Adverse childhood experiences and delinquent behaviour: Predictors and mediating variables

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ABSTRACT

Background: Adverse childhood experiences (ACEs) have been identified as a risk factor for the development of mental health and behavioural outcomes throughout life, including delinquent behaviours. This article focuses on the relationship between ACEs and delinquent behaviour (DB), seeking to identify predictors and mediating variables. **Methods:** The quantitative study comprised 175 Portuguese adolescents, aged 12 and 17 years of age (M = 14.99, SD = 2.26). **Results:** ACEs and exposure to traumatic events (ETE) are predictive of DB. Antisocial traits (AT) was found to be mediating the relationship between ACEs and DB, as well as the relation between ETE and DB. **Conclusion:** The results indicate that it is necessary that professionals in health behaviour field prevent and intervene in ACEs and in ETE, both predictors of DB. The results of this study allow to understand the role of ACEs in DB and its mediating variables, which must be considered to mitigate the harmful impact of ACEs in DB.

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Keywords: Adverse childhood experiences (ACEs), exposure to traumatic events (ETE), delinquent behaviour (DB), antisocial traits (AT), mediating variables.

Introduction

Adverse childhood experiences (ACEs) are understood as the experience or early exposure to potentially traumatic events, such as abuse and maltreatment as well as living or growing in an environment that is harmful to the development[1]. The Center of Disease Control and Prevention (CDC)[2] conceptualizes and illustrates the ACEs model through a pyramid, in which the adverse experiences in childhood are represented at the base level, leading to social, emotional and cognitive impairments associated with the increased risk of adopting health risk behaviours and which include delinquent behaviour (DB) and substance use. At the top of the pyramid are illnesses, disabilities and social problems, late in life.

ACEs are highly prevalent between adolescents and young people, with a potential negative impact on their adaptive development and functioning[3,4]. The study of the relationship between ACEs and the health of individuals has shown that ACEs are associated with negative consequences in different dimensions, including physical, psychological, cognitive, behavioural, social and emotional problems[5-10]. Exposure to traumatic events (ETE) and ACEs also seem to be associated with increased use of health care, substance abuse, psychopathology, lower life satisfaction and risk of suicide[11].

The literature has been identifying several types of ACEs, from experiencing physical abuse, neglect, exposure to interparental or other violence, family dysfunction, such as parents' mental illness or substance abuse[12], which tend to co-occur[13]. In this sense, ACEs are considered a cumulative stressor[14] and it has been argued that the unique experience of abuse is often the exception and not the rule[15]. In addition, it has been shown that prior victimization is a strong predictor of continued victimization throughout life[13].

Juvenile delinquency has also been identified as a common behavioural response to ACEs[14,16]. Although there are several studies that prove the risk of ACEs in the development of various physical, psychological and behavioural problems in adolescence

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and adulthood, there is little research that focuses on the potential central role of ACEs in DB[16]. DB can be classified as "acts that violate legal norms and are consensually considered as antisocial and non-social behaviours", being the result of an escalation of antisocial behaviour[17]. The Diagnostic and Statistical Manual of Mental Disorders, 5th edition[18] (DSM-V) included DB as a Behaviour Disorder (BD). There is empirical evidence connecting aspects of early development such as attachment quality, parental hostility, maternal depression, maltreatment and family conflicts with predisposition to develop DB patterns[19-21]. Emotional problems, sexual abuse and/or physical abuse prevent a healthy development and may trigger negative and adverse feelings, which may promote DB[22]. DB has been considered as a psychosocial developmental disorder, involving biological, behavioural and cognitive variables of the subjects, and contextual, such as family, social and negative adverse experiences, and should be understood in its complexity[23,24]. Although juvenile delinquency may be related to antisocial behaviour, the former can be differentiated from antisocial behaviour considering that antisocial behaviour encompasses behaviours disrespecting others and violating the norms of a given society, without necessarily infringing the current laws[25]. The consumption of psychoactive substances (CPS), namely the illicit drugs (e.g., amphetamines, cannabis, cocaine, heroin, ecstasy, LSD (*Lysergsäurediäthylamid*) and hallucinogens)[26], constituting a very prevalent DB among adolescents, highly vulnerable to substance abuse. CPS is high[27] and abused children tend to develop drug abuse problems[28]. A Portuguese study by Caridade, Martins & Nunes[29] identified a significant percentage of young people (58%) who took on various types of substance use (e.g., tobacco, alcohol and cannabis) very early, coexisting with certain less adequate and functional parenting practices, such as reduced parental supervision and control. A relationship between ACEs and CPS dependence during adolescence and later adulthood is also reported[30,31]. CPS can influence the occurrence of psychopathologies, with greater occurrence in the groups of individuals with multiple CPS[32].

