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Explanatory Factors for the Occurrence of Criminal Offenses in Adulthood Among Justice-Involved Adolescents

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Abstract

Identifying factors that can explain criminal behavior enables a better understanding of associated factors and the promotion of more effective preventive actions. The present study aimed to identify explanatory factors that increase the likelihood of individuals who have passed through the Brazilian juvenile justice system presenting in criminal behavior in adulthood, and to examine whether these factors accelerate the occurrence of such outcomes. Criminal records of 350 adolescents who have passed through the juvenile justice system were analyzed, with an average follow-up of 4.8 years after turning 18. Statistical analyses included Kaplan-Meier curves, rank tests, and Cox regression. The impact of detention, manifest aggressiveness, impulsivity, association with antisocial peers, family involvement, academic delay, alcohol use, and marijuana use were assessed. The results indicated that detention measure (OR 2.31), manifest aggressiveness (OR 1.54), impulsiveness (OR 1.37), and association with antisocial peers (OR 1.57) increased the likelihood for occurrence and acceleration of criminal actions. The findings' implications are discussed in terms of understanding the phenomenon and the need for preventive actions targeting the variables identified by the study.

Keywords: criminal recidivism, criminal behavior, adolescent offender, risk factor, practice of infractions

FATORES EXPLICATIVOS PARA A OCORRÊNCIA DE AÇÕES CRIMINAIS NA VIDA ADULTA EM UMA AMOSTRA DE ADOLESCENTES JUDICIALIZADOS

Fatores Explicativos para Ocorrência de Ações Criminais

Resumo

Identificar fatores capazes de explicar a prática delituosa possibilita compreender o fenômeno e promover ações de prevenção mais efetivas. Este estudo teve como objetivo identificar quais fatores explicativos aumentam as chances de indivíduos que passaram pelo sistema socioeducativo apresentarem uma ação criminal na vida adulta, além de verificar se esses fatores aceleram a ocorrência desse desfecho. Foram analisados registros criminais de 350 adolescentes que passaram pelo sistema socioeducativo após, em média, 4,8 anos de terem completado 18 anos. As análises estatísticas incluíram Curvas de Kaplan-Meier, teste de Rank e Regressão de Cox para avaliar o impacto dos fatores internação, agressividade manifesta, impulsividade, pares antissociais, investimento familiar, atraso escolar, uso de álcool e uso de maconha. Os resultados indicaram que as variáveis internação (OR 2,31), agressividade manifesta (OR 1,54), impulsividade (OR 1,37) e pares antissociais (OR 1,57) aumentavam a aceleração da ocorrência da ação criminal e a chance de sua ocorrência. As implicações dos resultados são discutidas em termos da compreensão do fenômeno e da necessidade de ações preventivas direcionadas nas variáveis indicadas pelo estudo.

Palavras-chave: reincidência criminal, comportamento criminoso, adolescente infrator, fator de risco, prática infracional

FACTORES EXPLICATIVOS DE LA OCURRENCIA DE ACCIONES DELICTIVAS EN LA EDAD ADULTA EN UNA MUESTRA DE ADOLESCENTES JUDICIALIZADOS

Fatores explicativos de la ocurrencia de acciones delictivas

Resumen

La identificación de factores capaces de explicar la práctica delictiva permite comprender el fenómeno y promover acciones de prevención más efectivas. Este estudio tuvo como objetivo identificar cuáles son los factores explicativos que aumentan las posibilidades de que los individuos que han pasado por el sistema socioeducativo tengan una acción delictiva en la edad adulta, además de verificar si estos factores aceleran la ocurrencia de este desenlace. Se analizaron los antecedentes penales de 350 adolescentes que pasaron por el sistema socioeducativo después de un promedio de 4,8 años de cumplir 18 años. Los análisis estadísticos incluyeron curvas de Kaplan-Meier, prueba de Rank y regresión de Cox para evaluar el impacto de la institucionalización, la agresividad manifiesta, la impulsividad, los pares antisociales, el tiempo conjunto en familia, el retraso escolar, el consumo de alcohol y el consumo de marihuana. Los resultados indicaron que las variables de institucionalización (OR 2,31), agresividad manifiesta (OR 1,54),

impulsividad (OR 1,37) y pares antisociales (OR 1,57) aumentaron la aceleración de la ocurrencia de la acción delictiva y la probabilidad de su ocurrencia. Se discuten las implicaciones de los resultados en términos de comprensión del fenómeno y la necesidad de acciones preventivas dirigidas a las variables indicadas por el estudio.

Palabras-clave: reincidencia criminal, comportamiento delictivo, adolescente infractor, factor de riesgo; práctica de infracción

Identifying factors that can explain engagement in criminal behavior allows a better understanding of the phenomenon and enables effective prevention actions (Moffitt, 2018; Basto-Pereira & Farrington, 2022). Longitudinal studies have indicated that, for most adolescents, involvement in criminal conduct declines and ceases spontaneously at the end of adolescence and during transition to adulthood (Farrington, 2015; Moffitt, 2018). However, for those significantly exposed to risk factors for criminal conduct, the chances of ceasing spontaneously become lower. For these adolescents, intervention focused on modifying such factors is essential to prevent the maintenance of criminal conduct (Cicchetti, 2016; Moffitt, 2018; Cuervo et al., 2020).

