Analysis of risk and protective factors for recidivism in Spanish youth offenders

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Summary

Although a large body of research has studied the factors associated to general recidivism, predictive validity of these factors has received less attention. Andrews and Bonta's General Personality and Social Psychological Model (2006) attempts to provide an in-depth explanation of risk and protective factors in relation to youth recidivism. The *Youth Level of Service/Case Management Inventory* (Hoge and Andrews, 2006) was administered to 210 adolescents aged between 14 and 18 with a criminal record in order to analyze risk and protective factors in relation to youth recidivism. Their possible differential contribution over a two-year follow-up period was also examined. Risk factors showed good levels of recidivism prediction. The factors that emerged as the most discriminative were education/employment, leisure/recreation and personality. Protective factors differentiated between recidivists and non-recidivists in all factors. Hence, results showed that not only individual but also social factors would be crucial in predicting recidivism.

Key words: Recidivism, risk and protective factors, delinquency, YLS/CMI, juvenile offender.

Criminal behaviour, and in particular juvenile crime, may be regarded as an issue of major concern in today's society. Although the general level of youth offending does not seem to have increased, there has been a steady rise in recorded violent crime since 1991 (National Health Service in England and Wales, 2004; Rennie & Dolan, 2010). Specifically, in Spain (where minors from 14 to 17 years old are judged under the juvenile system), an increase in general violent crimes, sexual assaults and severe crimes in the family and school context have been found in the last ten years (Benavente, 2009; Capdevila, Ferrer & Luque, 2005; Pérez, 2010). Moreover, the reoffending rate ranged between 5 and 25%, depending on the type of crime (Capdevila et al., 2005; Iborra, Rodríguez, Serrano & Martínez, 2011). In this context, intervention in youth recidivism becomes critical, that is, to help preventing them from continuing their criminal career into adulthood, on a life-course-persistent trajectory (Moffit, 2006). Recidivism is not only a concern because of the impact on the public, but because of the impact on the quality of life of recidivating juveniles: increasing levels of alcohol/drug use (Becker, Kerig, Lim & Ezechukwu, 2012), personal discomfort and conflict (Gendreau, Little & Goggin, 1996), psychopathy (Salekin, 2008) and even high mortality risk (Coffey, Lovett, Cini, Patton, Wolfe & Moran, 2004).

The concept of risk factors, and consequently protective factors, has become very important. A risk factor for offending is a variable that predicts a high probability of later offending (Farrington, Loeber & Ttofi, 2012; Ribeaud & Eisner, 2010). Some authors (Haines & Case, 2008) point out that risk factors can vary greatly. The same diversity applies to protective factors, which can be considered variables that predict a low probability of offending among persons exposed to risk factors (Farrington et al., 2012; Hartman, Turner, Daigle, Exum & Cullen, 2009). Most studies have focused on risk factors, but not on protective factors, despite acknowledgement of their important

role. This study therefore includes both types of factors, while at the same time recognizing their independent nature (Haines & Case, 2008; Hoge, Andrews & Leschied, 1996).

Social learning theories (Catalano & Hawkins, 1996; Andrews & Bonta, 2006) try to structure the wide range of risk and protective factors in accordance with their theoretical assumptions. These theories are mainly based on the fact that behaviour is interiorized through interaction with the environment, so criminal conduct will be more likely in youths who perceive more rewards for performing an antisocial activity than a prosocial one. This idea supports the fact that some risk factors, such as antisocial peers or belonging to a gang, are related to a higher risk of recidivism (Tollet & Benda, 1999). In general, research reveals antisocial peers and antisocial attitudes as the strongest predictors of criminal recidivism. Consequently, changes in these constructs will influence criminal activity (Andrews, Wormith & Keisling, 1985).

One perspective of social learning theories attempts to provide an in-depth explanation of the theoretical frame of risk and protective factors through Andrews and Bonta's General Personality and Social Psychological Model of Criminal Conduct (2006). This model understands the individual as an agent that interacts with his or her environment, and that cannot be explained without this interactive, dynamic context. The model highlights the importance of costs and rewards in antisocial behaviour from the social learning perspective. This balance is measured by the young person's cognitive factors and by the observed history of costs and rewards of other individuals, which also form part of the learning background (Bandura, 1977). In this model, the best predictors of recidivism were: antisocial attitudes, antisocial friendships, antisocial personality

pattern and history of previous offences. These factors, also termed the 'Big Four', are followed by a further group of factors with moderate correlations: deficient family circumstances, education and employment, substance abuse, and leisure and recreation free time. Together, these factors are referred to as 'the Central Eight' and coincide with those put forward by Hoge & Andrews (2006) in the Youth Level of Service/Case Management Inventory, the instrument used in the present study. Several studies continue to show the primacy of these eight factors from the Inventory (Andrews, Guzzo, Raynor, Rowe, Rettinger, Brews & Wormith, 2012; Rennie & Dolan, 2010; Flores, Travis & Latessa, 2004). Some of these studies highlight the predictive power of certain factors, such as previous history, drugs and attitudes/orientation (Flores et al., 2004) or education and employment, negative peer relationship and antisocial attitudes (Jung & Rawana, 1999).

