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# Factors in Assessing Recidivism Risk in Young Offenders

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Received: 19 December 2019; Accepted: 1 February 2020; Published: 4 February 2020



Abstract: The research aims to identify if the accumulation of protective and/or risk factors might predict the risk of recidivism in juvenile delinquents and determine the relative weight of both types of factors in the predictions themselves. The risk of criminal recidivism was assessed with the Structured Assessment of Violence Risk in Youth—SAVRY—instrument based on a sample of 192 Adolescents in Conflict with the Law—ACLs—held in juvenile detention centers in the Valencian Community (Spain). The results show that protective variables have greater relative consistency than risk variables when assessing recidivism risk in ACLs. The paper's findings enable advances in the identification of antisocial behavior patterns using positive variables, and this in turn involves modifying any intervention proposals made by professionals of juvenile justice because psycho-socio-educational processes can now be dealt with on the basis of the ACLs' potentialities (protective factors) rather than their deficiencies (risk factors) alone.

Keywords: protective factors; risk factors; recidivism risk; sustainability; adolescents

## 1. Introduction

Adolescence is an evolutionary period in which changes of a biological, cognitive, and socioemotional nature [1] take place and risk behaviors are believed to appear or become stronger [2]. Positive socialization is essential to prevent risk behaviors that may result in antisocial practices [3,4]. Socially appropriate interactions make it possible to overcome risk factors and increase protective factors, which according to [5] are those that lessen or mitigate the effects of the risk factors.

The results of many investigations give precedence to risk factors over protective factors [6–8]. However, recent research indicates that protective factors are catalysts for prosocial behavior [9], helping to reduce risk practices and favoring the development of an adult life following accepted rules of behavior [10]. It is from this perspective that [11] analyze protective factors, breaking them down into three dimensions: those relating to the individual (personality traits), social support links or networks (prosocial participation), and prosocial action dynamics (strong commitment to school or work). To a large degree these have a positive socialization effect because they protect, guide, and encourage the adolescent in an environment unconnected to their risk circuits and activities [12].

An adolescent with wide social support thus has an increased ability to cope in a variety of situations [13] and can access better strategies for conflict resolution [14].

Relationships with prosocial friends reduce the likelihood of attracting risk factors that could lead to violent behaviors [15] and having friends involved in prosocial activities has a direct protective effect

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as regards juvenile violence [16–18]. Family support brings greater resources and better relational networks, making at-risk adolescents better able to cope [19,20], and parents' commitment to their children's education is associated with a high level of prosociality [21]. Positive parentality constitutes a definite deterrent to crime [22] because it is accompanied by support in education and connection with the world of work [23]. Attachment to school is considered a protective factor against criminal behavior because it links the adolescent to an educational setting structured by rules [23–25].

Professionals who interact with adolescents in conflict with the law (ACLs) who are subject to penal measures with mandated treatment programs have different instruments they can use to assess the risk of recidivism. Table 1 shows a summary of the most representative instruments in this area. Some of the most common are the Psychopathy Checklist: Youth Version (PCL-YV) [26], the Youth Level Service/Case Management Inventory (YLS/CMI) [27], and the Antisocial Process Screening Device (APSD) [28], all of which evaluate the probability of recidivism risk by estimating risk variables. The Structured Assessment of Violence Risk in Youth (SAVRY) [29], on the other hand, includes protective factors when predicting recidivism risk along the same lines as the other instruments mentioned. It not only evaluates the risks but also explores the intervention objectives. This makes it possible to plan both therapeutic and community actions allowing the participation of other professionals and interested parties from the various different spaces in which the adolescent socializes—family (parents, brothers and sisters ...), school (teachers, coaches ...), community (those involved in reinsertion and follow-up), peers—in order for them to have an impact on the development of prosocial and resilient behaviors.