Although past conduct is an important risk factor for recidivism, it should be considered that past conduct (at an earlier time) is not capable of directly explaining future conduct (at a later time), as it is a variable that does not point to causal mechanisms or serve as a focus for psychosocial intervention (Basto-Pereira & Farrington, 2022). For this reason, Basto-Pereira and Farrington (2022) suggest that, in contexts where the main objective is to understand the phenomenon and its causes, and not just to predict its occurrence, the investigation should prioritize variables that represent different aspects of past antisocial behavior. These variables must be related to explanatory factors that can increase the probability of persistence of criminal conduct. In this sense, the authors indicate that, for this matter, it is useful to exclude factors that are redundant in relation to criminal conduct, such as past conduct and antisocial attitudes, since both reflect different manifestations of the same behavior (Basto-Pereira & Farrington, 2022).

This perspective aligns with the Risk-Need-Responsiveness (RNR) model, particularly regarding the concept of need. This concept guides assessments and interventions in programs for adolescents in conflict with the law, emphasizing dynamic and explanatory aspects of behavior. These aspects, referred to as “interventional needs”, represent priority targets for interventions at secondary prevention, such as reducing recidivism (Mei et al., 2021).

Theories explaining the persistence of criminal behavior over time indicate that both environmental and personal factors are associated with the development of persistent and serious trajectories of criminal conduct (Cicchetti, 2016; Moffitt, 2018; Loeber, 2019). Factors such as aggressiveness, impulsivity, inadequate parenting practices, school maladaptation, association with antisocial peers, and substance use are frequently identified as increasing the likelihood of maintaining such behavior over time (Cicchetti, 2016; Moffitt, 2018; Loeber, 2019).

The RNR theory integrates these factors and seeks to explain how they may influence the maintenance or reduction of criminal conduct. The authors note that the consequences of pro-criminal or prosocial behaviors (whether positive or negative) can be provided by external agents in the social environment (such as family, friends, teachers, or antisocial peers) or generated internally (such as feelings of pride, shame, or beliefs about appropriate behavior). In some cases, consequences may arise after the behavior itself, such as a sense of relaxation following substance use or excitement after committing a property offense (Mei et al., 2021; Bonta, 2023).

Thus, regarding individual aspects, impulsivity and aggressiveness refer to the development of characteristics that favor difficulties in emotional regulation, behavioral problems, and rule violations, including criminal conduct. In relation to the dimension of social learning, bonding and the quality of relationships in family, school, work, friends, and leisure play a central role in regulating conduct. In the family dimension, parenting practices such as investment of time together, supervision, and bonding quality are the most important factors. In the school context, the school bond and academic performance stand out. Regarding friends and leisure, the presence of prosocial or antisocial peers and a routine with structured activities are the most relevant factors (D'Amato et al., 2021; Mei et al., 2021; Bonta, 2023).

Basto-Pereira and Farrington (2022) conducted a meta-analysis of longitudinal studies and identified explanatory factors with a greater size effect for engaging in criminal conduct for the general population and for adolescents in conflict with the law. The results indicated that factors such as non-severe mental health problems (symptoms of aversive emotional states, such as anxiety and depression), antisocial peers, family problems, alcohol and other drug abuse, school problems, and difficulties managing negative emotions increased the likelihood of persistent criminal behavior in adult life. In the Brazilian context, using an RNR framework, Maruschi et al. (2012) identified that inadequate parenting practices, quality of education, relationships with antisocial peers, drug use, and antisocial attitudes increase the likelihood of an adolescent having more than one criminal process.

Also in the Brazilian context, Sapori et al. (2020) evaluated factors associated with recidivism in a sample of 435 adolescents in the juvenile justice system of the state of Minas Gerais. They identified that adolescents with low family bonds, early onset of offenses, and consumption of psychoactive substances had higher chances of maintaining criminal conduct in adulthood. The effect of closed measures was also significant (Sapori et al., 2020). Georgini, Galinari, and Bazon (2024) identified, based on data from a sample of 350 adolescents in conflict with the law, that the chances of being convicted of a criminal action as adults were higher for black adolescents and those belonging to a more severe psychosocial profile. These adolescents had greater engagement in infractions, a higher probability of involvement in violent crimes, and issues related to school, family, antisocial peers, antisocial attitudes, and impulsivity.

These studies represent advances in identifying factors that predict the chances of adolescents who have gone through the juvenile justice system entering the adult criminal system. However, by simultaneously analyzing variables that are redundant and indicative of social vulnerability to formal control (with a strictly predictive focus) and dynamic variables (with an explanatory focus), such studies do not provide clear evidence about which factors could explain the persistence of criminal conduct from adolescence to adulthood. This is an important gap, especially in view of the proposition of interventions that focus on intervention needs aimed at preventing the maintenance of criminal conduct.

