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Testing the Integrated Cognitive Antisocial Potential (ICAP) theory: what is the role of sex?

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Abstract

Background: For decades, crime has been perceived as a predominantly male phenomenon. As a consequence, most criminological theories have focused on male offenders, often overlooking the possibility that female delinquency may not be adequately explained by the same theoretical models. The Integrated Cognitive Antisocial Potential (ICAP) theory is a male-centered framework that predicts delinquent behaviors based on antisocial attitudes. This study aims to assess wether the ICAP theory can effectively predict delinquency in both female and male samples. Additionally, it examines the moderation effect of participants' sex in the relationship between antisocial attitudes and juvenile delinquency, distinguishing between violent and non-violent offenses.

Methods: The sample (N = 491) comprises participants recruited from a public school in the Center Region of Portugal and a forensic sample recruited from 4 Juvenile Detention Centers. Of the total participants, 43.4% of the participants are female and 56.6% are male adolescents and young adults. Delinquent behavior was assessed using the International Self-Report Delinquency 3 questionnaire (ISRD-3), while antisocial attitudes were measured using the Antisocial Attitudes scale.

Results: Findings indicate that aggressive and antisystem attitudes significantly predict offending behavior. Further, participants' sex moderates the relationship between antisocial attitudes and non-violent offenses, but not violent offenses.

Conclusions: Present findings showed that the theory effectively predicts delinquency through aggressive and antisystem attitudes. However, its applicability to female offenders may require adjustments. Future research should explore additional factors influencing female delinquency.

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

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Testing the Integrated Cognitive Antisocial Potential (ICAP) theory: what is the role of sex?

Introduction

The Integrated Cognitive Antisocial Potential (ICAP) theory, developed by Farrington (2005), is a foundational framework within developmental and life-course theories. The ICAP framework (see Figure 1) integrates elements from strain, control, labeling, and rational choice theories (Farrington & Ttofi, 2017) to explain the development of delinquency. However, the key construct in the ICAP theory is antisocial potential (AP). This theoretical model differentiates between long-term AP, influenced by risk and protective factors, and short-term AP, shaped by situational factors (Farrington & McGee, 2018). ICAP also considers cognitive processes where individuals evaluate the cost and benefits of offending, with AP influenced by perceived consequences of offending, whether resulting from punishment, reinforcement, or labeling (Farrington & McGee, 2017).