In contrast, protective factors have traditionally received less research attention in relation to recidivism, despite yielding a significant increment in the amount of variance explained by dynamic risk factors (Lodewijks, de Ruiter & Doreleijers, 2010). They have proved to be present in a significantly higher proportion among participants who did not reoffend during the follow-up period (12 months). In addition, the participants with protective factors were older when first charged, were less prolific offenders and had fewer psychopathological problems (Rennie & Dolan, 2010). Specifically, the main protective factors related to low recidivism refer to the explicit presence of a positive factor, in terms of positive personal characteristics, proper family conditions, peer selection, good school achievement, positive response to authority, and effective use of leisure time (Carr & Vandiver, 2001; Hoge, Andrews & Leschied, 1996).

The Spanish studies that have adopted social learning theories also take into account different risk factors that successfully discriminate between juvenile reoffenders and those who do not reoffend. However, protective factors are rarely considered in the same studies (Contreras, Molina & Cano, 2011; Garrido, López, Silva, López & Molina, 2006; Graña, Garrido & González, 2006; Garrido, 2009). For example, Contreras et al. (2011) found that family risk factors (family with criminal records and criminal legitimacy) and individual risk factors (low self-control, poor tolerance to frustration and external locus of control) were related to higher levels of recidivism. In the study by Graña et al. (2006), the two factors that predicted recidivism were past and current offences and substance abuse. However, in another study using categorical analysis, significant differences were found between recidivist and non-recidivist youths in all the factors of the Youth Level of Service/Case Management Inventory, with the exception of education/employment and leisure (Garrido et al., 2006). Nonetheless, the limitations of these studies should be taken into account. Some studies include adequate follow-up periods for recidivism, although without an evidence-based system for the prediction of risk (Capdevila et al., 2005; Contreras et al., 2011; Bravo, Sierra & Del Valle, 2009; Núñez, 2012). On the other hand, other studies used validated tools, although they considered retrospective periods of time (Graña et al., 2006; Garrido, 2009). And as Farrington et al. (2012) stated: "in order to determine whether a risk factor is a predictor or possible cause of offending, the risk factor needs to be measured before the offending" (p. 46). On the whole they were retrospective studies on recidivism (the rate of reoffending was considered before assessment in the Juvenile Court) and they provided no data on protective factors or on the reliability and validity of the instruments, when used. As can be seen, research into the risk of recidivism for juveniles in Spain is limited in comparison with other countries. Research in the form of

a prospective study is therefore needed to analyse the influence of risk and protective factors on youth recidivism. Such a study should also cover a wider range of the juvenile population, including limited and persistent trajectories (Moffit, 2006).

The aim of the present study is therefore to analyse risk and protective factors in relation to youth recidivism by examining their possible differential contribution over a follow-up period of two years, when most recidivist acts take place (Mulder, Brand, Bullens & van Marle, 2011). The study includes outcome variables of recidivism as a state (presence/absence), but also its frequency (number of new criminal charges in the Juvenile Court). It has been found that accumulated charges are related to early recidivism and an increase in the youth's risk level (Piquero, Farrington, Nagin & Moffitt, 2010). Moreover, a valid and reliable inventory for predicting the level of risk is applied to all participants in this study. The Youth Level of Service/Case Management Inventory (YLS/CMI), (Hoge & Andrews, 2008) stems from the Andrews & Bonta's (2006) General Personality and Social Psychological Model of Criminal Conduct, and gathers the eight most predictive factors of recidivism. Different studies and meta-analysis have proved good predictive values in different countries for the Inventory (Catchpole & Gretton, 2003; Onifade, Davidson, Campbell, Turke, Malinowski & Turner, 2008; Schwalbe, 2007).