The present study aimed to identify whether and to what extent explanatory factors such as impulsivity, manifest aggressiveness, antisocial peers, family investment, substance use, and

detention in closed regime measures for juvenile offenders influence the probability and acceleration of the occurrence of criminal actions in adult life, in a sample of judicialized Brazilian adolescents. Additionally, the study aimed to evaluate how these factors can support interventions aimed at preventing recurrence and reducing the negative impact of detention.

The hypotheses propose that the explanatory factors identified in the meta-analysis by Basto-Pereira and Farrington (2022), including antisocial peers, family problems, alcohol and other drug abuse, school problems, and emotional problems, when present in an assessment carried out during adolescence (W1), act as risk factors, increasing both the probability of the occurrence of a criminal action and the acceleration of this event in adult life (W2).

Method

Participants

At Wave 1 (W1), the initial sample was composed of 400 adolescents in the juvenile justice system. These data were collected as part of a larger study named "Practice of Infractions in Adolescence: Patterns of Conduct and Psychosocial Profiles" (Galinari, 2019), approved by the Ethics Committee for Research with Human Beings of the Faculty of Philosophy, Sciences, and Letters of Ribeirão Preto, University of São Paulo (CAAE: 31549420.2.0000.5407), with authorization to create a database for follow-up studies. The questionnaires were administered by researchers through structured interviews. Data collection was conducted in a private room within the institutions where the measures were applied. The consent form was presented to the participants and their legal guardians/parents, and the research procedures and ethical aspects were verbally explained before the interview. For participants aged 18 or older, the Free and Informed Consent Form was signed before the commencement of the research. For participants under 18, the adolescents signed the Free and Informed Consent Form before the commencement of the research, and their guardians signed it afterwards.

All participants were male (mean age = 16.98, SD = 0.78). In W1, data for 130 adolescents in the sample were collected in 2015, and data for 270 adolescents were collected in 2018 and 2019. At W1, 48% were in provisional detention, 35% were institutionalized in a closed socio-educational measure, and 16% were in an open socio-educational measure, specifically probation. Regarding socioeconomic distribution, according to the Brazil Criterion, 1% were from class A, 12% from class B, 37% from class C1, 33% from class C2, and 18% from class D-E.

At Wave 2 (W2), in January 2023, information regarding the 400 participants was retrieved from the Justice Automation System (e-SAJ) to identify criminal actions. For 50 participants, the data obtained were deemed inadequate for analysis, as it was not possible to precisely determine which records were linked to each individual due to the high number of entries associated with identical names. Consequently, these 50 participants were excluded from the analysis, resulting in a final sample of 350 individuals. The sociodemographic characteristics of the excluded participants were similar to those of the remaining sample: the mean age was 17.06 (SD = 0.76), 52% were in provisional detention, 30% were institutionalized in a closed

socio-educational measure, and 18% were on probation. Regarding socioeconomic distribution, 14% were in class B, 44% in class C1, 28% in class C2, and 14% in class D-E.

The analysis considered as the initial time the date on which each adolescent in the database turned 18 years old, and as the final time the date of data collection from the Justice Automation System (e-SA) in January 2023, with time measured in days. Thus, the minimum follow-up period for the adolescents in the sample was 692 days (1.89 years), the maximum was 3,106 days (8.65 years), the mean was 1,772.67 days (4.8 years), with a standard deviation of 680 days (1.86 years), and the median was 1,500.5 days (4.10 years).

Instruments

The variables Family Investment, School Delay, Antisocial Peers, Impulsivity, Weekly Use of Alcohol, and Daily Use of Marijuana were measured using data collected from the Youth Behavior Questionnaire (QJ). QJ is an instrument designed to gather information about adolescents' involvement in criminal conduct (regardless of whether it is known to the police/justice) and associated risk and protection factors. It has a version adapted and validated for the Brazilian sociocultural context by Komatsu et al. (2021). Initially, the scales produce raw scores, which are then transformed into T-scores based on data from a reference sample used in the adaptation study, consisting of 836 male students from public and private schools aged 11 to 18 (Komatsu et al., 2021). The questionnaire reliability analysis yielded Cronbach's alphas ranging from 0.23 to 0.89 and significant intradomain correlations in 81% of the cases, with coefficients ranging from 0.10 to 0.54. As presented in Komatsu et al. (2021), the variables Family Investment, Antisocial Peers, and Impulsivity are subscales of the instrument, composed of 2, 13, and 5 questions, respectively, on a standard 5-point Likert scale. The variable School Delay is a numerical question measuring school delay in years according to the participant's age, and the variables Weekly Alcohol Use and Daily Marijuana Use are binary Yes/No questions.