Research has also shown the capacity for positive integration and normative adjustment of individuals, despite the highly adverse experiences that occurred at an early age[33]. The impact of ACEs is mediated by the individual's way of overcoming or succumbing to adversity, which in turn is influenced by a set of variables inherent to the individual, the characteristics of the household in which it is inserted and the interaction with the surrounding environment[34]. Understanding the role of ACEs in DB thus requires the identification of predictors, as well as the variables that may mediate this relationship.

Adverse childhood experiences and mediating variables

The literature has shown that the effects of ACEs on the well-being and behavioural outcomes of young people are mediated by several risk and protective factors[35,36]. Among the various variables that have been associated with the multi-causality of ACEs, the age of occurrence of ACEs is identified[3], but also Social Support (SS)[37-39] or even Antisocial Traits (AT), analysed in the present study.

SS refers to the emotional or practical support given by the family and/or friends in the form of affection, company, care and information contributing to reduce the impact of ACEs[40]. It implies long-lasting patterns of attachment, essential to the physical and psychological integrity of individuals[41]. There is a negative relationship between ACEs and SS, a higher number of ACEs may be associated with less protection and SS[42]. The absence of SS or its reduced effectiveness is still considered a risk factor for CPS and DB[43]. ACEs inflicted by people close to children, such as parents and caregivers, may affect the way the quality of how SS is interpreted in adulthood. Empirical evidence reveals that recall associated with ACEs tends to be connected with a less positive perception of SS41-43. Another study by Brown & Shillington[44] developed from the National Survey of Child and Adolescent Well-Being, with 1054 adolescents, aged 11–17, concluded that protective adult relationships moderated the relationship between ACEs and substance use, but not delinquency. The hypothesis that lower levels of adult protective relationships and the presence of ACEs would be associated with increased substance use was thus confirmed by the authors.

AT is in line with the disruptive BDs[45] characterized by a persistent pattern of difficulty in accepting and complying with rules. AT relate antisocial behaviours such as robberies, lies, fugues, destruction of properties, aggression to people and animals, with school-age prevalence, where hetero-aggressive behaviours predominate and, in turn, during adolescence, where antisocial behaviours predominate[21]. Children or young people with this disorder have little concern for the feelings, wishes, needs and well-being of those around them, with a low tolerance for frustration, high levels of irritability, recklessness and explosive temperament[18]. There are two possible developmental trajectories in AT, the "early onset trajectory", which may arise with the appearance at preschool age, of behaviour problems (disobedience, scream, beat), and may progress in school age for more aggressive and non-aggressive behaviours (stealing, lying, cheating), and for aggravated adolescence symptoms (interpersonal violence and crimes against property), which may encompass wider contexts such as the community. The "late-onset trajectory" relates behaviours only arising during adolescence. When behaviours arise according to the first trajectory, frequency and severity tend to worsen over time, whereas when behaviours appear according to the second trajectory, there seems to be a more favourable prognosis[46].