Instrument and Author Items  SAVRY Borum, Bartel, and Forth (2003)		Theoretical Influences	Adaptations and Specificities	Age Rank	
		Borum, Swarz, and Sampson (1996); Borum (2000)	Hilterman and Pueyo (2008). SAVRY, Prediction of violence in adolescents		
APSD Frick and Hare (2001)	20	Hare and Mcpherson, (1984)			
<b>PCL-R</b> Hare (1991)	18		Moltó, Poy, and Torrubia (1996). PCL-YV Interpersonal characteristics and psychopathy. Short term interventions	14–21	
Hodge and 38		Andrews and Bonta (1994)	Graña, Garrido, and González (2007) IGI-J, Prediction of youngers deliquency	12–18	

**Table 1.** Instruments to assess risk of delinquency in children and adolescents.

Several authors [3,14,30–32] have shown that, unlike other scales that base their predictions on the earliest episodes or only take risk factors into account, the SAVRY is one of the most important instruments for assessing recidivism risk when the ACLs are already in an advanced stage of risk involving episodes of violence. The SAVRY directly considers a series of protective factors that may help to predict recidivism risk throughout the educational intervention process undergone by the ACLs [33] and therefore does not simply establish diagnoses on the basis of risk factors. Protective factors for prosocial and resilient behavior increase the possibilities of protection and strengthen the design and planning of the professionals' intervention due to the fact that they reinforce and consolidate areas that help deal with conflict [34,35]. SAVRY, contrary to other instruments of the same nature, includes dynamic factors as well as protective variables. Both may change and consequently allow to modify treatment aims, adapt educational process according to needs, considering risks in real time as well as the socialization process of the adolescent. Additionally, SAVRY is used to develop protocols of individualized attention that juvenile courts require, to establish typologies of criminal activities and

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work in psychosocial and educative programs in children's detention centers. SAVRY is also used for the granting of permits or discharge the offender conditionally [36–38].

So far there have been few scientific studies that focus on the impact of protective factors on preventing violence and establishing reliable predictions of antisocial behaviors. Nevertheless, although most studies concentrate on analyzing risk factors [6,7,12], Lodewijks et al. [3] examine cases in which precedence is given to protective factors. One of the observations they made was that, in order to verify their impact, design intervention targets, and establish their importance in comparison to risk factors, it is essential to carry out research focusing on the effects of protection and prosocial development in ACLs, and the ideal instrument for this is the SAVRY.

# The Current Study

The novelty of this paper is that it focuses on analyzing the relative impact of protective factors when identifying risk dynamics and then calculates their magnitude, since the scientific literature has paid little attention to this dimension. Our objectives are to:

- (1) Assess the effect on SAVRY of fewer protective variables than risk variables.
- (2) Identify whether the accumulation of risk and/or protective factors is able to predict recidivism risk in ACLs.
- (3) Determine the relative weight of protective factors compared to risk factors when predicting recidivism risk.

#### 2. Materials and Methods

## 2.1. Sample and Procedure

The investigation consisted of a cross-sectional survey involving 192 participants from various locations and different juvenile detention centers in the Valencian Community (Spain). All participants had committed criminal acts. The sample, which was 77% male, was constructed on the basis of inclusion criteria that the participating subjects had to satisfy. These were obtained concurrently following the recommendations used in investigations with similar population [32,38] and related to the age of the ACL, violent criminal responsibility, their admission to detention centers for a minimum time and in a specific territory. Specifically, criteria were:

- Age between 14 and 21.
- From juvenile detention centers: the 5 centers belonging to the province of Valencia and the 3 Valencian Community centers specializing in coexistence in educational groups.
- Must have been sent by the courts to a juvenile detention center for committing violent crimes.
- Must have been held for more than 30 days in a juvenile detention center.

The research was approved by the Committee on Ethics and Experimental Research of the University of Valencia, reference 000067/UV-Soc/2017, and followed national and international standards. Procedure was made according to Fortaleza's Declaration in the section relative to research in humans, attending all ethical considerations. Those who satisfied inclusion criteria received all the necessary information beforehand and gave their consent. Participants were also informed that they could interrupt or cease their participation at any time.

