



**Testing the ICAP Theory: Does Sex Affect
Relations Between Antisocial Attitudes and
Juvenile Delinquency?**

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Masters Dissertation
Integrated Master in
Psychology

Work supervised by
Professor Doctor Ângela Maia
and
Doctor Hugo Gomes

June, 2022

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Acknowledgements

À Professora Doutora Ângela Maia e ao Doutor Hugo, os meus orientadores, pela disponibilidade, ajuda imprescindível e contribuições fundamentais prestadas ao longo deste processo.

À Unidade de Investigação de Experiências Adversas e Traumáticas, pela partilha de conhecimentos.

Aos meus pais, por todo o amor incondicional e sacrifício, mas também por me ensinarem o valor da educação e terem sempre o meu melhor interesse como prioridade, a vocês devo absolutamente tudo.

Às minhas irmãs, por serem as minhas melhores amigas, não podia estar mais grata por saber que são obrigadas a aturar-me para o resto da vida.

Aos meus sobrinhos, por me encherem o coração de amor e orgulho.

Aos meus tios-avós, por me fazerem sentir em casa assim que sinto o cheiro da lareira acesa.

À brigada da tese, pelo apoio moral e sessões noturnas de trabalho, obrigada por transformarem os momentos mais difíceis nos mais divertidos.

Aos amigos de sempre, por serem absolutamente incríveis e tornarem tudo mais leve.

A todos os que cruzaram caminhos comigo, por tudo o que me ensinaram.

STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho

Braga, June 6th, 2022

A handwritten signature in blue ink that reads "Beatriz Jesus". The signature is written in a cursive style and is positioned above a horizontal black line.

Testing the ICAP Theory: Does Sex Affect Relations Between Antisocial Attitudes and Juvenile Delinquency?

Resumo

Nas últimas décadas o crime tem sido visto como um "clube de homens", assim, a maioria das teorias que explicam a delinquência têm-se focado na delinquência masculina, ignorando a possibilidade de que a delinquência feminina possa não ser explicada através dos mesmos modelos teóricos. A teoria do Potencial Cognitivo Antissocial Integrado (PCAI) é uma teoria testada exclusivamente em homens que prevê comportamentos delinquentes através de atitudes agressivas e antissistema. O presente estudo visa compreender se a teoria PCAI prevê adequadamente tanto a delinquência feminina como a masculina, e determinar se o sexo é moderador na relação entre atitudes antissociais e delinquência juvenil. A amostra (N=472) inclui uma amostra comunitária recrutada numa escola da Região Centro e uma amostra forense recrutada em 4 Centros de Detenção Juvenil, 43,4% dos participantes são do sexo feminino e 56,6% do sexo masculino. As variáveis foram operacionalizadas utilizando um questionário de autorrelato para medir o comportamento delinquente (*International Self-Report Delinquency 3*) e uma escala de atitudes antissociais (*Antisocial Attitude Scale*). Os resultados mostraram que atitudes agressivas e antissistema predizem comportamentos delinquentes. O sexo foi considerado moderador da relação entre atitudes antissociais e delinquência. Estes resultados sugerem que devem ser realizados ajustes na teoria ICAP.

Palavras-chave: atitudes antissociais, delinquência juvenil, sexo, teoria de ICAP

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Abstract

For the past decades' crime has been seen as a “men’s game”, for this reason, most theories that explain delinquency have focused on male delinquency, bypassing the possibility that female delinquency might not be explained when using the same theoretical models. The Integrated Cognitive Antisocial Potential (ICAP) theory is a male-based theory that predicts the commission of delinquent behaviors using aggressive and antisystem attitudes. The present study aims to understand if the ICAP theory can successfully predict both female and male delinquency, as well as to determine if sex is a moderator in the relationship between antisocial attitudes and juvenile delinquency. Our sample (N=472) includes a community sample recruited from a school in the Center Region of Portugal and a forensic sample recruited from 4 Juvenile Detention Centers, 43.4% of the participants are female and 56.6% are male adolescents and young adults. Our variables were operationalized using self-report questionnaires to measure delinquent behavior (International Self-Report Delinquency 3) and antisocial attitudes (Antisocial Attitude Scale). Results showed that aggressive and antisystem attitudes successfully predict offending. Sex was found to be a moderator of the relationship between antisocial attitudes and delinquency. These findings suggest that adjustments should be made to the ICAP theory.

Keywords: antisocial attitudes, ICAP theory, juvenile delinquency, sex

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Testing the ICAP Theory: Does Sex Affect Relations Between Antisocial Attitudes and Juvenile Delinquency?

Adolescence has been well-documented as the pinnacle of overall offending prevalence (Farrington, 1986, 2003; Loeber & Snyder, 1990; Moffit, 1993). Therefore, adolescence has been given a great deal of attention by researchers. According to Wilson and Herrnstein (1985, p.22), the term “crime” can be legally defined as “any act committed in violation of a law that prohibits it and authorizes punishment for its commission”. Juvenile delinquency is understood throughout this study as the commission of antisocial acts, usually prohibited by law, performed by adolescents and young adults (Farrington, 2004; Gomes et al., 2018).

Countries have different policies on the minimum age of criminal responsibility constructed specifically for underage offenders. In Portugal, individuals under the age of 16 can not be criminally liable as adults. As an alternative, the Educational Guardianship Law (*Lei Tutelar Educativa*, LTE, Law n.º 166/99, of 14th September, Ministério da Justiça) was created in 1999 as an important tool used for the education and insertion of young offenders, from the ages of 12 to 16, in society. The Educational Guardianship Law includes important dispositional measures for youth who behaved against the law, such as community service, deprivation of the right to drive, imposition of rules of conduct, training programs, educational follow-ups, and in more extreme cases, a detention program, in open, semi-open, or closed regime, which takes place in a juvenile detention facility.