Studies have pointed out that some of the conditions contributing to the AT etiology are related to ineffective parental practices, deficits in family dynamics, influences of deviant peers, and low school connection or poor school performance[47,48]. Parental involvement in school activities is identified as a promising strategy for increasing students' educational results and social functioning, as demonstrated by the Portuguese study developed by Caridade, Dinis, Sani, Nunes & Azevedo[49] with 333 Portuguese school personnel. The authors found that 80% of the professionals rating student's general behaviour as bad, also rated parental involvement as poor.

Another explanation to AT is given by the theory of social learning, expressing that subjects who have been victims of abuse and/or exposure to violence are more likely to develop aggressive behaviour in the future, reproducing the experiences of family violence during child abuse, thus contributing in order that maltreatment in childhood will perpetuate abuse in adult life[50].

Current study

The relationship between ACEs and subsequent DB has been understudied in Portugal. The mechanisms by which ACEs confer risk for specific problems are also largely unknown. The analysis and understanding of the mediating variables of the relationship between ACEs and DB is extremely important to mitigate the negative effects associated with ACEs and to better sustain intervention practices in this area. This study aims to understand if ACEs are related to DB (including CPS), seeking to identify predictors and explore the role of AT and SS as possible mediating variables, in Portuguese adolescents. The following hypotheses are investigated:

Hypothesis 1: Adolescents who experience any individual ACEs will be more likely to report DB (including CPS).

Hypothesis 2: ACEs are expected to be a predictor of DB (including CPS) in adolescence, with AT and SS as mediating variables.

Hypothesis 3: ETE is expected to be a predictor of DB (including CPS), with AT and SS as mediating variables.

Methods

Participants

The sample size was determined using Software G*Power 3.1.9. The sample consisted of 175 participants, 60 (34.3%) were students of two different grouping of schools of Portugal, and 115 (65.7%) attended two professional schools of the same municipality. Of the total number of young people, 97 (55.4%) are males and 78 (44.6%) are females. The mean age of the sample is 15 years old and age varies between 12 and 17 years old. With regard to schooling, the average is 9.19 years, corresponding to the 9th grade (*SD* = 1.34), between the 6th and the 11th grades. 123 (70.3%) live at home with both parents, 27 (15.4%) live at home with the mother, 16 (3.0%) are in another situation, corresponding to living at home with grandparents or close relatives, 4 (2.3%) reside with the father and 5 (2.9%) live in a host institution. Relating the father's schooling, 81 (46.8%) reported primary education, 62 (35.8%) reported 4th grade or less, 19 (11.0%) secondary or professional education, and 11 (6.4%) higher education. Concerning the mother's schooling, 76 (43.4%) indicated elementary education, 50 (28.6%) the 4th grade or less, 28 (16%) secondary or professional education, and 21 (12%) higher education.

Procedures

As inclusion criteria, adolescents, aged between 12 and 17 years old, of both genders, attending regular or professional education in the district of Porto, Portugal, were selected and, as exclusion criteria the selection included all participants under CPS, unable to complete the instruments, as well as children or young people presenting some type of cognitive deficit, or other disorder or physical condition preventing the proper understanding and/or correct completion of the questionnaires.

For the accomplishment of this study and data collection, authorization was requested from the Education Guardians/Legal Representatives, previously collecting informed consent as a means of obtaining permission for the child/youth to participate in the study, respecting the anonymity and confidentiality of the data, in accordance with the ethical procedures for the proper conduct of the research. The study has been conducted in accordance with the Declaration of Helsinki and its latest revision.

Data collection was performed in a single time date between April and June 2018. Procedures involved in the collection and processing of data were in accordance with the Personal Data Protection Law No. 67/98 of October 26[51] and Deliberation No. 227/2007 of May 28[52], as well as the Deontological Code of the Order of Portuguese Psychologists[53].