#### 2.2. Instruments

The main instrument used in this research is the Structured Assessment of Violence Risk in Youth (SAVRY) [29], Spanish adaptation by [38]. This is an ideal tool for use with ACLs who are in the juvenile justice system having committed criminal acts [39] because it measures both risk and protective factors, the latter being extremely important in preventive programs [33]. It has 30 indicators: 24 risk factors and 6 protective factors. The alpha estimate for the scale reliability was 0.887. Of the risk factors, ten refer

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back to the ACLs past (static), six are contextual/social (dynamic), and eight are individual (dynamic). Risks are scored from low (0) to high risk (2). Protective factors are scored as present (1) or absent (0) and for the purposes of interpretation have been reverse scored. The instrument provides two final scores deriving from the risk and protective factor levels: the total risk score (TRS) and the summary risk rating (SRR). The TRS is the addition of risk factors minus the protective factors. The final SRR is the result of clinical reflection based on the information gathered for each individual separately and is not obtained simply by adding up all the points. Therefore, the SRR is a clinical (professional) classification on risk of recidivism that has into account the scores of SAVRY and protective factors and all other available information, finally classifying each subject as with low, medium or high risk of recidivism. However, in this particular research, we have re-scaled and averaged the risk factors on one hand and the protective factors in the other hand, rather than adding, with the purpose of having scales of 0–2 for risks and protective factors rather than scales of very different range, therefore making comparisons straightforward. Since it was the only structured professional judgement tool used, the evaluators were instructed to start with the TRS assessment. The SRR was rated separately for this study.

# 2.3. Statistical Analyses

SPSS 22 software was used for all the statistical analyses including descriptive statistics, chi-square tests to show the association of risk and protective factors with recidivism risk, Analyses of Variance (ANOVAs) to test for mean differences due to recidivism risk, and a logistic regression to predict low versus moderate-to-high recidivism risk. Significance level was set at the usual p < 0.05. Effect sizes for every test were calculated. The chi-square test of independence was employed as they measure if two categorical variables may be considered statistically independent (p > 0.05) or, on the contrary, they are associated (p < 0.05). We have analyzed with chi-square-test the association among risk and protective factors taken individually with the measure of recidivism. The size of these associations was measured with Cramer's V index, a measure of effect size adequate for categorical variables, such as the risks and protective factors analyzed. ANOVA was employed to test for means differences in the total score of risk and the total score of protection with the three categories of recidivism as the factor. Additional to the statistical significance, the effect size for each ANOVA was estimated with the partial eta-square, a measure of the proportion of variance explained. Finally, a binary logistic regression was estimated in order to predict the low versus moderate-to-high recidivism risk (dependent variable) with two predictors, the average risk factors and the average protective factors. Parameter estimates and the corresponding odd-ratios as measures of the individual effect size of each predictor were calculated, as well as the overall predictive effect size of both predictors by means of the Nagelkerke R-square.

## 3. Results

The average for the risk factors in the sample was  $1.10~(\mathrm{SD}=0.53)$ , with a minimum of 0.25~ and a maximum of 1.88. On the other hand, protective factors had a sample mean of  $1.16~(\mathrm{SD}=0.53)$ , a minimum of 0~ and a maximum of 2~. Regarding the indicator of risk of recidivism, 19.3% of the sample was classified as having low risk, 66.7% had medium risk, and 14.1% had high risk of recidivism. Table 2~ shows descriptive statistics for all the risk and protective factors in the SAVRY. Higher values for the risk factor averages indicate greater risk, and among the highest we see "previous violence", "poor school performance", and "substance abuse problems". The protective factors are reversed and therefore a higher average indicates less protection, i.e., we are measuring the lack of protection. The three protective factors with the highest averages are "prosocial involvement", "strong commitment to school or work", and "perseverance as a personality trait". In addition to these descriptive statistics, each risk and protective factor was tested for its association with recidivism risk. A number of statistically significant associations of risk factors with recidivism risk were found, with moderate effects (see Table 2), with greater risk indicating greater likelihood of recidivism. All the associations between protective factors and recidivism risk were statistically significant with mostly large effect sizes (see Table 2).