The variable Manifest Aggressiveness was assessed using the Brazilian Revised Jesness Inventory (IJ-R-Br). In the IJ-R-Br, Manifest Aggressiveness reflects the perception of feelings of anger and the intense experience of such negative emotions (Costa et al., 2019). The IJ-R-Br is the adapted and validated version of the Jesness Inventory – Revised for Brazil (Costa et al., 2019). This instrument evaluates opinions, thoughts, beliefs, attitudes, perceptions, distortions, feelings, emotions, psychological defenses, and certain personality traits associated with criminal conduct, such as Impulsivity, Sensation Seeking, and Aggressiveness/Hostility (Costa et al., 2019). Different combinations of these items generate scores on 12 distinct scales, which are standardized using T-scores (mean = 50, standard deviation = 10). Coefficients of Cronbach's alpha ranged from 0.70 to 0.86, based on validation with a sample of Brazilian adolescents (n = 346).

We also utilized characterization data related to "race/color." This information was available in the database under the categories White and Black (with mixed-race individuals included in the Black category). No individuals classified under other races or ethnicities were identified in the database. The classification of race was heteroreported, as the information was

obtained from the adolescents' medical records during the application of socio-educational measure at the time of data collection in T1. It is important to note that this variable was not considered potentially explanatory but was included to assess whether the likelihood of criminal action could also be influenced by the selectivity of the penal system, reflecting the vulnerability of Black individuals to formal social control. Among all possible control variables, such as socioeconomic status and community factors, this was selected because it has been identified as the most significant for criminal selectivity (Tonry, 2014).

The dependent variable analyzed was the existence of at least one criminal action identified in the e-SAJ. Data collection for this variable occurred in W2, through consultation of the 1st Degree Proceedings of the Court of Justice of São Paulo (TJSP). Access to this information is publicly available through the Justice Automation System (e-SAJ). The search criteria used were the individuals' full names, date of birth, and mother's name, as compiled in the larger survey database (Galinari; Bazon, 2021).

Data analysis procedures

The following variables were listed as potential explanatory factors to be tested: detention in closed measures, Family Investment, School Delay, Antisocial Peers, Manifest Aggressiveness, Impulsivity, Weekly Use of Alcohol, and Daily Use of Marijuana. It is hypothesized that these factors would increase the likelihood and accelerate the occurrence of criminal action in adulthood. Possible interactions were not tested. Although detention variable does not indicate a need for intervention, it can be considered a possible explanatory factor for the persistence of criminal conduct, as antisocial socialization in institutional contexts and labeling may increase the chances of maintaining such conduct (Soares; Ribeiro, 2018). Detention variable was measured based on information collected in W1.

To test the hypothesis that the potentially explanatory factors evaluated in W1 would increase the likelihood and accelerate the occurrence of criminal action in adulthood at W2, survival analyses were performed using Kaplan-Meier curves and the log-rank test. These analyses were conducted to assess whether these variables increased the cumulative risk of the outcome. Additionally, a Cox regression model was applied to evaluate whether the variables increased the odds of the outcome, and the area under the ROC curve was calculated to measure the predictive capacity of the model. The level of statistical significance adopted was $p < 0.05$.

The Kaplan-Meier survival curve estimates the probability of an outcome occurring over time by analyzing the interval between the initial moment and a specific event, as well as factors that may influence this occurrence. In these analyses, the concept of censoring is central. Observation is considered censored when, during the follow-up period, the outcome is not observed. In this study, Type I right censoring was adopted, where the moment of censoring is defined by the end of the follow-up period. Thus, for individuals who did not present the outcome during follow-up, the information is considered censored, as it is not possible to guarantee that the outcome would not occur in a later period. The Cox regression model

complements survival analyses by estimating the effects of covariates in a simple and adjusted model, identifying how much these covariates increase the chance of occurrence of the outcome, without modeling survival time directly (Benítez-Parejo, et al., 2011).

This approach is more appropriate than logistic regression, as it does not classify individuals without criminal action during follow-up as “non-recidivist,” but as at risk, although censored. This allows us to consider that the event did not occur in the analyzed period, but that its occurrence would still be possible in a later period.

Survival analyses were performed from the *survival* package in the R software. The outcome evaluated was the occurrence of criminal action and the covariates tested were Detention, Family Investment, School Delay, Impulsivity, Manifest Aggressiveness, Daily Use of Marijuana and Weekly Use of Alcohol. In addition, the color/race indicator was tested in the Cox Regression model to evaluate possible effects of criminal selectivity. This analytical strategy is often used in studies investigating criminal recidivism (Lund et al., 2013; Marble, 2018; Cuervo et al., 2020).