The objective of the study leads to the formulation of the following hypotheses. Firstly, in general, all the risk factors analysed in this study will predict recidivism and the number of criminal charges; secondly, in particular, the most effective predictors will be criminal history, antisocial peer group, antisocial attitudes, and antisocial personality, identified by Andrews & Bonta (2006) as the Big Four; and thirdly, in the case of

protective factors, these same factors would be related to lower rates of recidivism and number of criminal charges.

Method

Participants

Participants were all the juveniles with a disciplinary record in the Juvenile Court of a Spanish province in the period from March 2008 to December 2010. Data were gathered from all the charges occurred in 135 municipalities, covering a total of 604.344 inhabitants. Therefore, the study included a wide range of youth offenders: from those occasionally committing minor crimes, such as shoplifting, to those persistently committing serious crimes, such as sexual assaults. Altogether there were 210 juveniles, aged from 14.03 to 18.10 years old. The average age was 15.9 years (SD = 1.16) and 90% of the participants were minors; 162 were male (77.1%) and 48 (22.9%) were female. In terms of nationality the largest percentage, 79.5%, were Spanish, followed by 10% of Romanian or other Eastern European nationalities, 5.7% from South American countries, and 4.8% from Arab countries. All the non-Spanish subjects presented a high level of proficiency in the Spanish language, and they were therefore administered the same instrument.

Instrument

The *Youth Level of Service/Case Management Inventory* (YLS/CMI, henceforth) (Hoge & Andrews, 2006), translated into Spanish by Garrido et al. (2006), is a recidivism risk hetero-assessment inventory. It is completed by a member of the technical team in the juvenile court with data from a range of information sources, including interviews with

the young person and his or her family, previous court records and information from other social centres the offender is or has been associated with.

The Inventory consists of 42 items grouped into eight risk factors; each item can be marked as present (1 point) or absent (0 point). The eight factors are as follows: 1) Prior and current offences/adjudications (5 items); 2) Family circumstances/parenting (6 items); 3) Education/employment (7 items); 4) Peer relations (4 items); 5) Substance abuse (5 items); 6) Leisure/recreation (3 items); 7) Personality/behaviour (7 items); and 8) Attitudes/orientation (5 items). Each of the subscales is assessed at low, moderate and high risk level, according to the YLS/CMI administration guidelines. The sum score of the eight factors provides a recidivism total risk level for each young person. Total risk level is classified as follows: low, from 0 to 8 points; moderate, from 9 to 22; high from 23 to 32; and very high from 33 to 42. In the present study only three risk levels were taken into account, since none of the participants' scores fell into the very high level.

The Inventory also allows factors of strength (protective factors) to be recorded. The assessor can indicate whether one specific factor might be considered as one of the young person's strengths. Protective factors are considered as not merely the absence of risk in a factor (since a necessary condition to mark the factor as protective is the absence of risk items), but the explicit presence of a positive factor. For example, illegal car racing must be a risk factor in the Leisure area, and being part of a sports club could be considered a protective factor in the same area. This option exists for all factors except Prior and current offences, since the positive factor here would be normative for all participants instead of protective.

The internal consistency of the Inventory was analysed using Cronbach's alpha coefficient, which gave values ranging from 0.62 to 0.80, except for the factor of Prior and current offences (0.48). This low value may be explained by the differences in the legal systems of Spain and Canada, where the original Inventory comes from. These two systems are not fully compatible, which is to say that it is more difficult to mark an item from this subscale in the Spanish sample. For example, the fact of presenting "three or more current convictions" is unusual in the Spanish system, since youth normally do not have more than one charge at the same time.

Procedure

The initial individual interviews to obtain a profile of the young person and information to complete the Inventory were carried out by the Justice Department in the offices of the Juvenile Court's Technical Team. The interviews took place at the juvenile court around 3-6 months after charge. During two previous months, two days a week, the members of staff from the technical team were trained by an expert in order to understand the protocol of the Inventory and obtain common criteria for the minors' assessments.

The outcome variables for recidivism were measured in two different ways: dichotomously (reoffender/non-reoffender) and quantitatively (number of subsequent charges). Both variables were examined in the two-year follow-up period, after the first assessment using the YLS/CMI Inventory.

Results

First we present Inventory data on age and gender. The YLS/CMI total score did not correlate with the age of the minors ($r = -.095$, $p = .17$). On the other hand, a significant relationship with the age of participants was found for the following factors: Prior and current offences/Adjudications ($r = .153$, $p = .02$), and Education/employment ($r = -.238$, $p = .00$). Hence, the minor presents a longer history of offences and lower risk at school or work as his or her age increases.