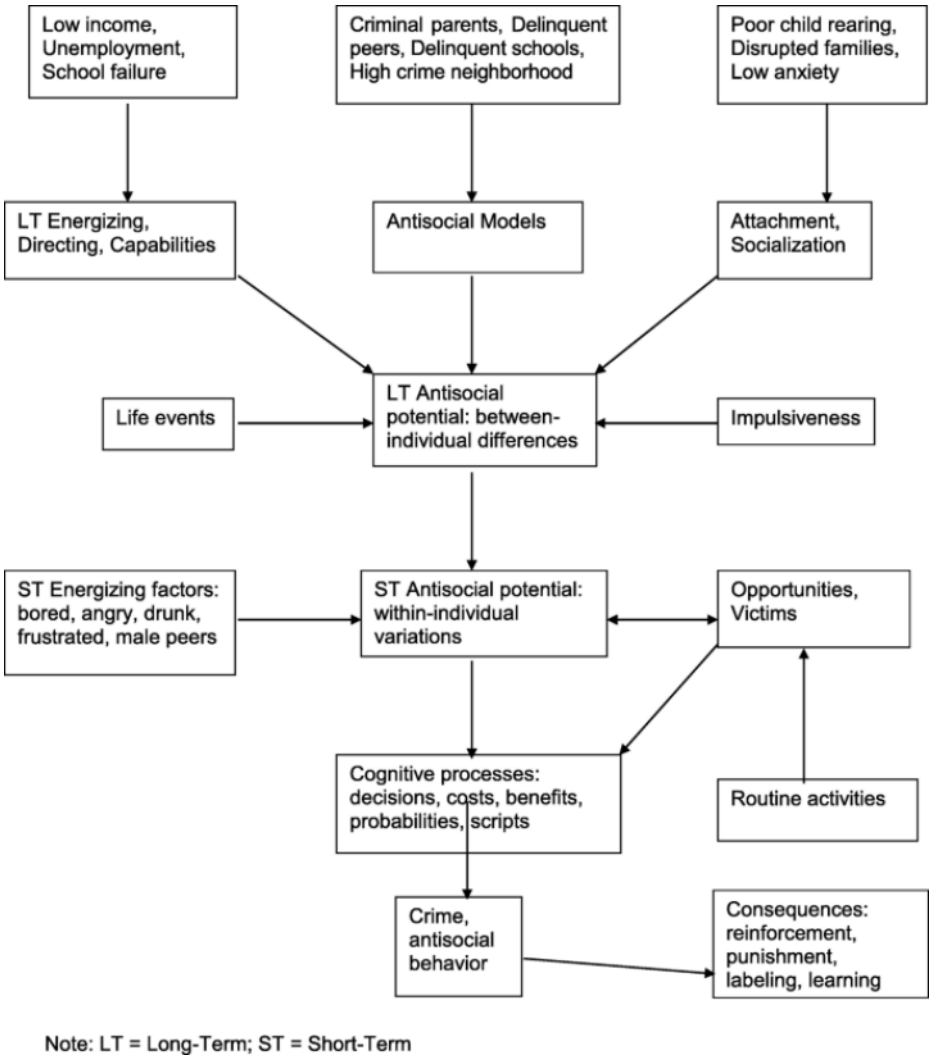

Figure 1 The Integrated Cognitive Antisocial Potential (ICAP) Theory

Long-term AP is influenced by risk factors, including stress, exposure to antisocial models (from parents and peers), socialization, impulsiveness, and life events; while short-term AP is contingent on immediate motivational and situational factors, such as anger or crime opportunity (Farrington & McGee, 2017). Furthermore, ICAP theory incorporates evidence on the versatility of antisocial behavior, suggesting that frequent offenders are prone to multiple crime types rather than specializing in a single offense category. Capaldi and Patterson (1996) concluded that the etiology of frequent offending relates to long-term risk factors. In contrast, the type of committed crime seems more impacted by the context-specific opportunities in the environment (Capaldi & Patterson, 1996). As a result, ICAP was proposed as a general theory that explains offending across different types of antisocial behaviors, from substance use to property and violent crimes (Farrington & McGee, 2017), indicating that individuals with high AP are more likely to engage in antisocial acts. However, situational factors may influence which specific offense is committed. Farrington and McGee (2017) hypothesized that long-term AP broadly predicts delinquency, while short-term AP could vary by crime type.

West and Farrington (1977) first measured long-term AP within the Cambridge Study in Delinquent Development (CSDD) using the Antisocial Attitudes (AA) scale (Farrington & McGee, 2017). The CSDD is a prospective longitudinal study of 411 working-class Caucasian British males born in 1953, followed from age 8 onward across their life courses. Within the study, this cohort is classified as Generation 2 (G2 males). The AA scale includes two subscales: Aggressive attitudes scale (e.g., "If someone hits me first, I really let him have it") and Anti-establishment attitudes scale (e.g., "Anyone who works hard is stupid") (Farrington & McGee, 2017). Farrington and McGee's (2017, 2018) testing of ICAP theory within the CSDD indicates that high long-term AA scores successfully predict convictions in G2 males.

The ICAP theory posits that AP remains relatively stable over the life course. Supporting this central proposition, Farrington and McGee (2017) found AA scores to be stable across ages, with highly antisocial G2 men at 18 tending to remain more antisocial throughout life compared to other participants in the sample. However, absolute values of AP decreased with age (Farrington & McGee, 2017). Further, Farrington and McGee (2018) replicated these findings with G2 males' sons (G3 males), showing that AP predicted antisocial behavior at age 25. Gomes et al. (2023) investigated the sample used in this study dividing it into three different age groups (13 –15 years old; 16 –17 years old; 18 –21 years old). They found that AP did not significantly differ among these age groups. However, a non-statistically significant visual trend was found in the long-term antisocial potential values, resembling the age-crime curve (Gomes et al., 2023).

ICAP theory was originally developed to explain offending among lower-class males (Farrington & McGee, 2017). However, Farrington (2019) highlighted the need to examine if the ICAP theory could also explain female offending, given that risk factors may impact males and females differently, potentially requiring adjustments to the model. Additionally, as the CSDD male participants grew up in contexts quite different from those faced by today's youth, questions arise about the theory's applicability to contemporary offenders of both genders (Farrington & Painter, 2004).

Current research on gender differences in antisocial attitudes remains inconclusive. Some studies suggest no significant differences between males and females (Ardelt & Day, 2002; Bendixen & Olweus, 1999; Hurioglu & Tumkaya, 2016; Stevenson et al., 2004; Walters et al., 1998), while most indicate that males exhibit higher antisocial attitudes (Butler et al., 2007; Butler et al., 2015; Gomes et al., 2022, 2023; Huesmann & Guerra, 1997), and some even report the opposite (Mazher et al., 2022; Walters, 2002).

For instance, research has shown that higher cognitive distortions is correlated with the externalization of problematic and antisocial behavior regardless of race, gender, and age (Helmond et al., 2014). Nonetheless, females report fewer cognitive distortions than males (Lardén et al., 2006; Tangney et al., 2012). Crick and Dodge (1994) propose that male cognition may be more instrumental, while female cognitions tend to be more interpersonal, which may lead males toward self-serving cognitive distortions (Gomes et al., 2022) and females toward greater pro-sociality (Hoffmann et al., 2004) and social competence (Merrell, 1993), which may increase the risk of male delinquency (Lardén et al., 2006).

Butler and Leschied (2007) examined the Antisocial Beliefs and Attitudes Scale (ABAS), a self-report instrument that assesses antisocial thinking across three main factors: Rule Non-Compliance, Peer Conflict, and Severe Aggression. In a sample of 425 children (ages 10-18), boys scored significantly higher than girls on Peer Conflict and Severe Aggression, while no significant sex differences emerged for Rule Non-Compliance.

Buss and Perry (1992) applied their Aggression Questionnaire (AQ) to a sample of 1253 participants (51.1% women) and found that men scored significantly higher than women on Physical Aggression, Verbal Aggression, and Hostility, but not on Anger. This suggests that although women experience the same levels of anger as men, however, their expression may be inhibited by means of different cognitive processes.

Tangney et al. (2012) used the 25-item Criminogenic Cognitions Scale (CCS) and found that women scored lower than men on most dimensions, namely Notions of Entitlement, Short-Term Orientation, Insensitivity to the Impact of Crime, and Negative Attitudes Toward Authority). However, no gender differences were found in Failure to Accept Responsibility. In contrast, Vaske et al. (2017) found no gender differences in the CCS dimensions.