In Portugal, juvenile detention in juvenile detention facilities has decreased over the years, dropping by 60.2% between the years 2010 and 2020 (DGRSP, 2021). A similar tendency was found in the occurrence of crimes in the school context, decreasing 19.6% from 2018/19 to 2019/20 (MAI, 2020). Although young boys consistently show much higher rates of conviction, 86.7% in 2020, over the past 10 years the percentage of young girls convicted to juvenile detention facilities has been slowly increasing. In 2010, females made up 10.2% of the total sample and in 2020 they made up 13.3% (DGPJ, 2021). These rates are in accordance with adult convictions. Males have shown consistently higher rates of official offending worldwide, making up 93% of the incarcerated population in Portugal (DGRSP, 2021). However, over the last 10 years, women’s rates of official convictions have slightly increased from 5.4% to 7% (DGRSP, 2021).

Leonard (1982) stated that, despite sex being the most powerful variable regarding crime, it has been widely ignored. The disproportionate offending rates seem to explain why, for so long, research on

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the development of delinquency has focused mostly on male-based delinquency theories (Fagan et al., 2007; Salisbury & Van Voorhis, 2009), with female delinquents absent in many theoretical models.

Developmental and Life-Course Theories

Several different disciplines have contributed with many theories to explain crime, such as psychology, sociology, philosophy, and medicine, among others (Farrington & Ttofi, 2017). Before the 1970s, around the time second-wave feminism emerged, females were rarely mentioned in theories of crime (Belknap, 2016). And, when included, theorists would generalize their findings to both men and women. The feminist movement in criminology highlighted an important question: do the factors proposed to explain male delinquency accurately explain female delinquency (Moreira & Mirón, 2013)?

In the 1990s the results from many longitudinal studies focused on offending (Hawkins et al., 2003; Moffitt et al., 2001; Thornberry et al., 2003; Tremblay et al., 2003) were first published. Consequently, Developmental and Life-Course (DLC) theories emerged (Farrington, 2003). These theories aimed to explain their particular findings while taking inspiration from some traditional theories such as strain, labeling, and rational choice (McGee & Farrington, 2016). DLC theories served immense importance in the explanation of antisocial behavior because traditional theories state that offending is an outcome of “static persistent differences between individuals” (McGee & Farrington, 2016, p. 338), whereas DLC theorists argue that the static and dynamic factors that influence offending change over the life-cycle (McGee & Farrington, 2016).

DLC theories focus mainly on the development of antisocial behaviors throughout life, how risk and protective factors influence antisocial behaviors at different ages, and how life events affect one's development (Farrington & Ttofi, 2017). An important and consistent finding in DLC theories is the link between age and crime. For most young offenders, early adolescence marks the period where antisocial behaviors first commence, often decreasing around late adolescence or when entering adulthood (Farrington, 1986; Loeber & Snyder, 1990; Loeber et al., 2015; Moffitt, 1993). Therefore, the age-crime curve has given juvenile delinquency a special spotlight when addressing antisocial behaviors.

Integrated Cognitive Antisocial Potential Theory

Farrington (2005) developed one of the most prominent developmental and life-course theories, the Integrated Cognitive Antisocial Potential (ICAP) theory, whose key construct is antisocial potential (AP). This theory integrates several aspects from different theories (strain, control, labeling, and rational choice) (Farrington & Ttofi, 2017). The ICAP theory focuses on explaining the development of delinquency while

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specifying risk and protective factors that influence long-term antisocial potential and situational factors that influence short-term antisocial potential (Farrington & McGee, 2018). It also considers the cognitive processes that allow for the offending to take place, by weighing out the cost and benefits of committing a crime, and how the feedback of the consequences of offending influence the AP depending on what kind of consequence it was applied (punishment, reinforcement, labeling) and how the individual perceives this consequence (Farrington & McGee, 2017).

Long-term antisocial potential depends on risk factors such as stress, antisocial models from parents and peers, socialization, impulsiveness, and life events; while short-term antisocial potential depends on motivational and situational factors such as being angry or having the opportunity to commit a crime (Farrington & McGee, 2017). People with high antisocial potential are likely to commit different types of antisocial acts. Since research tells us that antisocial behavior is versatile rather than specialized (Capaldi & Patterson, 1996), the ICAP theory applies to antisocial behaviors ranging from drug abuse to property crimes (Farrington & McGee, 2017). However, situational factors may impact the type of crime that is committed. Therefore, Farrington and McGee (2017) hypothesized that long-term antisocial potential predicts delinquency in general while short-term antisocial potential factors could vary for different types of crimes.

Farrington and McGee (2017) tested the ICAP theory using The Cambridge Study in Delinquent Development (CSDD) findings, from ages 18 to 48. The sample used in the CSDD mostly represents working-class, Caucasian, British males, who were born in 1953. The antisocial potential was measured using the Antisocial Attitude scale (AA; Farrington & McGee, 2017) which predicts long-term antisocial potential. It is composed of two attitude subscales: the aggressive attitude scale and the anti-establishment attitude scale (Farrington & McGee, 2018). The authors found that antisocial attitudes successfully predict antisocial behaviors for CSDD males.

Antisocial Attitudes

Gendreau and Andrews (1990) found evidence that intervention programs that focus on improving cognitive functioning using cognitive-behavioral strategies are the most effective in offender treatment. Likewise, intervention programs that target antisocial attitudes have shown positive effects on offenders (Wilson et al., 2005). Even so, not enough attention has been given to the understanding of the antisocial beliefs that tend to characterize antisocial behavior (Butler et al., 2007).

