gender and pubertal development. *Personality and Individual Differences*, 39, 179-188. <http://dx.doi.org/10.1016/j.paid.2004.12.012>
- Center, D. B., Jackson, N., & Kemp, D. E. (2005). A test of Eysenck's antisocial behavior hypothesis employing 11-15-year-old students dichotomous for PEN and L. *Personality and Individual Differences*, 38, 395-402. <http://dx.doi.org/10.1016/j.paid.2004.04.017>
- Center, D. B., & Kemp, D. E. (2002). Antisocial behaviour in children and Eysenck's theory of personality: An evaluation. *International Journal of Disability, Development and Education*, 49(4), 353-366. <http://dx.doi.org/10.1080/1034912022000028330>
- Chapple, C. L., Vaske, J., & Hope, L. T. (2010). Sex differences in the causes of self-control: An examination of mediation, moderation and gendered etiologies. *Journal of Criminal Justice*, 38, 1122-1131. <http://dx.doi.org/10.1016/j.jcrimjus.2010.08.004>
- Church II, W. T., Jagers, J. W., & Taylor, J. K. (2012). Neighborhood, poverty, and negative behavior: An examination of differential association and social control theory. *Children and Youth Services Review*, 34, 1035-1041. <http://dx.doi.org/10.1016/j.childyouth.2012.02.005>
- Colder, C. R. et al. (2011). Revised reinforcement sensitivity theory and laboratory assessment of BIS and BAS in children. *Journal of Research in Personality*, 45, 198-207. <http://dx.doi.org/10.1016/j.jrp.2011.01.005>
- Dodge, K. A., Coie, J. D., & Lynam, D. (2008). Aggression and antisocial behavior in youth. In W. Damon, & R. M. Lerner, *Child and adolescent development: An advanced course* (pp.437-472). Hoboken, N.J.: Wiley.
- Escorial, S., & Navas, M. J. (2007). Analysis of the gender variable in the Eysenck personality questionnaire – revised scales using differential item functioning techniques. *Educational and Psychological Measurement*, 67(6), 990-1001. <http://dx.doi.org/10.1177/0013164406299108>
- Eysenck, H. J. (1996). Personality and crime: Where do we stand? *Psychology Crime and Law*, 2, 143-152. <http://dx.doi.org/10.1080/10683169608409773>
- Farrington, D. P. (2007). Origins of violent behavior over the life span. In D. J. Flannery, Vazsonyi, A. T., & Waldman, I. D. (eds.), *The Cambridge handbook of violent behavior and aggression* (pp. 19-48). New York: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511816840.003>
- Fergusson, D. M., & Horwood, L. J. (2002). Male and female offending trajectories. *Development and Psychopathology*, 14, 159-177. <http://dx.doi.org/10.1017/S0954579402001098>
- Fonseca, A. C. (1989). Estudo intercultural da personalidade: Comparação de crianças portuguesas e inglesas no EPQ-Júnior. *Revista Portuguesa de Pedagogia*, 23, 323-345.
- Fonseca, A. C., & Monteiro, C. M. (1999). Um inventário de problemas do comportamento para crianças e adolescentes: O Youth Self-Report de Achenbach. *Psicologica*, 21, 79-96.
- Fonseca, A. C., Simões, A., Rebelo, J. A., Ferreira, J. A., & Cardoso, F. (1994). Um inventário de competências sociais e de problemas de comportamento em crianças e adolescentes: O Child Behaviour Checklist de Achenbach (CBCL). *Psicologica*, 12, 55-78.
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston: Allyn & Bacon.
- Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.

- Van Der Graaff, J., Branje, S., De Wied, M., Hawk, S., & Van Lier, P. (2013). Perspective taking and empathic concern in adolescence: Gender differences in developmental changes. *Developmental Psychology*, 50(3), 881-888. <http://dx.doi.org/10.1037/a0034325>
- Higgins, G. E. (2004). Gender and self-control theory: Are there differences in the measures and the theory's causal model?. *Criminal Justice Studies*, 17(1), 33-55. <http://dx.doi.org/10.1080/0888431042000204961>
- Jolliffe, D., & Farrington, D. P. (2004). Empathy and offending: A systematic review and meta-analysis. *Aggression and Violent Behavior*, 9, 441-476. <http://dx.doi.org/10.1016/j.avb.2003.03.001>
- Koolhof, R., Loeber, R., Wei, E. H., Pardini, D., & D'Escury, A. C. (2007). Inhibition deficits of serious delinquent boys of low intelligence. *Criminal Behaviour and Mental Health*, 17, 274-292. <http://dx.doi.org/10.1002/cbm.661>
- Lancôt, N. (2015). The development of antisocial behavior in adolescent girls. In J. Morizot & L. Kazemian (Eds.), *The development of criminal and antisocial behaviour*. (pp. 399-408). Switzerland: Springer. http://dx.doi.org/10.1007/978-3-319-08720-7_25
- Lynn, R., & Martin, T. (1997). Gender differences in extraversion, neuroticism and psychoticism in 37 nations. *The Journal of Social Psychology*, 137(3), 369-373. <http://dx.doi.org/10.1080/00224549709595447>
- López, E. E., Pérez, S. M., Ochoa, G. M., & Ruiz, D. M. (2008). Adolescent aggression: Effects of gender and family and school environments. *Journal of Adolescence*, 31(4), 433-450. <http://dx.doi.org/10.1016/j.adolescence.2007.09.007>
- Luna, A. B. (2010). A maturação do controlo cognitivo e o cérebro adolescente. In A. C. Fonseca (Ed.), *Crianças e adolescentes: Uma abordagem multidisciplinar* (pp. 331-369). Coimbra: Almedina
- Matos, P. M., & Fontaine, M. (1996). *Family environment scale – FES. Portuguese Adaptation*. Manuscrito não publicado. Faculdade de Psicologia e de Ciências da Educação da Universidade do Porto.