Another line of research has employed the Measures of Criminal Attitudes and Associates (MCAA), a widely used tool for assessing criminal attitudes. The MCAA con-

sists of two parts: Part A, which assesses peer offending, and Part B, which measures attitudes across four scales - Violence, Entitlement, Antisocial Intent, and Characteristics of Associates (Mills et. al., 2004). In Sweeden, Bäckström and Björklund (2008) analyzed the MCAA with an online sample and a sample of criminal offenders. Results showed that females scored lower than males in Positive Attitudes Towards Criminality, Antisocial Intent, and Violence in the online sample. Among offenders, males displayed higher scores in Antisocial Intent and Associates. Contrarily, O'Hagan et al. (2019) applied the MCAA scale to a sample of 300 justice-involved youth in Canada and found no differences between genders. These findings highlight potential sex differences in criminal cognition across populations.

Walters (2002) conducted a meta-analysis on the Psychological Inventory of Criminal Thinking Styles (PICTS), a self-report inventory designed to capture deviant thinking patterns associated with criminal behavior. Two studies analyzed adult female samples (Walters & Elliott, 1999; Walters et al., 1998), and both found higher PICTS scores compared to a male sample (Walters, 1995), suggesting that female offenders may exhibit more cognitively deviant tendencies, possibly due to the heightened social unacceptability of female antisocial behavior (Walters, 2002).

Vaske et al. (2017) suggest that this inconsistency may stem from varying definitions of "criminal thinking", which includes both the content (e.g., negative attitudes toward authority, favorable views of antisocial behavior) and processes (e.g., a negative worldview). Different measurement approaches capture distinct facets of criminal cognition, thereby complicating whether antisocial attitudes consistently differ across genders. Moreover, internal consistency tends to be lower for females than for males, indicating that these scales are more effective at predicting antisocial behavior and attitudes in males than in females (Bendixen & Olweus, 1999; Vaske et al., 2017).

The present study aims to test the ICAP theory's fundamental hypotheses by examining whether anti-establishment and aggressive attitudes predict self-reported juvenile delinquency. Additionally, we seek to determine if sex moderates the relationship between these antisocial attitudes and different types of offending (overall, violent, and property offending). Focusing on antisocial attitudes as predictors of delinquency in both males and females, this study utilizes a diverse sample of community and forensic settings. By combining participants from schools and juvenile detention facilities, we aim to capture a broad spectrum of delinquent behavior in minors and young adults, enhancing the generalizability of our results.

This study includes four hypotheses: H1: high antisocial attitude scores predict higher levels of delinquent behavior; H2: sex moderates the relationship between antisocial attitudes and overall delinquent behavior; H3: sex moderates the relationship between antisocial attitudes and property delinquency; and H4: sex moderates the relationship between antisocial attitudes and violent delinquency.

Methods

Participants

Eligible participants of the present study consisted of a total of 518 adolescents and young adults. From this total, 409 were recruited from a school context (79.0%) and 109 from a forensic context (21.0%), chosen by geographical convenience. A total of 27 participants were excluded from the study's database due to non-response to the selected measures. Regarding the school sample, 195 of the participants are females (50.1%) and 194 are males (49.9%), recruited from a school in the Center region of Portugal, aged between 13 and 21 years (M = 15.41, SD = 1.75). The forensic context sample includes 18 females (17.6%) and 84 males (82.4%), and participants were 13 to 20 years of age (M = 16.09, SD = 1.27), recruited from four juvenile detention 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 was composed of a total of 213 females (43.4%) and 278 males (56.6%), aged 13 to 21 years (M = 15.54, SD = 1.69). The nationality of the final sample was mainly Portuguese (95.9%).

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 (ISRD3) to assess lifetime self-report offending and sociodemographic variables.

Antisocial Attitude Scale (AA; Farrington & McGee, 2017; Portuguese version by Gomes et al., 2023). The AA was originally developed within the Cambridge Study in Delinquent Development (West & Farrington, 1977) and revised by Farrington and McGee (2017). Farrington and McGee (2017) found that the AA scale demonstrated adequate internal consistency within G2 males (= .72 at age 18, = .67 at age 32, and = .71 at age 48). 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 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. The internal consistency of this scale in the present study was high (= .85).

International Self-Report Delinquency 3 (ISRD3; Enzmann et al., 2018; Portuguese version by Martins et al.,

2015). The ISRD3 questionnaire is a self-report survey designed to study illegal and social behavior considered to be undesirable, validated by the Portuguese youth. This questionnaire is comprised of 11 modules (i.e., demographic background; family; school; victimization; leisure and peers; attitudes and values; offending; substance use; norm transmission strength; procedural justice, and peer influence). 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 and financial situation of the participants. The offending module consists of 15 items regarding lifetime and last-year offending. The offenses present in the ISRD3 questionnaire include graffiti, vandalism, shoplifting, burglary, bicycle 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 this study, we chose to discard the items concerning illegal downloading, animal cruelty, and graffiti, creating a measure of variety of delinquency (Sweeten, 2012), with a maximum score of 12, which represents the highest number of offenses committed last year and throughout life. The 12 ISRD3 items were divided into two composite variables: violent offenses (robbery, assault, carrying a weapon, group fight) and property offenses (vandalism, shoplifting, burglary, bicycle theft, car theft, stealing from a person, carrying a weapon and drug trafficking; Doelman et al., 2021).