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Cognition is extremely important in perpetuating antisocial behavior through time (Crick & Dodge, 1994; Huesmann & Guerra, 1997). Studies have shown that youth with antisocial attitudes tend to behave, congruently, in an antisocial manner (Crick & Dodge, 1994; Dodge & Coie, 1987; Farrington & West, 1981; Huesmann & Guerra 1997; Mak, 1990; Shields & Simourd, 1991).

Social attitudes represent beliefs about what an individual considers to be socially acceptable (Huesmann et al., 1992; Huesmann & Guerra, 1997). Huesmann and Guerra (1997) note that positive beliefs towards aggression are correlated to aggressive behavior and propose that this phenomenon happens for three different reasons: a) the children's aggressive beliefs may make them more prone to perceive others as hostile b) aggressive beliefs may activate aggressive behavior scripts c) aggressive beliefs may act as a facilitator of aggressive behavior by minimizing the perceived inappropriateness of certain behavior. These belief systems provide individuals with short-cuts that allow easier information processing and regulate interpersonal behavior (Huesmann & Guerra, 1997; Li et al., 2013). These cognitive processes can influence the way we perceive ourselves, others, social roles, and life events (Fiske & Taylor, 1991). Antisocial attitudes can generally be characterized as a distrust of all types of authority figures (e.g., parents, teachers, the police), negative portraits of the world, people seen as mean-spirited, and positive attitudes regarding aggressive behavior (Granic & Butler, 1998).

Socially acceptable behavior is not innate to humans, rather it is learned (Bandura, 1986). Huesmann and Guerra (1997) propose that these social or antisocial beliefs are developed during childhood from positive or negative consequences of their actions, observing others, and direct teaching from important figures in their lives, such as parents, teachers, and peers. Antisocial attitudes and positively valued beliefs of delinquency are not fully developed until around the age of 13 (Thornberry, 1987). Studies have shown that antisocial attitudes tend to increase during late childhood and adolescence (Mak, 1990; Zhang et al., 1997).

Sex Differences in Antisocial Attitudes

Previous research on sex differences regarding antisocial attitudes indicates that males tend to report a greater number of antisocial beliefs (Huesmann & Guerra, 1997). Crick and Dodge (1994) found females cognitions to be more interpersonal and male cognitions more instrumental, which could indicate that, overall, males are more likely to have cognitive self-serving cognitive distortions (Gomes et al., 2021), while females may tend to be more prosocial overall (Hoffmann et al., 2004). In turn, these differences increase the likelihood of male delinquency (Lardén et al., 2006). It has been hypothesized that the sex differences regarding what is socially acceptable behavior or not can be a product of different socialization

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(Huesmann et al., 1992). Males tend to carry out more imitative aggressive behavior, which can be seen as a result of exposure to the male aggressive model (Bandura, 1965).

Scarce attention in the literature has been paid to understanding gender differences in the way that antisocial attitudes influence the commission of a crime (Heimer, 1996). To our knowledge, only Cohn and Modecki (2007) specifically analyzed the moderating role of participants' sex on the relationship between antisystem attitudes and offending. Cohn and Modecki (2007) found that negative attitudes towards the legal system and delinquency were moderated by sex, meaning that, for male adolescents, antisocial attitudes played a key role in delinquent behavior for male but not for female adolescents.

Further research is required to create better assessment measures of antisocial attitudes, identify at-risk youth, and develop programs that target cognitive restructuring of antisocial thinking patterns. Such programs will not be equally effective for both sexes if antisocial attitudes are not equally related to antisocial behavior for males and females. Furthermore, sex differences regarding antisocial attitudes could have theoretical implications, such as different cognitive processes involved in the commission of a crime for different sexes.

The current study will attempt to test the ICAP theory (Farrington, 2005), which lacks empirical testing in a different database from CSDD findings. Previous research on the ICAP theory found that risk factors measured during childhood (e.g., low academic success, low family income, large family size, poor parental supervision) successfully predicted high antisocial attitude scores at 18 years old. Antisocial beliefs are enhanced when children are exposed to these same beliefs by family members, peers, and their communities through social learning and modeling processes (Farrington, 1995). Additionally, high antisocial attitude scores were found to be predictors of youth convictions at 18 years old. However, using convictions as the measurement of delinquency would most likely present some limitations in testing the ICAP theory (Farrington, 2019). Official arrests may not only reflect long-term antisocial potential but also biases within the justice system (Farrington, 2019). In an effort to reduce official biases the present study will use a self-report measure of delinquent behavior.

The ICAP theory originally sought to explain offending by lower-class males (Farrington & McGee, 2017). Farrington (2019) pointed out the need to investigate if the ICAP theory could explain female offending. CSDD participants grew up under vastly different circumstances from today's boys and girls, which begs the question of how much this theory applies to contemporary female and male offenders (Farrington & Painter, 2004). Our study intends to answer this question by determining whether or not sex moderates the relationship between antisocial attitudes and self-reported juvenile delinquency.

The Present Study

This thesis is focused on the study of antisocial attitudes and their ability to predict antisocial behavior similarly or differently in males and females, including community and forensic participants. Combining the juvenile participants from two different types of settings (schools and juvenile detention facilities) will help to reflect the diversity of delinquent behavior in minors and young adults, further ensuring our ability to generalize study results.

We aim to better explore the differences and similarities between male and female antisocial attitudes associated with delinquency to understand if the ICAP theory can be generalized to fit female delinquency or if sex should be considered when addressing this subject.

The present study has four essential research objectives. To determine if high aggressive attitudes scores are predictors of higher delinquent behavior, to determine if high antisystem attitudes scores are predictors of higher delinquent behavior, to assess if sex moderates the relationship between aggressive attitudes and delinquent behavior and to assess if sex moderates the relationship between antisystem attitudes and delinquent behavior.