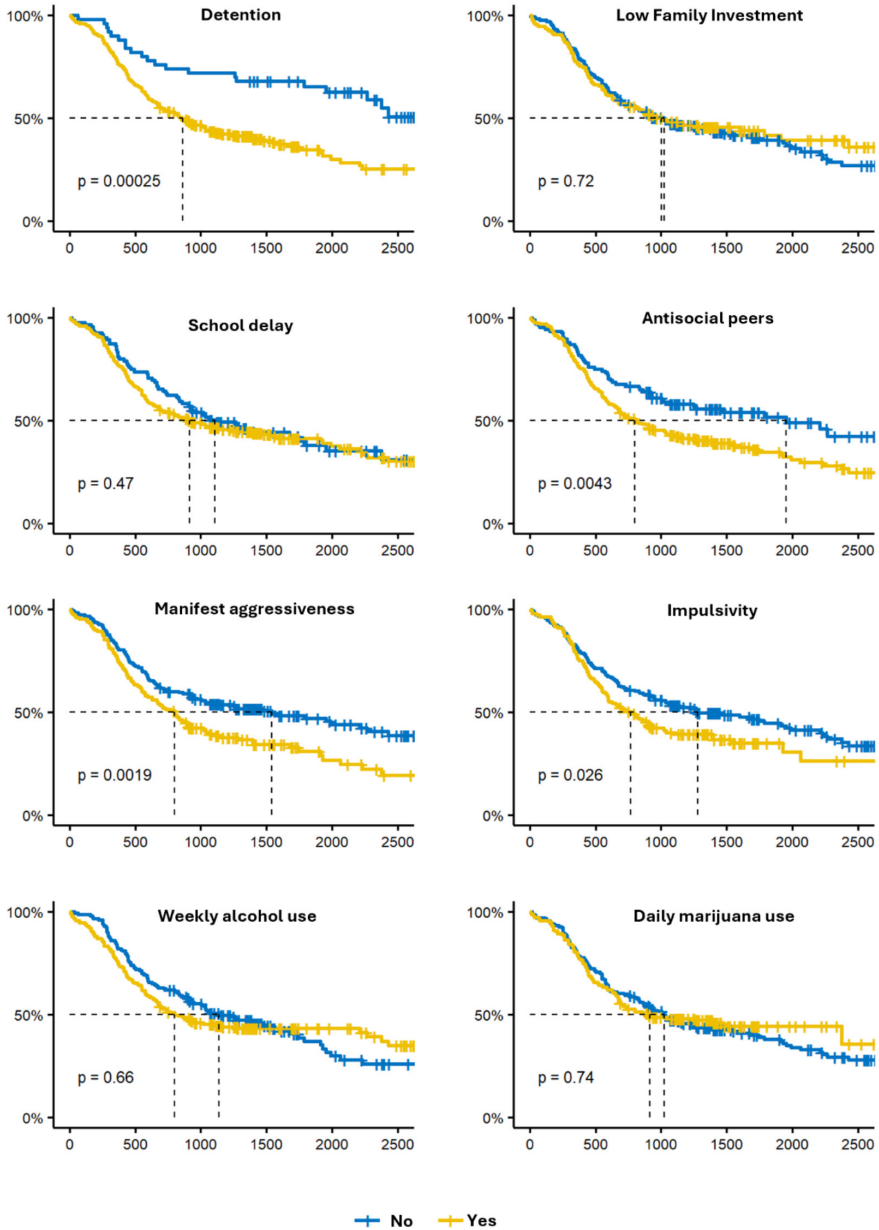
Results

Of 350 participants, for 204 (58%) at least one criminal action was identified during the study follow-up period. For the remaining 146 participants, it was considered a right censoring occurrence. This indicates that, although the event of interest did not occur during follow-up, these data are considered censored, as the event could occur after the study follow-up period. The censoring is indicated by the vertical strokes in Figure 1. Detention, Manifest Aggressiveness, Impulsivity and Antisocial Peers were the variables that had significant differences in the Kaplan-Meier curves and in the Cox Regression. On the other hand, no evidence of differences between repeat offenders and non-recidivists was found for the variables school delay, family investment, alcohol use, and marijuana use.

The variables Detention, Manifest Aggressiveness, Impulsivity and Antisocial Peers presented different survival probability curves between the groups with and without the presence of these variables, according to the log-rank test, evidenced by the p-values presented in Figure 1. The dashed line represents the median for both groups. Individuals who scored above the norm on these variables were more likely to have at least one criminal action after reaching the age of 18 in a shorter period. The variables Family investment, School delay and Drug use showed no evidence of significant differences in the probability of survival curves between individuals with the presence or absence of these variables.

Figure 1

Kaplan–Meier curves and log Rank test indicating survival curves during the follow-up period (in days) by variable of interest



Elaborated by the authors

Table 1 shows the number of participants according to the presence or absence (Yes/No) of the variable of interest and the number of “survivors” individuals, i.e., those who did not commit criminal actions during the follow-up period. It is noteworthy that for participants who were not institutionalized in a closed measure in adolescence, 62% remained without criminal action or censorship after 1,500 days of follow-up, and for those who were institutionalized, this proportion was 17%. For those without an Antisocial Peer indicator, 28% did not have a criminal action or censoring after 1,500 days of follow-up, and for those with the presence of the indicator, this proportion was 19%.