Materials

Sociodemographic questionnaire. It assesses the variables age, gender, marital status, level of schooling, monthly family income, residence situation, household members, occupational situation, level of schooling of the father and mother

Adverse Childhood Experiences and Exposure to Traumatic Events. Childhood History Questionnaire[54], composed of 38 dichotomous and multiple-choice questions. Assesses 3 categories: experiences against the child or young person, dysfunctional family environment and neglect and is quoted through the calculation of Total Adversity, being 0 points for absence of adversity and 1 point for the presence of adversity;

Life Events Checklist-5[55], adapted to young people, being a self-response checklist, depicts potentially traumatic life events, being divided into two parts: consisting of 14 events, in which the answers can be being "happened", "I saw it happen", "I knew it happened", "I'm not sure", "does not apply" and a part consisting of 9 semi-open answer questions related to an event that the participant considers to have been the worst experienced, when applicable;

Delinquent Behaviour and Consumption of Psychoactive Substances. Adapted Self-reported Delinquency Scale[56] is a self-response measuring the involvement of adolescents in illegal and antisocial activities and consumption of psychoactive substances. It was adapted for this study, consisting of 11 items, with a Likert-type response scale.

Antisocial Traits. Antisocial Process Screening Device (APSD-SR)[57], a multidimensional psychometric measure specifically designed to assess psychopathic traits in adolescents. It consists of 20 items, quoted on an ordinal scale of 3 points assessing 3 factors, traits-callous / non-emotional, narcissism and impulsivity, with higher scores indicating characteristics associated with each factor.

Social Support. Multidimensional Scale of Perceived Social Support[58], built to measure satisfaction with perceived social support. It is a self-report instrument composed of 12 items, assessing satisfaction with perceived social support in 3 dimensions, namely (a) significant figure (n = 4); (b) family (n = 4) and (c) friends (n = 4), in which the subject should indicate the degree of agreement for each of the statement (if applicable), on a 6-position Likert scale. The total score for the scale can vary between 12 and 72, corresponding to higher scores, a perception of greater social support.

Statistical analysis

Statistical Program for Social Sciences (SPSS-26) was used for statistical analysis, including descriptive statistical analyses, allowing the synthesis of the data of the sample through a single value, and inferential statistical analyses, allowing to test the hypotheses under study.

A Pearson correlation analysis to explore the relationship between the variables under study, namely ACEs, ETE, DB, AT and SS, was performed. The analyses of hierarchical regression were also carried out, aiming to explore a possible mediating effect between SS, ACEs and DB (including CPS) and SS, ETE and DB (including CPS). The possible mediation relationship between AT, ACEs and DB (including CPS), as well as between AT, ETE and DB (including CPS) was also explored. In order to test mediation between variables, the model 4 of SPSS command Process v3.4[59], was used, a more robust way to deal with mediation, according to a growing literature body.

Results

Descriptive analysis of variables

It is possible to observe that of the total number of participants (n = 175), 113 (66.5%) experienced at least one ACEs (Table 1).

Concerning ETE, participants related one or more exposure (Table 2).

In respect to DB (M = 1.95, SD = 2.68), the results did not show a recurrent practice of this type of behaviour, however, regarding AT (M = 10.20, SD = 4.84), the results seem to lead in the sense of the practice or adoption of behaviours encompassed by this problem. In relation to SS (M = 62.70, SD = 9.28), the results in the 3 subscales reveal that the participants have and perceive support figures (Table 3).

Relationship between ACEs and DB: predictors and mediating variables

The correlations between the main variables of the study are presented in Table 4. It can be verified that all variables are statistically correlated with each other.

A linear regression analysis was performed to test the predictors of DB (including CPS). The results obtained (Table 5) show that all

Table 1. Results of Adverse Childhood Experience (ACEs) scale and assessed dimensions

Dimension	*n* (%)	
Total adverse childhood experiences (ACEs)	113	(66.5)
Emotional abuse	30	(17.1)
Physical abuse	17	(9.8)
Sexual abuse	14	(8.1)
Emotional neglect	45	(26.0)
Physical neglect	34	(19.5)
Divorced or separated parents	37	(21.1)
Exposure to domestic violence	16	(9.1)
Parents or other family with consumption of psychoactive substances (CPS)	30	(17.1)
Family member with a mental disorder or committing suicide	34	(19.4)
Arrested family member	11	(6.3)