Consequently, this thesis contains four main hypotheses. The first hypothesis is that high aggressive attitudes scores will significantly predict higher delinquent behavior. The second hypothesis is that high antisystem attitudes scores will predict higher delinquent behavior. Our third hypothesis is that sex will moderate the relationship between aggressive attitudes scores and delinquent behavior. Our fourth hypothesis is that sex will moderate the relationship between antisystem attitudes scores and delinquent behavior.

Method

Participants

The sample of this study consisted of a total of 472 adolescents and young adults. From this total, 377 were recruited from a school context (79.9%) and 95 from a forensic context (20.1%), chosen by geographical convenience.

Regarding the school sample, 189 of the participants are females (50.1%) and 188 are males (49.9%), recruited from a school in the Center region of Portugal, aged between 12 and 19 years ($M = 14.56$, $SD = 1.76$). The forensic context sample includes 16 females (16.8%) and 89 males (83.2%), and participants were 13 to 20 years of age ($M = 16.09$, $SD = 1.22$), recruited from four juvenile detention

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facilities of the Portuguese Ministry of Justice, three in the Lisbon region and one in the North region of Portugal. At the time of the data collection, all young girls convicted in juvenile detention facilities in Portugal were recruited for the present study.

The final sample has a total of 205 females (43.4%) and 267 males (56.6%), aged 12 to 20 years ($M = 14.84$, $SD = 1.78$). The nationality of the final sample was mainly Portuguese (96.4%, $n = 451$).

Measures

The variables of this study were operationalized using two questionnaires, to evaluate antisocial attitudes the Antisocial Attitude scale (AA), and the International Self-Report Delinquency 3 (ISR3) to assess lifetime self-report offending and sociodemographic variables.

Antisocial Attitude Scale (AA; Farrington & McGee, 2017; Portuguese version by Gomes et al., 2022). The AA was originally developed within the Cambridge Study in Delinquent Development (West & Farrington, 1977) and revised by Farrington and McGee (2017). This version is a 23-item self-report scale that measures long-term antisocial potential using statements representative of antisocial attitudes which predicts delinquency, composed of 2 subscales, 13 items assess aggressive attitudes (e.g., “If someone does the dirty on me I always try to get my own back”) and 10 items evaluate anti-establishment attitudes (e.g., “The police are always roughing people up”). The internal consistency of this scale in the present study was high ($\alpha = .86$). The AA scale used a 4-point Likert scale response format ranging from: definitely true, probably true, probably false, and definitely false. High AA scores correspond to high antisocial attitudes.

International Self-Report Delinquency 3 (ISR3; Enzmann et al., 2018; Portuguese version by Martins et al., 2015). The ISR3 questionnaire is a self-report survey designed to study illegal and social behavior considered to be undesirable, validated to the Portuguese youth. This questionnaire is comprised of 12 modules (i.e., demographic background; family; school; victimization; leisure and peers; attitudes and values; offending; substance use; norm transmission strength; gang; and final question). In this study, only the demographic background and offending modules will be taken into consideration. The demographic background module included 15 items concerning sex, age, demographic and social characteristics, household structure, religion, and questions regarding the economic-financial situation of the participants. The offending module consists of 15 items regarding lifetime and last-year offending. The offenses present in the ISR3 questionnaire include graffiti, vandalism, shoplifting, burglary, bicycle

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theft, car theft, stealing from a car, robbery, assault, stealing from a person, carrying a weapon, group fight, animal cruelty, drug trafficking, and illegal downloading.

For the purpose of this study, we chose to focus on lifetime offending and discarded the illegal downloading item, creating a variety measure of delinquency, with a maximum score of 14, which represents the highest number of offenses committed throughout life. The ISRD3 questionnaire has high internal consistency in this study ($\alpha = .90$).

Procedure

Ethical approval was granted from all institutions involved in this project, the University of Minho Ethics Committee (see Appendix); the Directorate-General for Education (*Direção-Geral da Educação*), which was obtained through the School Surveillance Monitoring System (*Monitorização de Inquéritos em Meio Escolar*); and the Directorate-General for Reintegration and Prison Services (*Direcção-Geral de Reinserção e Serviços Prisionais–Ministério da Justiça*). Ethical approvals were also obtained from the principal of the school involved in the study, as well as from the Directors of the Juvenile Detention Facilities (*Centros Educativos*) for the forensic sample. Lastly, informed consent forms were provided to the underage participants' legal guardians to participate in the study. After this criterion was met, the research team began the data collection process. All respondents participated voluntarily and were given clear instructions to ensure they knew their testimony was confidential and to prevent participant bias. Questionnaires were completed in a paper-and-pencil format in a classroom by the community sample and in a designated room by the forensic sample, only the researcher and participants were present during the data collection. The length of the data collection *per* classroom and designated room took on average 45 minutes.

Data analysis strategy

All statistical analyses were performed using the 28th version of the IBM® SPSS® (Statistical Package for the Social Sciences) software, with a test's significance level p-value probability of $< .05$. Preliminary analyses were used to characterize the sample using the mean and standard deviation, providing a summary of the sample's sociodemographic information, antisocial attitudes, and lifetime offending. To assess the association between study variables a Pearson correlation analysis was performed.

To test the ability of antisocial attitudes (aggressive attitudes and antisystem attitudes) to predict delinquency we performed two separate linear regressions. We then utilized the PROCESS extension to

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estimate the significance of two moderation models. For both models, offending was considered the dependent variable and sex the moderating variable. Aggressive attitudes and antisystem attitudes were considered the independent variables, for each of the two moderation analyses.

Results

Preliminary Analysis

At least 49.8% ($n = 235$) of participants reported having committed at least one offense throughout life. Table 1 shows different types of offending, the most frequently reported being shoplifting (27.7%, $n = 126$), taking part in a group fight (25.6%, $n = 116$), and stealing from a person (23.3%, $n = 106$). Offending varied between zero (50.2%, $n = 237$) and fourteen (0.2%, $n = 1$). Chi-square tests of independence revealed a statistically significant association between all offenses and sex.