- Moffitt, T. E. (2006). A review of research on the taxonomy of life-course persistent versus adolescence-limited antisocial behavior. In F. T. Cullen, J. P. Wright, & K. R. Blevins, *Taking stock: the status of criminological theory*. (pp. 277-311). New Brunswick, N.J.: Transaction Publishers. <http://dx.doi.org/10.1017/CBO9780511816840.004>
- Moffitt, T. E., Caspi, A., Rutter, M., & Silva, P. A. (2004). *Sex differences in antisocial behaviour: Conduct disorder, delinquency and violence in the Dunedin longitudinal study*. Cambridge: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511490057>
- Morgado, A. M., & Vale Dias, M. L. (2014). Personality and gender: What do they tell us about adolescent antisocial behaviour? *International Journal of Developmental and Educational Psychology*, 1(1), 417-426. http://dehesa.unex.es/bitstream/handle/10662/2070/0214-9877_2014_1_1_417.pdf
- Morizot, J. (2015). The contribution of temperament and personality traits to criminal and antisocial behavior development and desistance. In J. Morizot & L. Kazemian (Eds.), *The development of criminal and antisocial behaviour*. (pp. 137-165). Switzerland: Springer. http://dx.doi.org/10.1007/978-3-319-08720-7_10
- Mota, C. P., Matos, P. M., & Lemos, M. S. (2011). Psychometric properties of the social skills questionnaire: Portuguese adaptation of the student form (grades 7 to 12). *The Spanish Journal of Psychology*, 14(1), 486-499. http://dx.doi.org/10.5209/rev_SJOP.2011.v14.n1.44
- O'Mara, A. J., Marsh, H. W., Craven, R. G., & Debus, R. L. (2006). Do self-concept interventions make a difference? A synergistic blend of construct validation and meta-analysis. *Educational Psychologist*, 41(3), 181-206. http://dx.doi.org/10.1207/s15326985ep4103_4
- Orr, P. (2013). *Gender and SES effects on multidimensional self-concept development during adolescence*. Doctoral thesis. Dublin: Dublin Institute of Technology.
- Pardini, D., Waller, R., & Hawes, S. (2015). Familial influences on the development of serious conduct problems and delinquency. In J. Morizot & L. Kazemian (Eds.), *The development of criminal and antisocial behaviour*. (pp. 201-220). Switzerland: Springer. http://dx.doi.org/10.1007/978-3-319-08720-7_13
- Rueckert, L., Branch, B., & Doan, T. (2011). Are gender differences in empathy due to differences in emotional reactivity? *Psychology*, 2(6), 574-578. <http://dx.doi.org/10.4236/psych.2011.26088>
- Skeer, M. R., Mc Cormick, M. C., Normand, S., T., Mimiaga, M. J., Buka, S. L., & Gilman, S. E. (2011). Gender differences in the association between family conflict and adolescent substance use disorders. *Journal of Adolescent Health*, 49, 187-192. <http://dx.doi.org/10.1016/j.jadohealth.2010.12.003>
- Steinberg, L. (2009). Adolescent development and juvenile justice. *Annual Review of Clinical Psychology*, 5, 459-485. <http://dx.doi.org/10.1146/annurev.clinpsy.032408.153603>

- Thijs, P. E., van Dijk, I. K., Stoof, R., & Notten, N. (2015). Adolescent problem behaviour: The gender gap in European perspective. *European Journal of Criminology*, 12(5), 598-615. <http://dx.doi.org/10.1177/1477370815578195>
- Torregrosa, M. S., Ingles, C. J., & Garcia-Fernandez, J. M. (2011). Aggressive behavior as a predictor of self-concept: A study with a sample of Spanish compulsory secondary education students. *Psychosocial Intervention*, 20(2), 201-212. <http://dx.doi.org/10.5093/in2011v20n2a8>
- Tremblay, R. E. (2010). Developmental origins of disruptive behaviour problems: The 'original sin' hypothesis, epigenetics and their consequences for prevention. *Journal of Child Psychology and Psychiatry*, 51(4), 341-367. <http://dx.doi.org/10.1111/j.1469-7610.2010.02211.x>
- Veiga, F. H. (2006). Uma nova versão da escala de autoconceito Piers-Harris Children's Self-Concept Scale (PHSCS-2). *Psicologia e Educação*, 5(1), 39-48.
- Wilgenbusch, T., & Merrell, K. W. (1999). Gender differences in self-concept among children and adolescents: A meta-analysis of multidimensional studies. *Psychology Quarterly*, 14(2), 101-120. <http://dx.doi.org/10.1037/h0089000>
- Wong, T., Slotboom, A., & Bijleveld, C. (2010). Risk factors for delinquency in adolescent and young adult females: A European review. *European Journal of Criminology*, 7(4), 266-284. <http://dx.doi.org/10.1177/1477370810363374>