In this study, two different data collection approaches were put into practice, due to the nature of the original research projects they were inserted in. The forensic sample was part of a cross-sectional study, collected in a single moment. Contrarily, the community sample's data integrated a small longitudinal study, over one year. Data was collected at three distinct moments, separated by six months, where the AA questionnaire was only administered during the final data collection moment. Concerning ISRD3, this questionnaire was applied to all data collection moments. In the first moment, participants were questioned regarding lifetime offending. In contrast, participants were specifically asked about their engagement in offending behaviors over the last 6 months in the middle and final moments. Subsequently, a composite variable representing the prevalence of lifetime offending was constructed by integrating the data obtained from the first collection moment and summing any new offenses that may have occurred over the last two moments.

Procedures

Ethical approval was granted from all institutions involved in this project, the University of Minho Ethics Committee; 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 and 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 meeting this criterion, the research team began an in-person data collection process. All respondents participated voluntarily and were given clear instructions to ensure they were aware their testimony was confidential, preventing 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 an average of 45 minutes. The participants were not given any form of monetary compensation.

Statistical analysis

All statistical analyses were performed using the 28th version of the IBM® SPSS® (Statistical Package for the Social Sciences) software. The significance level was set at a 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 and lifetime offending. We carried out 9 moderation models to test our hypothesis. In all moderation models, we considered age and group (i.e., community and forensic sample) as covariates. For all moderation hypotheses, three different outcomes regarding antisocial attitudes were considered, the total long-term antisocial potential, and the two sub-scales of the antisocial attitudes scale: aggressive attitudes and anti-establishment attitudes.

Results

As a preliminary analysis, we analyzed the prevalence of each offending behavior in the current sample. At least 51.3% (n = 252) of participants reported having committed at least one offense throughout life. Table 1 shows different types of offending, the most frequently reported being shoplifting (29.7%, n = 146), taking part in a group fight (27.6%, n = 135), and stealing from a person (25.1%, n = 123). Chi-square tests of independence revealed a statistically significant association between all offenses and sex, except for shoplifting. Independent t-tests displayed significant differences in variety scores between females and males. For overall delinquency, females (M = 1.04, SD = 1.88) showed significantly lower variety scores than males (M = 2.67, SD = 3.47). Chi-square tests revealed significant differences in the prevalence of offending between females and males. Overall delinquency prevalence was significantly lower among females (39.4%) than males (60.4%).

	Total	Females	Males	*t*	*p*
Variety scores	M (SD)	M (SD)	M (SD)		
Overall delinquency	1.96 (3.00)	1.04 (1.88)	2.67 (3.47)	6.17	< .001
Property crimes	1.12 (1.85)	0.54 (1.00)	1.56 (2.19)	6.33	< .001
Violent crimes	0.67 (1.09)	0.38 (0.83)	0.90 (1.21)	5.37	< .001
Prevalence scores	*n* (%)	*n* (%)	*n* (%)	χ^2	*p*
Overall delinquency	252 (51.3)	84 (39.4)	168 (60.4)	21.28	< .001
Property crimes	208 (42.4)	69 (32.4)	139 (50.0)	15.31	< .001
Violent crimes	178 (36.3)	47 (22.1)	131 (47.1)	32.76	< .001
Delinquency items					
Vandalism	76 (15.5)	14 (6.6)	62 (22.4)	22.97	< .001
Shoplifting	146 (29.7)	54 (25.4)	92 (33.1)	3.10	.063
Burglary	43 (8.8)	2 (0.9)	41 (14.9)	29.03	< .001
Bike theft	66 (13.4)	3 (1.4)	63 (22.7)	46.82	< .001
Car theft	44 (9.0)	4 (1.9)	40 (14.4)	23.25	< .001
Stealing from a car	52 (10.6)	5 (2.3)	47 (17.0)	27.13	< .001
Robbery	48 (9.8)	9 (4.2)	39 (14.0)	13.14	< .001
Stealing from a person	123 (25.1)	33 (15.5)	90 (32.4)	18.30	< .001
Carrying a weapon	103 (21.1)	26 (12.2)	77 (27.9)	17.80	< .001
Group fight	135 (27.6)	34 (16.0)	101 (36.6)	25.61	< .001
Assault	43 (8.8)	11 (5.2)	32 (11.6)	6.26	.012
Drug sales	84 (17.2)	27 (12.7)	57 (20.7)	5.27	.022

Table 1
Frequencies and Chi-Square Results for Types of Offenses and Sex

To address hypothesis one, we carried out 3 Models: (1) sex moderates the relationship between total antisocial attitudes and juvenile delinquency (Model 1); (2) sex moderates the relationship between aggressive attitudes and juvenile delinquency (Model 2); and (3) sex moderates the relationship between anti-establishment attitudes and juvenile delinquency (Model 3). Model 1 explained 63% of the variance in juvenile delinquency (see Table 2, *Moderation Models*). As Table 2 demonstrates, regardless of the type of antisocial attitudes, results are very similar. A statistically significant direct effect of antisocial attitudes on offending was found (Model 1: $b = 2.73$, $p < .001$; Model 2: $b = 2.08$, $p < .001$; Model 3: $b = 1.90$, $p < .001$); an effect of sex on offending (Model 1: $b = 2.19$, $p < .001$; Model 2: $b = 1.59$, $p < .01$; Model 3: $b = 0.80$, $p < .1$); and a significant interaction effect (Model 1: $b = -1.15$, $p < .01$); Model 2: $b = -0.81$, $p < .05$; Model 3: $b = -0.85$ $p < .05$), where the effect of antisocial attitudes on offending is significantly stronger for males than for females (see Table 3). Figure 2 illustrates this effect, indicating that as antisocial attitudes increase, overall offending increases more sharply for males than females.