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Table 1

Frequencies and Chi-Square Results for Types of Offenses and Sex

ISRD3	Total		Female		Male		N	$\chi^2 (1)$	P
	n	%	n	%	N	%			
Graffiti	96	20.9%	32	15.9%	64	24.7%	460	5.30	.021
Vandalism	63	13.9%	10	5.1%	53	35.5%	454	22.89	< .001
Shoplifting	126	27.7%	44	22.2%	82	31.9%	455	5.24	.022
Burglary	37	8.2%	1	0.5%	36	14.2%	453	27.80	< .001
Bike theft	59	13%	3	1.5%	56	22%	454	41.36	< .001
Stealing from a car	48	10.6%	4	2%	44	17.3%	454	27.47	< .001
Stealing from a person	106	23.3%	26	13.1%	80	31.3%	455	20.72	< .001
Robbery	43	9.5%	8	4%	35	13.7%	455	12.19	< .001
Carrying a weapon	79	17.4%	16	8%	63	24.7%	454	21.60	< .001
Car theft	39	8.6%	3	1.5%	36	14.1%	454	22.64	< .001
Assault	32	7.1%	6	3%	26	10.3%	451	8.85	.003
Group fight	116	25.6%	31	15.6%	85	33.3%	454	18.52	< .001
Drug trafficking	69	14.9%	21	10.4%	48	18.3%	463	5.56	.018
Animal cruelty	44	9.8%	11	5.6%	33	13%	451	7.07	.008

A bivariate analysis was performed using the Pearson correlation coefficient to measure correlations between age and offending, which were found to be highly related to each other, $r(459) = .34, p < .001$.

Regarding antisocial attitudes and offending by sex, results show statistically significant effects (see Table 2). Females ($M = 1.71, SD = 0.49$) showed lower aggressive attitudes than males ($M = 2.11, SD = 0.55$), $t(459.90) = 8.32, p < .001$, as well as lower means in antisystem attitudes for females ($M = 1.82, SD = 0.40$) than males ($M = 1.99, SD = 0.42$), $t(470) = 4.46, p < .001$. Concerning offending, males ($M = 2.78, SD = 3.77$) reported higher means than females ($M = 1.05, SD = 2.06$), $t(428.19) = 6.33, p < .001$.

Table 2

Differences Between Sex on Antisocial Attitudes and Offending (N = 472)

	Male	Female	<i>t</i>	<i>p</i>
	(<i>n</i> = 267)	(<i>n</i> = 205)		
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		
Offending	2.78 (3.77)	1.05 (2.06)	6.33	< .001
Aggressive Attitudes	2.11 (0.55)	1.71 (0.49)	8.32	< .001
Antisystem Attitudes	1.99 (0.42)	1.82 (0.40)	4.46	< .001

Mean levels of antisocial attitudes and offending varied significantly across the sample groups (see Table 3). The community sample ($M = 1.80, SD = 0.49$) showed lower aggressive attitudes than the sample of adjudicated juveniles ($M = 2.49, SD = 0.50$), $t(470) = -12.19, p < .001$. Similarly, lower means in antisystem attitudes for community ($M = 1.83, SD = 0.37$) than forensic group ($M = 2.27, SD = 0.42$), $t(470) = -9.87, p < .001$. Regarding offending, the forensic group ($M = 6.89, SD = 3.94$) reported significantly higher means of lifetime variety of offending than the community group ($M = 0.80, SD = 1.39$), $t(99.93) = -14.85, p < .001$.

Table 3

Differences Between the Sample's Group on Antisocial Attitudes and Offending (N = 472)

	Community Group	Forensic Group	<i>t</i>	<i>p</i>
	(<i>n</i> = 377)	(<i>n</i> = 95)		
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		
Offending	0.80 (1.39)	6.89 (3.94)	-14.85	< .001
Aggressive Attitudes	1.80 (0.49)	2.49 (0.50)	-12.19	< .001
Antisystem Attitudes	1.83 (0.37)	2.27 (0.42)	-9.87	< .001

Aggressive attitudes as a predictor of offending

To test our first hypothesis, we conducted a linear regression analysis to evaluate if aggressive attitudes predicted offending. Our results show that aggressive attitudes significantly predicted offending, $R^2 = .32$, $F(1, 470) = 218.30$, $p < .001$, 95% CI [2.83, 3.70].

Antisystem attitudes as a predictor of offending

We conducted a second linear regression analysis to confirm if antisystem attitudes significantly predicted offending, our results confirmed our hypothesis, $R^2 = .22$, $F(1, 470) = 132.54$, $p < .001$, 95% CI [3.02, 4.27].

Testing the moderation model

Two moderation analyses were conducted to test the hypotheses that sex moderates the relationship between antisocial attitudes and offending. For both models our dependent variable was “offending” and “sex” was the moderating variable.

Sex as a moderator in the relationship between aggressive attitudes and offending

In our first moderation model, we considered aggressive attitudes as the independent variable. The overall model was significant, $F(3, 468) = 78.09$, $p < .001$, $b = -1.39$, 95% CI [-2.34, -0.45], $t = -2.89$, $p = .004$, accounting for a significant amount of variance $R^2 = 0.33$. The interaction effect between sex and aggressive attitudes was significant. See table 5 for the different path coefficients of this model.

We analyzed the conditional effects of the focal predictor at the values of the moderator to better understand the nature of the interaction effect. For males, the relationship between aggressive attitudes and offending was positive and significant ($b = 3.64$, 95% CI [3.06, 4.22], $t = 12.29$, $p < .001$). For females, this effect was also positive and significant, however smaller ($b = 2.25$, 95% CI [1.50, 3.00], $t = 5.91$, $p < .001$). See figure 1 for the simple slope analysis of this effect. High aggressive attitude scores were predictive of offending for both sexes, however, this relationship was stronger for males than females.