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**Table 2.** Means, standard deviations, and chi-square test results for the association of risk and protective factors with recidivism risk.

Factors	M	SD	x <sup>2</sup>	р	V	Factors	M	SD	x <sup>2</sup>	р	v
Previous violence	1.56	0.68	1.51	0.47	0.08	Marginal environment	0.79	0.75	15.5	< 0.01	0.28
Non-violent criminal acts	0.91	0.78	2.51	0.28	0.11	Negative attitudes	1.12	0.73	33.9	< 0.01	0.42
Early start of violence	1.15	0.73	14.7	< 0.01	0.28	Impulsivity	1.18	0.76	22.2	< 0.01	0.34
Failure of follow-ups	0.91	0.79	8.58	0.01	0.21	Substance abuse problems	1.29	0.78	24.0	< 0.01	0.35
Previous self-harm	0.37	0.63	2.53	0.28	0.12	Problems with anger	1.23	0.71	31.4	< 0.01	0.40
Exposure to domestic violence	0.87	0.84	1.31	0.51	0.08	Low empathy/regrets	1.15	0.67	38.6	< 0.01	0.45
History of child abuse	0.67	0.74	13.9	< 0.01	0.27	Problems of concentration	1.01	0.79	24.3	< 0.01	0.35
Crime of parents or caregivers	0.54	0.78	10.0	0.00	0.23	Low collaboration	1.16	0.79	27.5	< 0.01	0.38
Early separation of caregivers	0.65	0.88	9.05	0.01	0.22	Low commitment	1.04	0.71	33.9	< 0.01	0.42
Poor school performance	1.74	0.53	21.3	< 0.01	0.33	Prosocial involvement	1.33	0.81	63.61	< 0.01	0.38
Crime in the peer group	1.28	0.78	23.3	< 0.01	0.35	Strong social support	0.90	0.79	30.34	< 0.01	0.40
Rejection of the peer group	0.52	0.73	2.60	0.27	0.12	Ties with prosocial adult	0.93	0.80	43.80	< 0.01	0.48
Stress/inability to face difficulties	1.28	0.65	32.1	< 0.01	0.41	Positive attitude interventions	0.94	0.72	48.86	< 0.01	0.50
Little ability parents to educate	1.24	0.62	21.3	< 0.01	0.33	Strong commitment	1.38	0.72	62.27	< 0.01	0.57
Lack of support from adults	0.94	0.72	18.0	< 0.01	0.31	Perseverance	1.51	0.70	70.01	< 0.01	0.60

Notes: p = p-value, V = Cramer's V; protective factors in italics; risk factors are scaled 0–2 and protective factors 0–1.

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Most of the risk and protective factors have bivariate associations with recidivism risk, but we can also test whether the accumulation of risk and/or protective factors actually predicts the risk of recidivism. In order to do this, we follow a dual analysis strategy. First, two ANOVAs are calculated, one to compare the risk factor averages and the other to compare the protective factor averages of participants categorized in groups denoting "low risk", "moderate risk", and "high risk" of recidivism, respectively. Second, a new recidivism risk variable with two categories—low risk and moderate/high risk—is created and a logistic regression calculated to predict this binary variable using two predictors: accumulation of risk factors and accumulation of protective factors. This logistic regression enables us to test not only whether risk and protective factors predict recidivism risk, but also which of the two is the strongest predictor.

The ANOVA for the accumulation of risk factors was statistically significant with a large effect size  $(F(2, 189) = 56.59, p < 0.001, \eta^2 = 0.375)$ . Post-hoc comparisons found statistically significant differences between all pairs of means (p < 0.05). These were 0.81 for participants with a low risk of recidivism, 1.09 for those with a moderate risk and 1.52 for those with a high risk. It can therefore be seen that as the risk of recidivism increases, there are more risk factors present.