For testing hypothesis two, we conducted Models 4, 5, and 6: (4) sex moderates the relationship between total antisocial attitudes and non-violent offending (Model 4); (5) sex moderates the relationship between aggressive attitudes and non-violent offending (Model 5); and (6) sex moderates the relationship between anti-establishment attitudes and non-violent offending (Model 6). Model 4 explained 58% of the variance in non-violent juvenile delinquency (see Table 2). Table 2 demonstrates similar results, regardless of the type of antisocial attitude. A strong direct effect of antisocial attitudes on non-violent offending was found (Model 4: $b = 1.57$, $p < .001$; Model 5: $b = 1.21$, $p < .001$; Model 6: $b = 1.05$, $p < .001$); an effect of sex on non-violent offending (Model 4: $b = 1.84$, $p < .001$; Model 5: $b = 1.41$, $p < .01$; Model 3: $b = 1.08$, $p < .05$); and a significant interaction effect of antisocial attitudes on non-violent offending (Model 4: $b = -1.03$, $p < .001$; Model 5: $b = -0.79$, $p < .001$; Model 6: $b = -0.70$, $p < .01$). Similarly, the link between antisocial attitudes and overall offending is stronger for males than for females (see Table 3). Interestingly, in Model 6, conditional effects show that antisystem attitudes are only a statistically sig-

Table 2 Moderation Models

	Coeff	SE	95% CI	Coeff	SE	95% CI	Coeff	SE	95% CI
	Model 1 (AA*Sex – Overall offend.)			**Model 2 (Aggr.*Sex – Overall offend.)**			**Model 3 (A-Est.*Sex – Overall offend.)**		
Attitudes	2.73	0.27***	[2.205; 3.261]	2.08	0.22***	[1.651; 2.500]	1.90	0.28***	[1.349; 2.440]
Sex	2.19	0.76**	[0.698; 3.677]	1.59	0.63*	[0.350; 2.825]	1.33	0.80†	[-0.246; 2.910]
Attitudes*Sex	-1.15	0.39**	[-1.920; -0.378]	-0.81	0.32*	[-1.449; -0.175]	-0.85	0.41*	[-1.662; -0.036]
Age	0.12	0.05*	[0.021; 0.214]	0.13	0.05*	[0.031; 0.227]	0.09	0.25†	[-0.009; 0.196]
Group	4.00	.24***	[3.526; 4.478]	4.15	0.24***	[3.670; 4.625]	4.55	0.05***	[4.065; 5.031]
R^2		.63			.62			.58	
	Model 4 (AA*Sex – Non-violent offend.)			**Model 5 (Aggr.*Sex – Non-violent offend.)**			**Model 6 (A-Est.*Sex – Non-violent offend.)**		
Attitudes	1.57	0.18***	[1.224; 1.916]	1.21	0.14***	[0.933; 1.486]	1.05	0.18***	[0.700; 1.405]
Sex	1.84	0.50***	[0.859; 2.814]	1.41	0.41**.	[0.602; 2.213]	1.08	0.52*	[0.059; 2.100]
Attitudes*Sex	-1.03	0.26***	[-1.533; -0.521]	-0.79	0.21***	[-1.200; -0.370]	-0.70	0.27**	[-1.227; -0.176]
Age	0.06	0.03†	[-0.006; 0.121]	0.06	0.03*	[0.001, 0.128]	0.05	0.03ns	[-0.021; 0.111]
Group	2.45	0.16***	[2.135; 2.760]	2.54	0.16***	[2.230, 2.852]	2.74	0.16***	[2.431, 3.055]
R^2		.58			.58			.54	
	Model 7 (AA*Sex –Violent offend.)			**Model 8 (Aggres.*Sex – Violent offend.)**			**Model 9 (A-Est.*Sex – Violent offend.)**		
Attitudes	0.96	0.12***	[0.739; 1.190]	0.72	0.09***	[0.540; 0.903]	0.69	0.12***	[0.461; 0.923]
Sex	0.35	0.33 n.s.	[-0.293; 0.982]	0.17	0.27 n.s.	[-0.361; 0.967]	0.26	0.34 n.s.	[-0.405; 0.931]
Attitudes*Sex	-0.16	0.17 n.s.	[-0.494; 0.166]	-0.06	0.14 n.s.	[-0.336; 0.208]	-0.18	0.18 n.s.	[-0.527; 0.161]
Age	0.43	0.02*	[0.002; 0.085]	0.05	0.02*	[0.005; 0.089]	0.03	0.02ns	[-0.010; 0.077]
Group	1.11	0.10***	[0.908; 1.316]	1.16	0.10***	[0.950; 1.359]	1.32	0.10***	[1.115; 1.523]
R^2		.48			.47			.43	

Note. AA = Antisocial Attitudes; Aggr. = Aggressive Attitudes subscale; A-Est. = Anti-establishment Attitudes subscale; Offend. – Self-reported offending; n.s.= Statistically non-significant; * p < .05; ** p < .01; *** p < .001.