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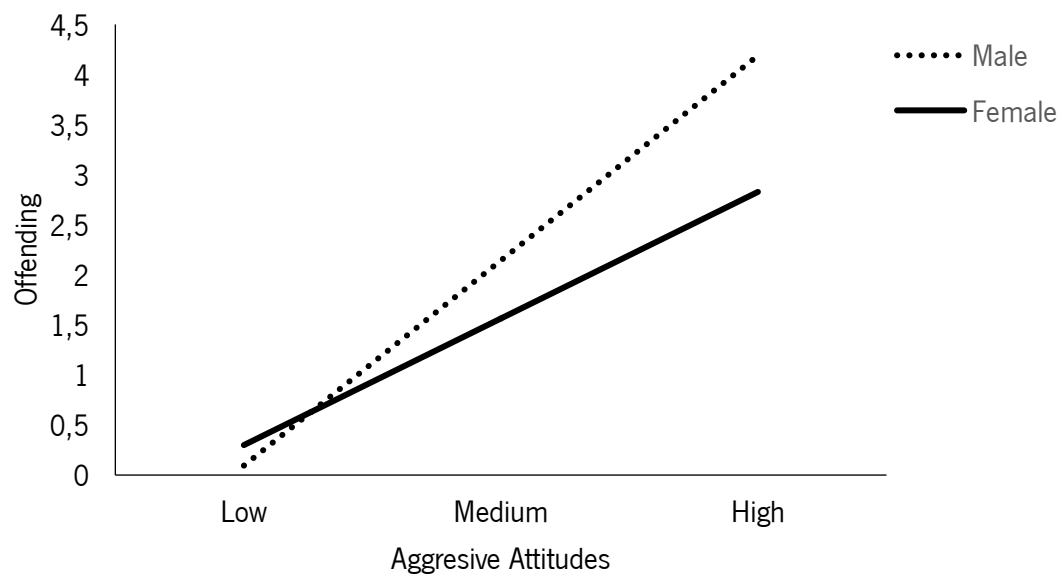
Table 4

Path Coefficients of First Moderation Model (N = 461)

	<i>B</i>	<i>SE B</i>	95% CI	<i>t</i>	<i>p</i>	<i>R</i> ²
Aggressive Attitudes	3.04	0.24	[2.57, 3.50]	12.90	< .001	0.33
Sex	-0.58	0.27	[-1.10, -0.05]	-2.16	.031	
Aggressive Attitudes * Sex	-1.39	0.48	[-2.34, -0.45]	-2.89	.004	

Figure 1

Simple Slope Analysis Chart of First Model



Sex as a moderator in the relationship between antisystem attitudes and offending

For the second moderation model, antisystem attitudes were used as the independent variable. Table 6 shows the different path coefficients of this model. Similarly to our first moderation model, this model was statistically significant, $F(3,468) = 56.99$, $p < .001$ $b = -2.18$, 95% CI [-3.43, -0.93], $t = -3.42$, $p = .001$, accounting for a significant amount of variance $R^2 = 0.27$.

For males, the relationship between antisystem attitudes and offending was positive and significant ($b = 4.27$, 95% CI [3.47, 5.08], $t = 10.42$, $p < .001$). Again, for females, the effect was also positive and significant, however smaller ($b = 2.10$, 95% CI [1.14, 3.05], $t = 4.30$, $p < .001$). See Figure 2 for the simple slope analysis of this effect. Although this relationship was significant for both sexes, antisystem attitudes were better predictors of offending for males than females.

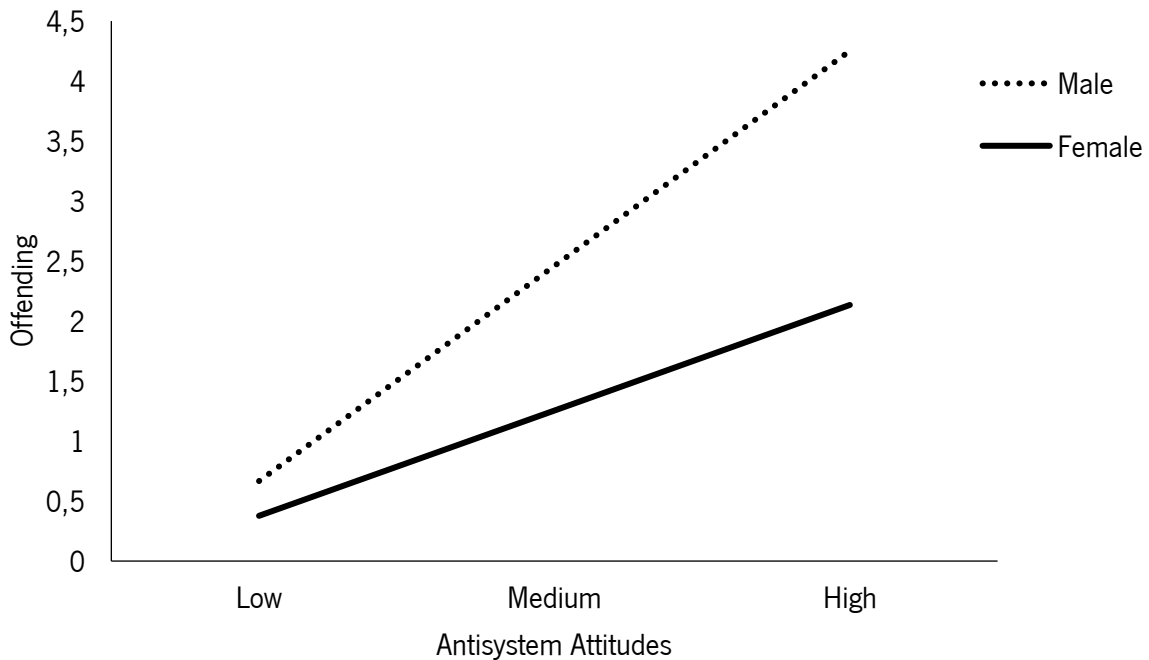
Table 5

Path Coefficients of Second Moderation Model (N = 461)