Regarding personal variables, 24% of the participants without an indicator of Manifest Aggressiveness did not present criminal action or censure after 1,500 days of follow-up, while this proportion was 19% for those with an indicator of Manifest Aggressiveness. Regarding Impulsivity, 26% of the participants without an impulsivity indicator did not commit criminal action or were censored after 1500 days of follow-up, while this value was 16% for those with an impulsivity indicator.

Table 1

Number of participants by the presence or absence of the variable of interest and without the occurrence of the event (first criminal action) during the follow-up period

N per Variable	Time (in days)						p
	0	500	1000	1500	2000	2500	
Detention							
No	50	41	36	31	24	10	0,00025*
Yes	296	197	124	46	19	13	
Low Family Investment							
No	215	151	100	47	25	15	0,72
Yes	131	87	60	30	18	8	
School delay							
No	96	71	48	24	13	7	0,13
Yes	250	167	112	53	30	16	
Antisocial peers							
No	109	82	60	31	19	10	0,0043*
Yes	237	156	100	46	24	13	
Manifest aggressiveness							
No	196	143	103	48	30	17	0,0019*
Yes	150	95	57	29	13	6	
Impulsivity							
No	197	141	106	53	36	19	0,026*
Yes	149	97	54	24	7	4	
Weekly alcohol use							
No	158	115	82	38	17	8	0,66
Yes	188	123	78	39	26	15	
Daily marijuana use							
No	185	132	90	49	33	20	0,74
Yes	161	106	70	28	10	3	

* p value considered significant < 0.05.

Elaborated by the authors

Table 2 presents the Cox Regression model results. In addition to the variables of interest, the black race variable (black and mixed race compared to white) was included as a control. This variable was inserted to assess whether the chance of criminal prosecution could also be influenced by the selectivity of the penal system (which reflects the vulnerability of black people to formal control) (Torny, 2014).

The results indicate variables that increase the chances of criminal action. The variable Detention increased the chance of criminal action by 2.31 times, the presence of Antisocial Peers increased by 1.57 times, Manifest Aggressiveness increased by 1.54 times, and Impulsivity increased by 1.37 times.

Table 2

Results of Cox Regression

Variables	exp(coef)	Lower CI (95%)	Upper CI (95%)	Pr(> z)
Black	1,1198	0,818	1,533	0,48
Detention	2,3150	1,46	3,672	0,000362*
School delay	1,1201	0,8235	1,524	0,47
Family investment	0,94908	0,7133	1,263	0,72
Antisocial peers	1,5774	1,151	2,163	0,00464*
Manifest aggressiveness	1,5422	1,171	2,031	0,00204*
Impulsiveness	1,3707	1,038	1,81	0,0263*
Weekly alcohol use	1,06468	0,8083	1,402	0,656
Daily marijuana use	0,9531	0,7208	1,26	0,736

* p value considered significant < 0.05.

Elaborated by the authors

Thus, among the variables analyzed and listed in the research hypothesis as factors that would increase the probability of involvement with the criminal system, those related to personal dimensions, together with the presence of antisocial peers and the fact of having been submitted to the measure of confinement at some point in adolescence, were those that significantly increased the chances of the occurrence of a criminal action and the chances of its occurrence in a shorter time. On the other hand, the other variables that refer to psychosocial and contextual/relational aspects were not significant in the analyses performed.

Discussion

The present study aimed to identify explanatory factors for the persistence of criminal conduct in the Brazilian sociocultural context, based on the follow-up of adolescents in conflict with the law on average 4.8 years after completing 18 years old (W2). The results showed that Detention, Antisocial Peers, Manifest Aggressiveness and Impulsivity had an effect on accelerating the occurrence of criminal actions and increased the chances of their occurrence. However, variables such as weekly alcohol use, daily marijuana use, family investment, and school delay showed no significant effect. In terms of practical impacts, the results corroborate the importance

of interventions regarding individual factors and a potential harmful effect of closed measures, such as detention. On the other hand, the effect of social variables should be better studied, since the non-association revealed by our data may be due to the limitations of the instruments, as will be discussed in greater depth below.

On the other hand, when analyzing official criminal records as a dependent variable, it should be considered that the data on criminal involvement reflect not only the conduct itself, but also the justice system selectivity, which can influence the observed rates of criminal involvement. The rates of involvement with the adult justice system observed in this study (58%) are comparable to other surveys but vary in relation to geographic and methodological contexts. The study conducted in Minas Gerais (Sapori, 2020) found a rate of 30.1%, and the study in Spain (Cuervo et al., 2020) a rate of 44.69%, both lower than the present study. On the other hand, the Canadian study by Olver et al. (2012) found a higher rate of 73.9%.

These discrepancies can be explained by differences in the cultural and social context between the places studied, as well as by methodological differences. For example, in the Canadian study, most adolescents had committed serious or violent crimes, which may have led to greater engagement with the justice system. In the Spanish study, most adolescents were not in closed measures, which may indicate that the sample characteristics influence the risk of involvement with adult criminal justice.