Table 3 Conditional effects

	B	SE	*t*	*p*	95% CI
Model 1 (AA*Sex – Overall offend.)					
Male	2.73	0.27	10.18	<.001	[2.205; 3.261]
Female	1.58	0.31	5.08	<.001	[0.972; 2.196]
Model 2 (Aggr.*Sex – Overall offend.)					
Male	2.08	0.22	9.60	<.001	[1.651; 2.500]
Female	1.26	0.26	4.86	<.001	[0.753; 1.775]
Model 3 (A-Est.*Sex – Overall offend.)					
Male	1.90	0.28	6.82	<.001	[1.349; 2.440]
Female	1.05	0.32	3.26	.001	[0.415; 1.676]
Model 4 (AA*Sex – Non-violent offend.)					
Male	1.57	0.17	8.91	<.001	[1.224; 1.916]
Female	0.54	.20	2.66	.008	[0.142; 0.945]
Model 5 (Aggr.*Sex – Non-violent offend.)					
Male	1.21	0.14	8.59	<.001	[0.933; 1.486]
Female	0.42	0.17	2.51	.013	[0.092; 0.757]

Model 6 (A-Est.*Sex – Non-violent offend.)					
Male	1.05	0.18	5.86	<.001	[0.700; 1.405]
Female	0.35	0.21	1.69	.091	[-0.056, 0.758]
Model 7 (AA*Sex –Violent offend.)					
Male	0.96	0.12	8.39	<.001	[0.739; 1.190]
Female	0.80	0.13	6.00	<.001	[0.538; 1.063]
Model 8 (Aggres.*Sex – Violent offend.)					
Male	0.72	0.09	7.81	<.001	[0.540; 0.903]
Female	0.66	0.11	5.91	<.001	[0.439; 0.876]
Model 9 (A-Est.*Sex – Violent offend.)					
Male	0.69	0.12	5.89	<.001	[0.461; 0.923]
Female	0.51	0.14	3.75	<.001	[0.242, 0.776]

Note. AA = Antisocial Attitudes; Aggr. = Aggressive Attitudes subscale; A-Est. = Anti-establishment Attitudes subscale; Offend. – Self-reported offending.

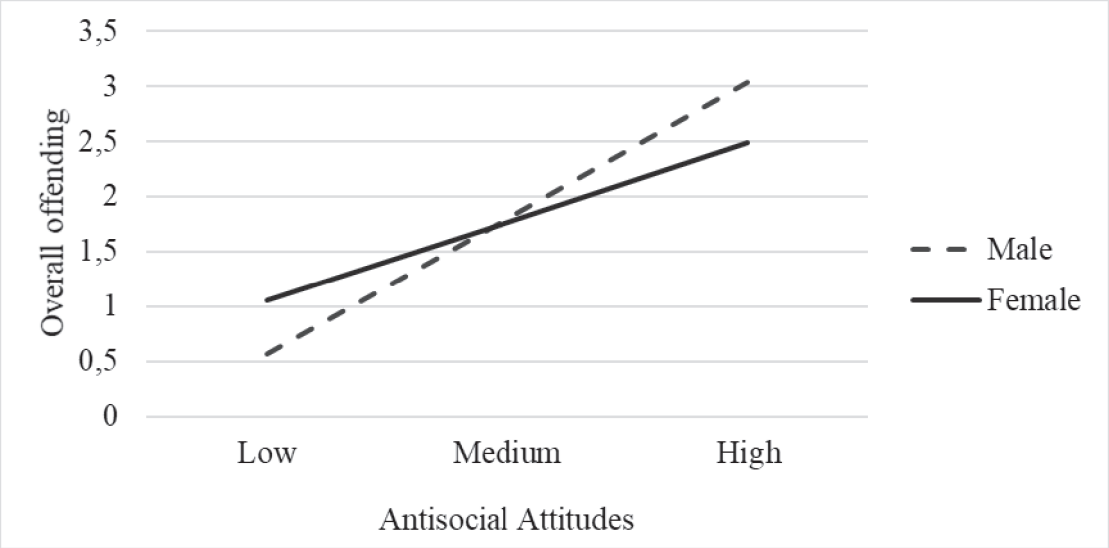

Figure 2 Simple Slope Analysis Chart of Model 1

nificant predictor of non-violent offending for males, but not for females (see Table 3). Figure 3 shows the simple slope analysis of this effect for overall antisocial attitudes.

Finaly, we tested the third hypothesis by carrying out Models 7, 8, and 9: (7) sex moderates the relationship between total antisocial attitudes and violent offending (Model 7); (8) sex moderates the relationship between aggressive attitudes and violent offending (Model 8); and (9) sex moderates the relationship between anti-establishment attitudes and violent offending (Model 9). Model 7 explained 48% of the variance in violent juvenile delinquency (see Table 2). Again, we found overall similar results in each model. As Table 2 suggests, we found a direct effect of antisocial attitudes on violent offending (Model 7: $b = 0.96$, $p < .001$; Model 8: $b = 0.72$, $p < .001$; Model 9: $b = 0.69$, $p < .001$); a null effect of sex on violent offending; and, there was no evidence of an interactional effect. Consequently, these results suggest that sex is not a moderator of the relationship between antisocial attitudes and violent offending (Table 3). Figure 4 illustrates this effect on overall antisocial attitudes.