	<i>B</i>	<i>SE B</i>	95% CI	<i>t</i>	<i>p</i>	<i>R</i> ²
Antisystem Attitudes	3.33	0.31	[2.71, 3.94]	10.60	< .001	.27
Sex	-1.20	0.27	[-1.73, -0.68]	-4.53	< .001	
Antisystem Attitudes * Sex	-2.18	0.64	[-3.43, -0.93]	-3.42	.001	

Figure 2

Simple Slope Analysis Chart of Second Model



Discussion

Scientific research has repeatedly found cognition to have a vital role in the perpetuation of antisocial behavior (Berkowitz, 1988; Crick & Dodge, 1994). Furthermore, to our knowledge, research regarding the moderating effect of participants' sex on the relationship between antisocial attitudes and offending is a very unexplored field. The current study set out with the aim of testing the ICAP theory by analyzing if antisocial attitudes are predictors of offending, furthermore, our study aimed to explore if sex had a significant moderating effect on the relationship between antisocial attitudes and offending.

Our findings support the ICAP theory, consistent with our first two hypotheses: antisocial attitudes predicted juvenile delinquency. Additionally, this study identifies a moderating effect of sex upon the relationship between antisocial attitudes and juvenile delinquency. All four hypotheses guiding this study were supported.

The results of the present study show a positive association between age and lifetime delinquency, adding to the well-documented age-crime relationship throughout the literature. The age-crime curve has been consistently observed in developmental criminology (Shulman, 2013). Research has shown that, on

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average, juvenile delinquent involvement seems to peak during late adolescence and decrease when entering adulthood (Farrington, 1986).

Male offending was significantly higher than female offending. The gender gap is well-documented not only in official statistics but also in self-reported delinquency questionnaires (Steffensmeier et al., 2005). A study comparing 11 countries using the ISRD self-reported delinquency measure also found higher rates of delinquency in boys across all countries (Junger-Tas et al., 2004). Furthermore, our results indicate that boys are more likely to commit all types of offenses than girls.

Antisocial attitudes were found to be significantly higher in males than females. Higher levels of pro-aggressive attitudes in males have been previously documented (Butler et al., 2007; Butler et al., 2015; Huesmann & Guerra, 1997; Hurioglu & Tumkaya, 2016). Hurioglu and Tumkaya (2016) hypothesize that a possible reason for this phenomenon could be that the masculine gender role is overall more encouraging and accepting of violence than female gender roles, gendered socialization could play an important role in the development of aggressive beliefs.

Likewise, the present study also found males to have significantly more antisystem attitudes, these findings can also be found in existing literature (Emler & Reicher, 1987; Murray & Thompson, 1985; Reicher & Emler, 1985; Zafar et al., 2013). Culturally, young girls are taught to be more obedient than young boys, this socialization process may have an impact on how youths perceive, react, and form attitudes and beliefs towards authority figures.

As expected, the forensic group also appears to be related to offending. Results also indicate that the forensic sample reported more aggressive attitudes than the community sample. Not many studies specifically evaluate differences in antisocial attitudes between community and forensic samples, however, our findings are similar to the ones of Slaby and Guerra (1988), which compared incarcerated young offenders and students rated with high and low aggression, their results found that incarcerated offenders are more likely to hold positive attitudes towards aggression. Young offenders' households often display patterns of child abuse, poor parental control, and poor parent-child relationships (Gove & Crutchfield, 1982) as well as higher affiliation with delinquent peers (Alboukordi et al., 2012), these negative variables most likely impair youths' ability to develop prosocial cognitions (Cohen & Strayer, 1996).

Juvenile offenders also displayed higher antisystem attitudes. Similar findings can also be found in Robinson et al. (2007) study on conduct-disordered youth and community youth. Child maltreatment and

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antisocial models may influence these types of antisocial attitudes by increasing distrust of others. Moreover, the youths' social background, negative experiences with authority figures, and commitment to a delinquent pattern of behavior seem to be related to antisystem attitudes (Leiber et al., 1998), the forensic sample will most likely show higher rates of these characteristics and circumstances than the community sample.

Present findings support our first hypothesis, aggressive attitudes are predictors of offending (Dodge & Coie, 1987; Farrington & West, 1981; Huesmann & Guerra, 1997). People with more aggressive attitudes are more likely to become aggressive because they will evaluate situations as more hostile (Huesmann, 1998). Aggressive attitudes are also correlated with overall more deviant cognitive processes in evaluating and reacting to social situations, namely, hostile attribution bias, inclination to come up with aggressive solutions in a perceived unjust situation, and retrospectively positive evaluation of said aggressive solutions a year later (Zelli et al., 1999). Existing literature often explores the effect of aggressive attitudes on aggressive behavior instead of overall juvenile offending (e.g., Dodge & Coie, 1987; Huesmann, 1998; Huesmann & Guerra, 1997; Huesmann et al., 1992; Zelli et al., 1999). This thesis tries to fill this gap by measuring violent offenses (i.e., assault, robbery) and non-violent offenses as well (i.e., graffiti, drug trafficking). Our findings suggest that aggressive attitudes are predictors of overall delinquent behavior. A possible explanation for this is that pro-aggressive attitudes foresee the presence of underlying more antisocial cognitive processes, such as self-serving cognitive distortions (i.e., Self-Centered, Blaming Others, Minimizing and Assuming the Worst) which are, in turn, associated with many types of offending, as reported by Gomes et al. (2021).