In addition, closed measures stood out as an important factor in predicting involvement with the adult justice system in the sample investigated, suggesting that early contact with the juvenile justice system, especially in detention settings, may increase the chances of recidivism. This is corroborated by other studies that indicate the importance of factors such as the influence of antisocial peers and the labeling associated with closed measures in increasing the risk of adult crime (Moffit, 2018; Mei et al., 2021).

Previous studies (Bernburg et al., 2006; Dishion & Tipsord, 2011) indicate that closed measures can expose individuals to deviant groups, such as gangs, where antisocial behaviors are not only accepted but encouraged. In addition, it also can stigmatize the individual, making it difficult for them to access positive social opportunities, such as the formal labor market, creating barriers to their reintegration into society (Soares & Ribeiro, 2018). In addition, as recommended by SINASE (National System of Socio-Educational Assistance, 2012), detention should be applied for a short period of time and exclusively for adolescents with a more serious pattern of conduct.

The negative effects of closed measures have been discussed in the context of juvenile justice intervention programs. Andrews and Bonta (2010), for example, emphasize that programs in an open environment are preferable, as they are less susceptible to generating the adverse impacts of stigmatization and association with deviant behaviors. The closed measures application should be done with caution, for short periods, precisely to avoid these undesirable effects.

In addition, it is essential to consider the social and racial dimensions in analyses of the juvenile justice system. People from more vulnerable social groups, such as black people, for

example, are more likely to suffer repeated convictions (Tonry, 2014). This reflects the need to avoid deterministic views that reinforce social disadvantages and limit the possibilities of change and reintegration. It is essential that interventions not only seek to reduce crime but also consider the structural inequalities that increase the risk of recidivism among certain social groups and focus on broader public policies for access to rights.

In the Brazilian reality, structural inequalities amplify the issues of stigmatization and selectivity. Although the regulations and mechanisms for implementing SINASE have increasingly focused on guaranteeing the rights of adolescents and promoting social inclusion, intense socioeconomic disparities, lack of access to basic public policies and inadequate actions during the application of socio-educational measures generate even greater challenges. In this scenario, educational actions focused on the needs of adolescents and that consider this broader context are still infrequent (Silva et al., 2023).

Compared to the study by Sapori et al. (2020), there was no statistically significant difference in recidivism for adolescents who were on detention or for those who served a semi-liberty measure (Sapori et al., 2020). However, the study by Sapori et al. (2020) considered recidivism as a “new record by the civil police” (Sapori et al., 2020, p. 10), covering both infractions recorded in the socio-educational system and in the criminal system. In this case, the measure of detention may seem more protective against recidivism because during the period in which the adolescent is detained, it is more difficult for him to commit crimes for which he will have a new process. This hypothesis suggests a possible explanation for the difference between the results observed in the two studies. While the current study may have considered recidivism more directly and comprehensively (involving continuous contact with the justice system after detention), the study by Sapori et al. (2020) may have captured recidivism only indirectly, based on formal records of infractions, which could underestimate the cases in which recidivism occurs, but it is not formally registered. Thus, the analysis of recidivism needs to consider both the effects of deprivation of liberty and the aspects of social monitoring and interventions applied during and after the measure.

Regarding the factors at the level of personal characteristics – impulsivity and manifest aggressiveness – it should be considered that low self-control and difficulty in managing negative emotions, such as anger, are aspects recurrently pointed out by the literature as factors that increase the chances of maintaining criminal behavior when the levels of these characteristics do not decrease with maturity (Loeber, 2019; Meinert & Reinecke, 2018). Impulsivity and manifest aggressiveness are dynamic personal characteristics that can vary over time, implying that while they may be prevalent in some periods of life, they are not necessarily stable. These characteristics can be modified throughout adolescence, for example, due to environmental interventions, such as changes in parenting practices and specific intervention actions.

This understanding brings into focus the importance of working on these variables in juvenile justice programs. Modification of self-control and emotional regulation during adolescence can be a crucial goal in interventions, since the development of these skills can

reduce the probability of recidivism and can facilitate the social reintegration of individuals. Literature suggests that these characteristics can be positively impacted by intervention strategies that seek the emotional and behavioral development of adolescents, aligned with practices that promote awareness of the consequences of impulsive and aggressive conduct (Meinert; Reinecke, 2018).

Affiliation with antisocial peers is often associated with criminal conduct as it offers a direct context of learning by model (Defoe et al., 2021). On the other hand, affiliation with prosocial peers represents a protective factor, associated with a decrease in criminal conduct (Walters, 2020). According to Andrews and Bonta (2010), developing programs that promote insertion of young people in alternative social contexts, where they can establish pro-social interactions and affiliations, is extremely important. These authors emphasize that peer socialization has a direct influence on the adolescent's routine and is essential for the development of positive social skills. This includes access to leisure and academic activities that favor the development of prosocial behaviors and reduce the risk of recidivism.