The ANOVA analysis with total YLS/CMI score and gender of the offenders revealed gender to be a significant factor; in other words, boys presented a higher risk of recidivism than girls (boys $M = 8.33$, $SD = 7.41$; girls $M = 4.77$, $SD = 4.88$; $F(1,209) = 9.77$, $p = .00$; Total group $M=7.51$). In the same way, when gender is related to the Inventory factors, significant differences in the factor of Family circumstances/parenting ($F(1,209) = 4.87$; $p=.02$), Peer relations ($F(1,209) = 8.10$; $p = .00$), Substance abuse ($F(1,209) = 9.54$; $p = .01$), Personality/behaviour ($F(1,209) = 5.88$; $p = .02$) and Attitudes/orientation ($F(1,209) = 6.63$; $p = .00$) were found. Thus, boys presented more risk in these factors than girls. The number of protective factors the juveniles presented did not correlate with age or gender ($r = -.091$, $p = .18$; Chi-square = 12.007; $p = .10$).

Results referring to recidivism showed that 49 out of the 210 minors had a new disciplinary conviction in the Juvenile Court during the two-year follow-up period and hence 23.3% were reoffenders (14.3% female and 85.7% male) (six juveniles from the total sample were in closed-centres and would therefore not be able to recidivate). The reoffenders' risk scores in the Inventory ranged from 3 to 27 points, with a mean score of 13.67, whereas the score of non-reoffenders ranged from 0 to 31, and their mean

score was 5.63. The total mean on protective factors for juveniles who recidivated was .29 (SD = .79), ranging from 0 to 3 whereas it was 1.75 (SD = 2.19) for non-recidivist juveniles (t (209) = 7, 104; p = .00), ranging from 0 to 7.

Furthermore, when each subscale was analysed in relation to general recidivism, significant differences between reoffenders and non-reoffenders emerged in all the factors, except for Prior and current offences. Reoffenders exhibited a significantly higher risk score on each subscale than non-reoffenders (Table 1).

Table 1. Descriptive statistics for Inventory subscales between reoffenders and non-reoffenders (risk factors)

Finally, protective factors or strengths were analysed. The difference between recidivists and non-recidivists in relation to the total number of protective factors was found to be significant in the expected direction (Table 2). The means for the number of protective factors on each scale were significantly lower in the group of reoffenders than in the group of non-reoffenders (Table 2). This suggests that juveniles with higher score on protective factors are less likely to recidivate.

Table 2. Descriptive statistics for Inventory subscales between reoffenders and non-reoffenders (protective factors)

Predictive statistics

Analysis of risk and protective factors

Results from a logistic regression are presented in three models divided in: total risk score, protective factors score and both, risk and protective scores. Demographic variables (gender, age and nationality) were included as well in the three models (table 3).

On the first block (containing risk factors along with demographics), total risk score emerged as the most significant predictor of recidivism. Age and race (foreign nationality) were also significant, explaining 36.9% of the variance on the prediction of recidivism (Nagelkerke, R2= .369). On the second block, containing protective factors along with demographics, the protective score was the most important variable (inverse) predicting recidivism, being age also significant (inverse). This model explains 27% of the variance on the prediction of recidivism. On the third model including risk and protective factors and demographic variables, total risk score, age (inverse) and race (foreign nationality) were the variables that contributed significantly to the final model. When the whole variance of the model is considered, it can be said that the third model, with risk and protective factors, represented an improvement over the previous models. The final model was statistically significant ($p<.005$), explaining 38% of the variance on the prediction of recidivism (Nagelkerke, R2= .386). Nevertheless, the protective score was not significant in this model.

Table 3. Logistic regression analysis of recidivism in a follow-up period of 2 years

An area under the curve analysis (AUC) was performed to assess the capability of the total eight-factor score to predict recidivism. An AUC value of .5 indicates a chance prediction and the value of one, a perfect prediction. In this case, in a two-year follow-

up period, an AUC of .83 (SE = .29) was observed and was therefore significant (p = .00). The confidence interval for the AUC value lay between .77 and .89.

In addition, when the total score was related to the number of subsequent criminal charges in the follow-up period, similar results were found. The total score of the eight factors also predicted the number of charges in the follow-up period through multivariate regression (negative binomial regression analysis). The effect of age was significant. Therefore as the minor grows up, less risk of recidivism is found (table 4).