Our second hypothesis claimed that antisystem attitudes would be predictors of offending, which was confirmed by our results. Farrington (1995) documented associations between convictions and antisystem attitudes in the Cambridge Study in Delinquent Development, it was hypothesized that youths surrounded by family and communities that hold antisystem beliefs will influence their perception of right and wrong or justified and unjustified which in turn will increase their odds of enacting a crime, as they perceive their actions to be justifiable.

The ICAP theory (Farrington, 2005) was tested by operationalizing antisocial potential as aggressive and antisystem attitudes and analyzing their probability to influence crime (Farrington & McGee, 2017). It has been documented that the effects of risk factors vary between sexes, such as the ones detailed in the ICAP theory (i.e., antisocial models, school performance, parental relationships, need for peer approval). Since antisocial attitudes seem to be influenced by some of these factors it is important to

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explore sex's possible moderating effect. Our findings are consistent with our third and fourth hypotheses: sex moderates the relationship between aggressive attitudes and offending and sex moderates the relationship between antisystem attitudes and offending. Boys were more influenced by aggressive and antisystem attitudes than girls in the commission of antisocial behaviors, although girls were still significantly influenced. A possible explanation for sex's moderating role may be that different types of antisocial attitudes are more important in the commission of a crime for girls, such as antiforeigner and pro-drug attitudes. Future research should further explore other types of antisocial attitudes aside from aggressive and antisystem attitudes, such as pro-drugs and anti-foreigner attitudes, as these may not have as much impact as other types of antisocial attitudes in female offending. Another possible explanation is that, perhaps, in female offending antisocial attitudes are not as important in the commission of a crime because females prioritize different cognitive processes, such as evaluating the costs and benefits of behaving in an antisocial way. The findings of Cohn and Modecki (2007) suggest that antisystem attitudes played a central role in antisocial behavior for males as the only predictor of delinquency, but not for females, in turn, females' sole predictor of delinquency was anti-right-wing authoritarianism views. The commission of a crime may need different explanations for different sexes, especially regarding cognitive processes. It seems important that more research is done on sex differences in the effects of different types of antisocial attitudes as well as other cognitive processes on antisocial behavior. According to our findings, it seems that the ICAP theory might be less well suited for explaining young female offending than young male offending.

Conclusion

In conclusion, the current study contributes to the existing literature on the underexplored topic of aggressive and antisystem attitudes concerning juvenile delinquency, and how they behave in the function of gender. Intervention programs that focus on cognitive restructuring, although extremely important for both sexes, should consider sex differences in young offenders' cognitive processes to be equally effective for young boys and girls.

Our research presents an important contribution to the validity of the ICAP theory, as we were able to replicate the results found by Farrington and McGee (2017) regarding the antisocial attitudes predictability of antisocial behavior. However, our study calls into question the generalizability of the ICAP theory, as our results found sex to play a moderating role in the relation between antisocial attitudes and delinquency. These findings may have strong theoretical implications, it is possible that adjustments could be made to cater to sex differences in antisocial potential.

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However, our findings must be interpreted considering some limitations, which should direct us to future research in this area. Even though participants were told that responses to questionnaires would remain anonymous, self-reported measures are more vulnerable to response bias, some participants may have inaccurately responded to our instruments (Gomes et al. 2018, 2019). It is important to note that the current study used a cross-sectional design, meaning that it is difficult to derive causal relationships in our analysis, furthermore, some relationships considered in this study may have bidirectional influences. To derive causal relationships future research should better explore these interactions in longitudinal studies. Future longitudinal studies should also focus on how antisocial attitudes change through life and their contribution to desistance processes or life-course-persistent offending. Furthermore, prevalence can affect the measures being used in our study and therefore the strengths of male associations may falsely seem stronger (Farrington & Painter, 2004). Finally, future research should include participants with more mild offending sentences to increase the diversity of results, as such extreme differences in scores of different settings may not be representative of the diversity of human behavior and cognition in delinquent behavior.

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Appendix

Approval of the Ethics Committee of The University of Minho



Universidade do Minho

SECSH

Subcomissão de Ética para as Ciências Sociais e Humanas

Identificação do documento: SECSH 052/2017

Título do projeto: *Self-report bias in measuring delinquent behaviour: Modes of administration, questionnaire design, and testing effects in longitudinal studies*

Investigador(a) Responsável: Angela Maia, Unidade de Investigação de Justiça e Violência do Centro de Investigação em Psicologia (CIPSI), Escola de Psicologia, Universidade do Minho (Orientadora)

Outros Investigadores: Hugo S. Gomes, Estudante de doutoramento em Psicologia Aplicada, Universidade do Minho; David P. Farrington (Instituto de Criminologia, Universidade de Cambridge)

PARECER

A Subcomissão de Ética para as Ciências Sociais e Humanas (SECSH) analisou o processo relativo ao projeto intitulado *Self-report bias in measuring delinquent behaviour: Modes of administration, questionnaire design, and testing effects in longitudinal studies*.

Os documentos apresentados revelam que o projeto obedece aos requisitos exigidos para as boas práticas na investigação com humanos, em conformidade com as normas nacionais e internacionais que regulam a investigação em Ciências Sociais e Humanas.

Face ao exposto, a SECSH nada tem a opor à realização do projeto na UMinho.

Braga, 04 de dezembro de 2017.

O Presidente

Digitally signed by
PAULO MANUEL
PINTO PEREIRA
ALMEIDA MACHADO
Date: 2017.12.05
16:22:00 Z

Paulo Manuel Pinto Pereira Almeida Machado