Table 2. Results of Exposure to Traumatic Events (ETE) questionnaire

Traumatic event	*n* (%)		*M*
Exposure to some type of natural disaster	86	(49.4)	.49
Experienced or heard of a close family member or close friend who had been exposed to a fire or explosion	106	(60.6)	.61
Exposure to a transport accident	110	(64.0)	.64
Suffered and/or were exposed to a major accident at school, at home or during a recreational activity	96	(55.2)	.55
Exposure to physical aggression	86	(49.1)	.49
Exposed or heard of someone close who had suffered gun-aggression	50	(28.6)	.29
Exposure to sexual aggression	32	(18.6)	.19
Exposure to another uncomfortable or unwanted sexual experience	35	(20.0)	.20
Experienced life-threatening illness or injury	91	(52.0)	.52
Exposure to severe human suffering	55	(31.8)	.32
Exposure to sudden violent death	51	(29.1)	.29
Exposure to unexpected accidental death	73	(42.0)	.42
Caused or heard of someone close to them who caused pain, injury, serious injury or death to another person	54	(30.9)	.31
Exposure to another extremely stressful event or experience	39	(22.3)	.22

Table 3. Mean and standard deviation of the quality variables

				Sample		Instrument	
Variables	*n* (%)	*M*	*SD*	*Min*	*Max*	*Min*	*Max*
Total adverse childhood experiences (ACEs)	171	14.6	13.66	.00	61.00		
Total delinquent behaviour (DB)	174	1.95	2.68	.00	13.00	0.00	22.00
Total antisocial traits (AT)	175	10.20	4.84	1.00	29.00	0.00	40.00
Total social support (SS)	175	62.70	9.28	12.00	72.00	12.00	72.00
Subscale significant figure	175	21.63	3.58	4.00	24.00	4.00	24.00
Subscale family	175	21.06	4.00	4.00	24.00	4.00	24.00
Subscale friend	175	20.00	3.70	4.00	24.00	4.00	24.00

independent variables considered are individually predictors of DB (including CPS). The variable AT are the one that explains more of the variance of DB, 30%. ACEs can explain 12.3%, ETE 8.3% and SS 3.7% of the variance. When considered all these variables together in a multi regression model, ETE was not significative. The best significative model obtained have the ACEs, AT, SS and age as predictors variables, and can explain more that each of them individually, 43.3% variance of DB, F (4, 163) = 31.06, $p < .001$.

In order to test mediating effects between variables, the model 4 of SPSS command Process v3.4[59], was used:

The results of SS as mediating the relationship between ACEs and DB (including CPS) show no mediating effect. There is a significant total effect of ACEs to DB (B = .0686, SE = .0141, $p <$ .001) and also a significant and similar direct effect (B = .0694, SE = .0170, $p < .001$), but a not significant indirect effect (B = -.009, Bootstrap 95% CI = [-.0226, .0189], BootStrapSE = .0102).

The results of AT as mediating the relationship between ACEs and DB (including CPS) show that it occurs in a full mediating effect, as the ACEs and DB (including CPS) relationship does not exist in presence of AT variable. Results give a significant total effect of ACEs to DB (B = .0686, SE = .0141, $p < .001$) but a not significant direct effect (B = .0249, SE = .0142, p = .0808), but there is a significant indirect effect (B = .0437, Bootstrap 95% CI = [.0205, .0709], BootStrapSE = .0131), resulting in a full mediating

Table 4. Correlation between social support (SS), exposure to traumatic events (ETE), adverse childhood experiences (ACEs), delinquent behaviour (DB), antisocial traits (AT) and Age.