Discussion

The present study aimed to understand the relationship between antisocial attitudes and offending and, additionally, the moderating effect of sex in this relationship. Over-

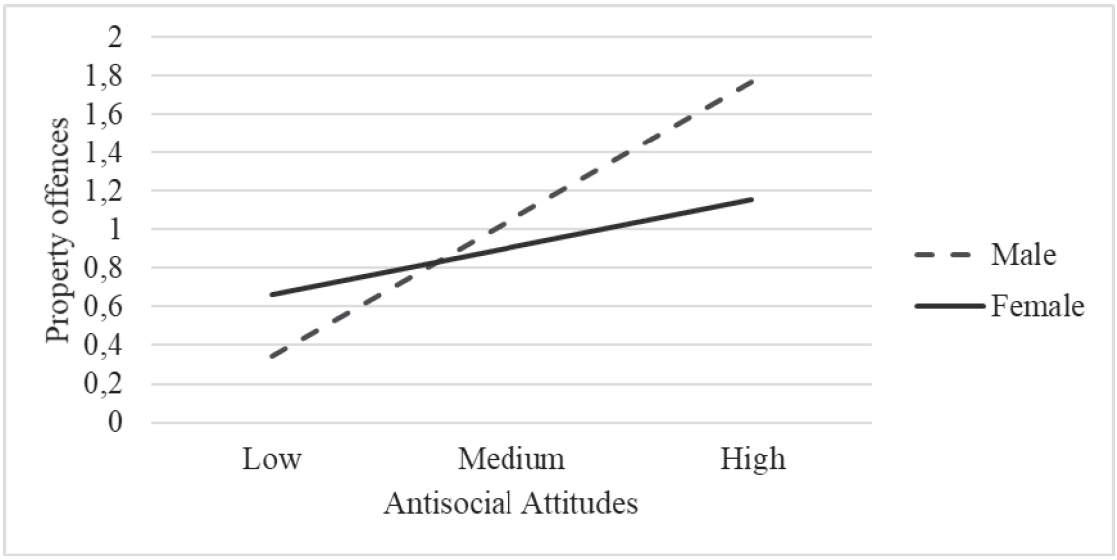

Figure 3 Simple Slope Analysis Chart of Model 4

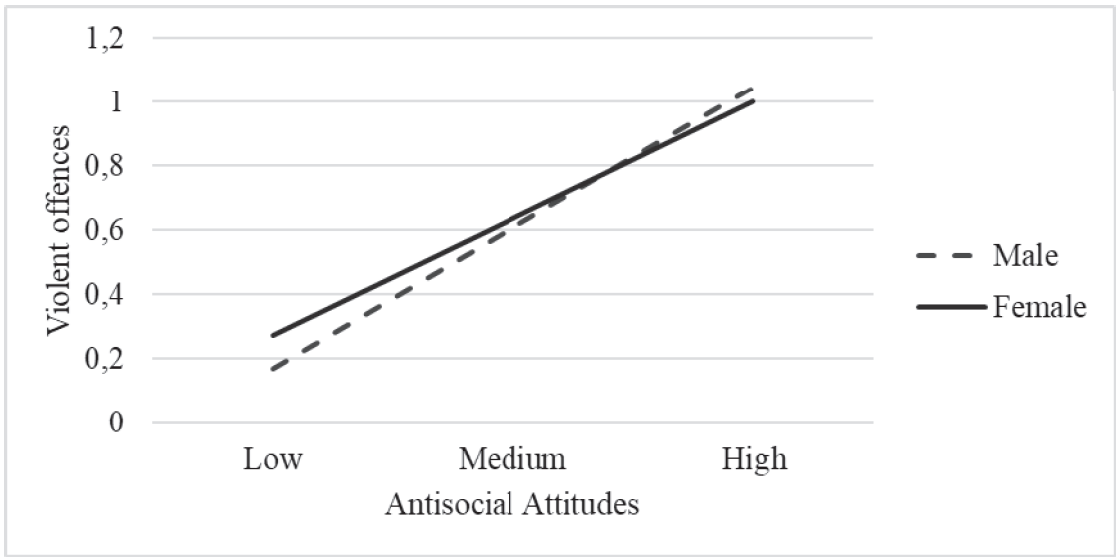

Figure 4 Simple Slope Analysis Chart of Model 7

all, the results were consistent across different types of antisocial attitudes (total, aggressive, and antisystem attitudes). Antisocial attitudes were strong predictors of overall offending, with sex moderating this relationship. However, when examining non-violent and violent offending separately, different patterns emerged. For violent offending, sex did not moderate the relationship, suggesting that antisocial attitudes predict violent offending similarly for males and females. In contrast, antisocial attitudes were stronger predictors of non-violent offending in males, suggesting a sex-specific mechanism.

This study provides a significant contribution to one of the most prominent life-course theories, the ICAP theory, by partly replicating the results found by Farrington and McGee (2017). By examining the predictive power of antisocial attitudes on violent, non-violent, and overall offending, this study enhances our understanding of how these attitudes operate across sexes and offense types.

Regarding violent offending, antisocial attitudes were strong predictors for both males and females, aligning with the ICAP theory. This theory suggests that violent behavior arises from shared underlying risk factors, such as conduct disorders and antisocial cognitive processes (Moffitt et al., 2001). The absence of a moderating effect of sex in this context supports the notion that violent offenders, regardless of sex, may share similar cognitive profiles. Prior research has found comparable levels of antisocial cognitive processing in males and females with conduct disorders, along with shared risk factors such as mental health issues, further explaining this pattern (Mof-

fitt et al., 2001). These findings reinforce the ICAP theory's emphasis on common risk factors driving violent offending.