In the present study, it is noteworthy that no significant evidence was found for family and school aspects and substance use. In the meta-analysis by Basto-Pereira and Farrington (2022), family factors were one of the most important aspects for the maintenance of criminal conduct by judicialized adolescents, especially those related to low parental supervision, inappropriate discipline, and low family investment. It is possible that the instrument used has low sensitivity to assess specific family aspects of adolescents in conflict with the law, possibly due to the formulation of excessively generalist items. In addition, the Family Investment scale has a Cronbach alpha of 0.22, which may represent a weakness in the measurement of this scale (Komatsu et al., 2021).

School delay has been identified as a relevant variable in the context of adolescents in conflict with the law. Low academic commitment and low attachment to the school environment in adolescence are pointed out as predictors of the persistence of criminal conduct (Higgins et al., 2020; Basto-Pereira & Farrington, 2022). Studies in the Brazilian context indicate that adolescents in conflict with the law, regardless of the severity of the infraction, have a very negative school experience (Franco & Bazon, 2019). In addition, these factors can aggravate social exclusion and make it difficult for adolescents to enter a rehabilitation trajectory (Machado, Zappe, Days & 2021). Despite the relevance of the school factor, it would be possible to argue that the variable "school delay" alone may not be sensitive enough to discriminate against more serious trajectories of young people in conflict with the law, since adolescents at different levels of involvement with the justice system may share similar difficulties in the school environment. This could be an indicator of the need for a broader evaluation that considers multiple factors, including the quality of the school environment, the type of support received, and the impact of socioeconomic factors on adolescents' educational trajectory.

The use of psychoactive substances was another aspect for which a significant effect on the chances of criminal action in adult life was not identified, either the use of alcohol or the use

of marijuana. Scientific literature indicates that adolescent offenders who use substances, in addition to having a higher risk of recidivism, have more intervening needs in behavioral and academic aspects (Banks et al., 2020). Here, one can also consider the instrument's scale quality. It is possible that it was not able to evaluate the pattern of consumption in a sufficiently accurate way. In this sense, it is possible that this variable would require a more specific assessment, considering different patterns of use to carry out more detailed analyses of the effects of this variable on criminal conduct over time. Furthermore, the relationship between drug use and antisocial behavior is a complex phenomenon. Aebi et al. (2014), for example, found out that alcohol abuse, externalizing problems, low socioeconomic status, and inadequate problem-solving skills were variables capable of predicting crimes in adult life. Thus, it is considered that those adolescents who have a more problematic consumption pattern have a greater chance of maintaining their behavior (Basto-Pereira & Farrington, 2022). In this context, intervention programs focused on reducing substance use should be a priority for adolescents with a history of substance abuse, aiming to reduce recidivism risk and promote healthier and more adaptive behaviors (Anderberg et al., 2022).

Final Considerations

The study contributed to advance on the knowledge of explanatory factors for criminal conduct from adolescence to adulthood, by seeking to identify explanatory factors that accelerate and increase the chances of the occurrence of a criminal action, for adolescents who have been prosecuted and sanctioned for an infraction. Identifying these factors is critical to developing more effective interventions in juvenile justice. The importance of prioritizing programs in an open environment is also highlighted, whenever possible. Closed measures, when necessary, must be applied according to the principle of brevity, in view of the evidence that this experience, in itself, increases the chances of persistence of criminal conduct from one stage to another.

In addition, when considering that explanatory factors are interventional needs, it is important that they be focused by interventional programs with adolescents in conflict with the law. In this context, when assessing the increased risk for involvement with the adult criminal system, the main focus should not be identifying "high-risk" adolescents, but rather the identification of those aspects that should be prioritized in an intervention process. Thus, in addition to the theoretical importance of understanding the phenomenon, the identification of explanatory factors should be understood as an unavoidable step in defining the intervention process in the context of juvenile justice.

In terms of limitations and demands for future research, in view of the limits already indicated regarding the analysis being based on official data, the importance of studying the persistence of criminal conduct through self-report data in studies with a longitudinal design is highlighted. The effect of labeling and the discretion of the justice system also need to be investigated in greater depth, to complement the discussion about explanatory factors related to criminal conduct.

Future studies with a larger sample and with specific validated instruments are also suggested. Such actions are especially important regarding family functioning, substance use and school variables. These are areas listed as relevant in the literature in the area and that in the present study did not have discriminative capacity, probably due to limitations of the instruments used. In addition, it would be interesting to add other potentially explanatory factors, which can be evaluated more precisely, for example, indicators of mental health problems, which can provide a more comprehensive and accurate understanding of the underlying causes of criminal behavior.

Despite the limitations, by analyzing explanatory factors for conduct, the study also contributes with practical recommendations for the improvement of the system for adolescents in conflict with the law. In this sense, it is recommended to carry out interventions that aim to develop self-control and emotional regulation in the socio-educational system. The importance of community actions and public policies for youth that promote the insertion of young people in pro-social contexts and that contribute to their development is also highlighted. In addition, by pointing to detention as a potential risk factor for the maintenance of criminal conduct, the study reinforces the importance of improving actions carried out in this context and indicates that this measure should be applied with caution, obeying the principle of brevity recommended by SINASE (2012).

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