Variables	1	2	3	4	5
1. Social support (SS)	-				
2. Exposure to Traumatic events (ETE)	- .223**	-			
3. Adverse childhood experiences (ACEs)	-.553***	.231**	-		
4. Delinquent behaviour (DB)	-.193*	.289***	.351***	-	
5. Antisocial traits (AT)	-.410***	.209**	.459***	.548***	-
6. Age	-.203**	.170*	.173*	.442**	.205*

Note. The DB variable includes the CPS variable.
The number of participants available for each correlation ranged from 166 to 175.
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 5. Linear regression analysis between variables with significative correlations

Model Variable					
Predictor	Dependent	R2	B	β	t
Adverse childhood experiences (ACEs)	Delinquent behaviour (DB)	.123***	.069	.351	4.851***
Antisocial traits (AT)	Delinquent behaviour (DB)	.300***	.302	.548	8.589***
Social support (SS)	Delinquent behaviour (DB)	.037*	-.056	-.193	-2.581*
Exposure to Traumatic events (ETE)	Delinquent behaviour (DB)	.076***	.461	.275	3.674***
Age	Delinquent behaviour (DB)	.195***	.731	.442	6.421***
Adverse childhood experiences (ACEs)			.034	.171	2.297*
Antisocial traits (AT)	Delinquent behaviour (DB)	.433***	.254	.463	6.764***
Social support (SS)			.047	.164	2.264*
Age			.572	.347	5.711***

Notes. The DB variable includes the CPS variable.
The number of participants available for each correlation ranged from 166 to 175.

*$p < .05$; ** $p < .01$; *** $p < .001$.

effect. The variable AT can capture almost 2/3 of the significant relationship of ACEs and DB (effect $B = .0686$ drops to $B = .0437$ in presence of AT).

The results of SS as mediating the relationship between ETE and DB (including CPS) show no mediating effect. There is a significant total effect of ETE to DB ($B = .4544$, $SE = .1227$, $p = .003$) also a significant direct effect ($B = .3931$, $SE = .1340$, $p = .0038$), but a not significant indirect effect ($B = .0613$, Bootstrap 95% CI = [-.0431, .1969], BootStrapSE = .0602).

The results of AT as mediating the relationship between ETE and DB (including CPS) show that it occurs in a full mediating effect. Results give a significant total effect of ETE to DB ($B = .4544$, $SE = .1227$, $p = .003$) but a not significant direct effect ($B = .1547$, $SE = .1142$, $p = .1774$), but as there is a significant indirect effect ($B = .2998$, Bootstrap 95% CI = [.1245, .5163], BootStrapSE = .0999), resulting in a full mediation. The variable AT can capture almost 2/3 of the significant relationship of ETE and DB (effect $B = .4544$ drops to $B = .2998$ in presence of AT).

Discussion

After analysing the results, and relating the hypothesis 1, regarding the existence of an association between the main variables, the results were statistically significant, indicating a positive correlation between the 3 main variables: ACEs, ETE, and AT. This result predicts that adolescents exposed to ACEs, as well as to ETE, tend to present a greater predisposition regarding the practice of DB (including CPS), which is corroborated by the literature on this subject[6,7,10,28]. Regardless of the form and type of ACE and/or ETE, consequences can be diverse, significantly affecting the physical, social, behavioural, emotional and cognitive development of the subjects[6]. Thus, DB may function as a strategy in attempting to adapt and socialize in repressive contexts[60]. The relationship between the CPS and DB can also be explained, given that CPS can be considered as a facilitator or motivator of delinquent and violent actions, with the aggravation of association with groups of deviant peers[61]. It should be considered that adolescence is a phase of discovery and experimentation of personal and social boundaries[62], reason why this relation should not be considered as of cause-and-effect.