Conversely, the relationship between antisocial attitudes and non-violent offending revealed notable sex differences, with these attitudes showing stronger predictive power for boys. This divergence challenges the ICAP theory, which does not explicitly account for such variations. Boys' lower levels of reported prosocial attitudes (Lardén et al., 2006) and greater susceptibility to peer influence (Piquero et al., 2005) may explain their higher engagement in non-violent offenses, which are often perceived as less risky or stigmatizing. Additionally, girls may engage in different cognitive processes when considering non-violent offenses, prioritizing relational concerns or cost-benefit analyses over antisocial attitudes, altering how they justify and engage in non-violent offending. Research suggests that for incarcerated females, antisocial cognitive processing may present higher scores (Walters & McCoy, 2007), possibly because female offending is perceived as less socially acceptable.

This study also contributes to the literature on antisystem attitudes. These attitudes were significant predictors of non-violent and overall offending, aligning with prior research demonstrating their influence on youths' perceptions of right and wrong (Farrington, 1995). However, sex differences emerged, with only males showing associations between antisystem attitudes and non-violent offenses. This finding suggests that in communities where antisystem beliefs are strong, boys and girls experience these attitudes differently (Cohn & Modecki, 2007). Girls might face different pressures in these environments, influencing how they view and justify non-violent offenses, or they might prioritize relational concerns or conduct cost-benefit analyses, leading to distinct cognitive pathways to offending (Farrington & Painter, 2004). Future research should further investigate these differences as they directly challenge the ICAP theory's assumption that offending pathways are the same for both sexes. Instead, findings suggest that societal and cultural pressures in communities with strong antisystem beliefs might push boys and girls toward distinct cognitive and behavioral responses. Another possible explanation for sex's moderating role may be that different types of antisocial attitudes play a more important role in female offending, such as antiforeigner and pro-drug attitudes (Cohn & Modecki, 2007; Farrington & Painter, 2004).

Interestingly, while aggressive attitudes are often studied in relation to violent behavior, this study demonstrates their predictive value for overall offending and non-violent offending as well. Aggressive attitudes may reflect broader antisocial cognitive processes, such as self-serving distortions (e.g., blaming others, minimizing harm), which are linked to various offenses (Gomes et al., 2022). These findings address gaps in the literature, as existing research often explores the effect of aggressive attitudes on aggressive behavior rather than overall juvenile offending and non-violent offenses (e.g., Dodge & Coie, 1987; Huesmann, 1998; Huesmann & Guerra, 1997; Huesmann et al., 1992; Zelli et al., 1999). Prior studies have identified antisocial attitudes as one of the strongest predictors of delinquent behavior (Gendreau et al., 1996), ranking among the "Big Four" risk factors alongside a history of previous delinquency, personality traits, and delinquent peers (Bonta & Andrews, 2017). Literature postulates that people with more aggressive attitudes tend to become more violent (Huesmann, 1998). Aggressive attitudes are strongly associated with deviant cognitive processes involved in evaluating and reacting to social situations. These include hostile attribution bias, a tendency to generate aggressive solutions in perceived unfair situations, and a retrospective evaluation of aggressive responses as positive over time (Zelli et al., 1999). Therefore, our findings contribute to addressing this research gap by assessing the predictive power of antisocial attitudes not only on overall offenses but also by distinguishing between violent and non-violent offenses.

Conclusion

In conclusion, this study advances the understanding of aggressive and antisystem attitudes in juvenile delinquency and how their influence varies as a function of participants' sex. While it provides valuable insights, some limitations must be acknowledged. First, the reliance on self-reported measures, despite assurances of anonymity, may cause response biases (Gomes et al., 2018, 2019). Additionally, the cross-sectional design limits causal inferences, highlighting the need for longitudinal research. Another limitation is the focus on specific antisocial attitudes, such as aggressive and antisystem attitudes, which may overlook other relevant factors like pro-drug or anti-foreigner attitudes. The sample's geographical and cultural specificity may also constrain the generalizability of our findings. Moreover, differences in offense prevalence rates may have influenced the measures, potentially exaggerating the strength of male associations (Farrington & Painter, 2004). These factors warrant caution when interpreting the findings.

Despite these limitations, this study lays the groundwork for future research. Longitudinal studies are essential to explore how antisocial attitudes evolve over time and their role in desistance or life-course-persistent offending. Further investigations into the moderating role of sex in the relationship between antisocial attitudes and offending is warranted. Future research should also examine additional types of antisocial attitudes, such as pro-drug or anti-foreigner beliefs, to enhance the understanding of their impact, particularly in female offending. Emerging evidence suggests that females might prioritize different cognitive processes, such as cost-benefit analyses or relational concerns, when engaging in antisocial behavior, contrasting with the stronger predictive power of antisocial attitudes for males (Butler et al., 2015; Cohn & Modecki, 2007). By expanding the scope of research, scholars

can refine theoretical frameworks to capture sex-specific pathways to offending.

Beyond its contributions to academic literature, this study holds significant implications for youth crime prevention and intervention strategies. Since antisocial attitudes strongly predict offending behavior, interventions should prioritize altering these attitudes. Programs tailored for males might focus on addressing aggressive and anti-system attitudes and counteracting peer influences through cognitive-behavioral strategies that challenge antisocial thinking and promote prosocial behavior. For females, interventions should explore the role of pro-drug or anti-authority attitudes and address relational dynamics and fear of social rejection. Notably, the absence of sex differences in violent offending suggests that universal approaches targeting antisocial attitudes and cognitive distortions could effectively reduce violent behaviors across sexes. Early interventions during adolescence are critical in preventing the escalation of criminal behavior into adulthood. These findings underscore the importance of sex-responsive, evidence-based interventions that address different cognitive factors and foster positive developmental trajectories for all youth.

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