The second ANOVA was performed on the accumulation of protective factors and was also statistically significant and with a very large effect size (F(2, 189) = 18.05, p < 0.001,  $\eta^2$  = 0.659). Post-hoc comparisons found statistically significant differences between all pairs of means. Given that the mean for participants with a low risk of recidivism was 0.39, for moderate risk 1.23 and for high risk 1.86, it is clear that the same pattern is emerging with the lack of protective factors increasing in line with the risk. In other words, the more protective factors the subject has, the lower the risk.

As regards the logistic regression, this enabled us to estimate the predictive power of both risk and protective factors at the same time. The results show that these factors explained 77.3% of the variance in recidivism risk ( $R^2 = 0.773$ ), with the regression being able to correctly classify 91.7% of the participants. To put it another way, risk and protective factors as a whole have great predictive power where recidivism risk is concerned. Although risk and protective factors both significantly predict recidivism, their effect sizes were quite different. Table 3 shows protective factors had a greater effect on the probability of recidivism risk (B = 7.08, p < 0.001) with an odds ratio of 1194.24, while the effect of risk was marginally significant (B = 2.60, p = 0.054) and its odds ratio was only 13.47.

Factors	В	E.T.	Wald	df	p	Odd-Ratios	CI 95% for Odd-Ratios
Risks	2.600	1.349	3.716	1	0.054	13.470	0.958-189.49
Protective	7.085	1.373	26.616	1	0.000	1194.241	80.924-17624.04
Constant	-6.688	1.601	17.448	1	0.000	0.001	

**Table 3.** Results of the binary logistic regression to predict risk of recidivism.

## 4. Discussion

The aims of the present paper were (1) to assess how the SAVRY is affected by the existence of fewer protective than risk variables, (2) to detect whether the accumulation of risk and/or protective factors has the capacity to predict recidivism risk among ACLs, and (3) to determine the relative weight of protective factors compared to risk factors in the prediction.

As far as the first of these aims is concerned, we already knew that in the SAVRY there are fewer protective variables (6) than risk variables (24). We wanted to find out whether this imbalance could affect the questionnaire in some way. The higher values for the risk factor averages were an indication of greater risk in the sample. Nevertheless, there were three protective factors that obtained high averages: "prosocial participation", "strong commitment to school or work", and "perseverance as a personality trait". However, the presence of more risk variables implied more possibilities of recidivism risk [40], especially bearing in mind that the associations between 19 of the 24 were statistically significant. These results are in agreement with those of other instruments that focus only on risk variables to

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predict criminal activity, for instance the SIR-R1 [41], YLS/CMI [27], the IGI-J [42], the PCL-YV [26], the PSD [28], and the ASPD [43]. Thus, the assessment of criminal behaviors analyzed earlier on the basis of risk variables pointed to closer contact with antisocial behaviors [2,44]. Nevertheless, [33] (p. 86) reported that "it was found that the tools for measuring risk in ACLs focus on assessing risk factors with no emphasis on protective factors ... This could lead to interventions that target only those characteristics seen as problems, without developing the benefits of the protective factors". Along similar lines, Botija [30] stressed that it was important for instruments that predict and measure to contain all types of variables, thereby increasing their scope and providing more accurate estimates. According to [45], the dual trajectories leading towards or away from violence involve different types of variables (risk and protection) that make it possible to be more accurate using more information when diagnosing and predicting antisocial behaviors.

As regards the second aim, our intention was to detect whether the accumulation of risk and/or protective factors has the capacity to predict recidivism risk in ACLs. Our results indicated that it is important to accumulate protective factors in this area because then the risks will have less impact. The study showed statistically significant differences between all the pairs of means. Given that the averages for participants with a low, moderate and high risk of recidivism were 0.39, 1.23, and 1.86 respectively, then fewer protective factors mean a greater risk of recidivism. These results are in line with those from studies such as [3], which show a correlation between protective factors and a reduction in ACLs involvement in criminal activities. Thus, an accumulation of protective factors is fundamental [46] not only to guard against antisocial patterns of behavior [47–51] but also as a predictor of behaviors unconnected with criminal-type dynamics. An accumulation of variables that predict risk, however, makes it possible to determine with greater accuracy any antisocial behaviors that could, if not stopped, continue into adulthood. The study by [52] on adolescents who have fallen foul of the law stresses the importance of surrounding oneself with protective variables in order to avoid contact with risk practices as much as possible. The accumulation of these protective variables has the capacity to predict not only antisocial behaviors but also those adjusted to forms of prosocial behavior [9,10,53].