Regarding the hypothesis 2, the exploration of the association between ACEs as a predictor of DB (including CPS) and AT and SS as mediating variables, was partially confirmed. In fact, it is observed that ACEs are predictive of the DB (including CPS), an expected result, considering what is reported in the literature[11,19,20]. Accordingly, the DB can be better explained in cases where the subjects experienced some type of adversity, since the DB is associated with intense psychological suffering, such as depression, anxious symptomatology and low self-esteem[23], which are connected with the ACEs[5,7,9,10]. In respect to the second part of the hypothesis 2, namely if AT and SS played the role of mediators between the independent variable ACEs and the dependent variable DB (including CPS), only AT showed to be a total mediator of this relation. SS did not have any effect when included in the hierarchical regression model. This result is corroborated by the literature as a possible consequence of exposure to ACEs, to the extent that adversity can exert on the individual and on the development of his personality, a distorted view of the world and the interactions

that surround it[63]. In turn, and given that AT is also associated with DB[48,64], there is a mediating effect of AT in the relationship between ACEs and DB (including CPS). In this sense, AT can evolve into more serious typologies in adolescence and, extended to other contexts such as school and the community, being congruent with what is expected in the practice of DB[21,25,46,48,49,64]. The SS variable did not exert any mediating effect influence on the relationship between the ACEs and the DB (including CPS), oppositely to what the literature reports, i.e., SS did not function as an amortization factor for the consequences of ACEs and, in turn, in the practice of DB. This result can be explained, given that in the genesis of ACEs are often acts practiced by figures of support and trust, particularity those close to the subject, such as parents or caregivers, often influencing the way the quality of SS is interpreted[37]. The sample of this study relates children and young people, particularly in the adolescence phase, and thus, SS at this stage may not play the expected role, compared to other samples, which are not at risk. Since adolescence is a phase of development involving contextual and social changes, the perception of SS can be particularly difficult for young people exposed to ACEs[63].

Finally, in regard to hypothesis 3, having as mediating variables the AT and SS: ETE is a predictor of DB (including CPS) as theoretically expected[19-21]. Concerning AT as mediator of this relationship, a full mediating effect was verified, as expected[50,65,66]. In fact, some studies[50,67] point out that subjects who have been victims of abuse and/or exposure to violence are more likely to develop aggressive behaviour in the future, reproducing the experiences of family violence during child abuse. Furthermore, there is also a high co-morbidity between AT, hyperactivity disorder and attention deficit, anxiety, depression, mood and substance use[65,66]. Regarding the SS variable, the mediating effect between ETE and the DB (including CPS) does not exist, revealing that SS does not seem to exert an influence on the recovery of ETE in children and youths, similar to what happens with ACEs. It is important to clarify that, if traumatic events involve close relations, the perception of this SS is distorted, with feelings of threat, danger and insecurity, both relating the subject and also relating the relationships with others, which is understandable in cases where the subjects were abused by relatives or close friends. It may be the family and close friends who do not carry out the necessary SS to the victim, avoiding to talk about the event, leading them to be interpreted as not caring, which may result in distorted cognitive trust schemes[63].

Limitations

The study has some limitations. The results cannot be inferred to the Portuguese general population, since the small sample is limited to a geographical area of Portugal, Porto. In addition, the present study involved university students, not involving a clinical sample, which should be considered in future studies. Because no longitudinal assessment was carried out, a linear cause-and-effect relationship between the independent and the dependent variables should not be established. Future studies should extend the sample to other Portuguese geographical areas, opting by a longitudinal design, analysing if victims develop AT and how it may or may not evolve to DB.

Conclusions

Although ACEs and traumatic events appear as important predictors of delinquency throughout life, there are children and adolescents with ACEs who develop behavioural pathways of greater adaptation and resilience. Understanding the variables that mediate ACEs and their impact on the behaviour of adolescents is essential for the design of intervention policies and strategies aiming to combat DB. This study proves to be particularly useful as it allows identifying the mediating variables, AT and SS, of the relationship between ACEs, ETE and DB (including CPS), assisting the practice of professionals who operate in the field of adolescents' healthy behaviour, namely in terms of mitigating the consequences associated with ACEs. Efforts to prevent delinquency should, therefore, include the group of young people who early demonstrate antisocial and DB, given their greater risk for the development of future forms of social maladaptation.

Disclosure statement

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