Finally, the study's third aim was to explore the relative effect of protective factors compared to risk factors. An in-depth analysis was carried out on the protective factors proposed by the SAVRY, i.e., prosocial involvement, strong social support, links with prosocial adults, positive attitude towards interventions and authority, strong commitment to school or work, and resilience. The results showed that the relative weight of these factors was substantially greater than the weight of the risk factors. The sample's effect size would also be representative in larger samples, which would indicate the precedence of protective factors over risk factors. Scientific evidence supports the idea that protective factors encourage rehabilitation [54] and indicates that the success of social readjustment programs is determined to a large degree by taking into account the protective factors that make the individual's social integration possible [55,56]. Jessor et al. [35] show that resilience helps the individual achieve a high degree of autonomy when it comes to overcoming and neutralizing exposure to risk variables. Ref. [57] stress the importance of social support and involvement in school [58], while other elements include satisfaction with prosocial activities [59,60], subjective wellbeing [61], and the way all these are able to resist and deal with different risks. Ref. [32] confirm that little interest in education and a lack of commitment to work encourage recidivism risk, which means that the greater the attachment to learning, the lower the risk of reoffending. Other research, such as that by [62], reports that participation in conversations about recidivism and risky behavior creates the opportunity for ACLs to show genuine intent to change their problematic behavior. Along similar lines, Ref. [16] recommend an action-response model of protective factors, underlining how useful it is in treating adolescent populations [63,64], especially considering that [25] report that adolescents are highly receptive to prosocial changes. Finally, investigations such as those by [3,45] highlight how important it is for us to increase our knowledge of the influence of protective factors because their impact is greater in predicting prosociality, thereby reducing patterns of criminal behavior [65].

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#### 5. Conclusions

This study presents the effectiveness of protective factors as a methodological technique for predicting the risk of recidivism. The presence of protective factors therefore makes it possible not only to predict antisocial behaviors but also to identify prosocial behaviors. This means that the agents of socialization have a greater impact than the accumulation of risk factors when predicting criminal behavior patterns, which in turn means that attention should be focused on ACLs potentialities rather than on their defects. This allows progress to be made and implies a paradigm shift as regards intervention programs, moving from the design of proposals based on ACLs deficiencies and defects towards programs based on their qualities and potential so that these can be extended to other contexts and developed.

A limitation of the study is that more research on the predictive power of risk and protective factors on objective measures of recidivism is needed.

**Author Contributions:** Conceptualization, J.-J.N.-P.; methodology, J.-J.N.-P. and J.M.T.; validation, J.-J.N.-P., M.V., J.C., and J.M.T.; formal analysis, J.M.T.; investigation, M.V.; resources, J.-J.N.-P.; data curation, M.V.; writing—original draft preparation, J.-J.N.-P., J.C., and J.M.T.; writing—review and editing, M.V.; visualization, J.-J.N.-P., M.V., J.C., and J.M.T.; supervision, J.-J.N.-P.; project administration, J.-J.N.-P.; funding acquisition, J.-J.N.-P. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Valencian Government, grant number GV/2017/208.

**Acknowledgments:** Authors want to acknowledge all professionals from different juvenile detention centers like Colonia San Vicente Ferrer, CGE Alicante Amigó and CM Cabanyal among others, who promoted investigation and mediated between ACLs and the authors during questionnaire administration. We thank the Luis Amigó Chair of the University of Valencia for coordinating the empirical procedure.

**Conflicts of Interest:** The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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