Table 4. Negative binomial regression effects of total risk score and control variables and their association with number of criminal files in a follow-up period of 2 years**.**

A logistic regression was also run in order to verify the impact of each scale on the prediction of recidivism. The model selected three factors: 3 (Education/employment), 6 (Leisure/recreation) and 7 (Personality/behaviour). Results of the logistic regression indicated that scores obtained in these three factors were significant predictors of subsequent recidivism (Factor3R, B = 1.00, Wald = 9.19, p = .00), (Factor6R, B = .71, Wald = 5.47, p = .01) and (Factor7R, B = .77, Wald = 4.23, p = .03). For every one unit increase in Education/employment (risk scale 3), the likelihood to recidivate increases by 2.72 times. For every one unit increase in Leisure and recreation (risk scale 6), the likelihood to recidivate increases by 2.03 times, while for Personality and behaviour (risk scale 7), increases by 2.16 times. In this case, the Nagelkerke statistic was .337 (Table 5).

Table 5. Logistic regression analysis of risk subscales and their association with recidivism in a follow-up period of 2 years

In addition, negative binomial regression analysis determined the risk subscales that best predict the number of future criminal files, namely, Prior and current offences, Education/employment, Peer relations, Leisure/recreation and Personality/behaviour (Table 6).

Table 6. Negative binomial regression analysis of risk factors and their association with number of criminal files in a follow-up period of 2 years

Focusing on the specific subscales of protective factors, Table 7 shows the values for recidivist and non-recidivist juveniles. All the differences between recidivists and non-recidivists with regard to protective factors were significant. However, rejection to drugs (28.6%) followed by prosocial attitudes (23.8%) were the most frequent protective factors, although the differences between protective factors were small when rates of recidivism were compared.

Table 7. Chi-square analysis between reoffenders and non-reoffenders
(protective factors)

Conclusions

The main aim of this study was to analyze risk and protective factors in relation to youth recidivism, including general recidivism as a dichotomous variable as well as the number of subsequent crimes the juvenile committed. We first comment on some of the

data regarding age and gender. Age did not correlate with the total score for risk prediction; however, the minor will have a larger record of offences and lower risk at school or work as his or her age increases. Boys presented a higher mean than girls in the total risk score. When gender was related to the Inventory factors, boys presented more risk than girls, specifically in relation to family circumstances, antisocial peers, substance abuse, antisocial personality/behaviour and attitudes/orientation. These results support previous studies into the influence of gender and age on risk (Upperton & Thomson, 2007; Flores at al., 2004), with the exception of the relation between age and better academic and work performance, which seems to contradict current literature and deserves further attention. No differences were found for age and gender in protective factors.

The first hypothesis stated that risk factors would predict recidivism and the number of criminal charges in our sample. This was confirmed for the two outcome measures. In this study, the Nagelkerke R^2 statistic for the total score of the Inventory and demographic variables (gender, age and nationality) was .369; the model therefore explains 36.9% of the total variance of recidivism. This value is improved when protective score is included in the model, then a 38.6% of explained variance is obtained. Protective factors explained a percentage of variance of 27.5%. The AUC value we obtained demonstrates that the total score of the YLS/CMI has a strong predictive validity for recidivism in a Spanish sample. The sum of all the factors also predicts the number of criminal charges in the follow-up period. This study therefore lends support to previous studies that significantly predict general recidivism using this Inventory (Rennie & Dolan, 2010; Flores, 2004). The present research also confirms that this total score is a predictor of the number of subsequent crimes.

The second hypothesis stated that the best predictors of juvenile recidivism would be previous criminal record, antisocial peer group, antisocial attitudes and antisocial personality, identified by Andrews & Bonta (2006) as the Big Four. Our results partly confirm this hypothesis. The factors that emerged as significant predictors of general recidivism were education/employment, leisure/recreation and personality/behaviour, whereas the factors that best predict the number of future charges were prior and current offences, education/employment, peer relations, leisure/recreation and personality/behaviour. Our findings support the influence on recidivism of prior and current offences, peer relations and personality/behaviour, of Andrews & Bonta's (2006) Big Four factors.

Antisocial personality is a factor that is clearly associated with juvenile recidivism (Graña et al., 2006; Viljoen, Elkovitch, Scalora & Ullman, 2009). This factor represents a significant factor in the onset and persistence of the offender's trajectories. The factor may seem static, but because most of its items evaluate aggression and management of anger in relationships, it can be modified through intervention (Boxer and Frick, 2008; Guerra, Kim & Boxer, 2008; Hoge & Andrews, 2010; van der Put, Stams, Hoeve, Dekovic, Spanjaard, van der Laan & Barnoski, 2012).

The other two factors – leisure and education– form part of the young person's immediate environment and coincide with the social factors from theories of social learning. The rewards that juveniles get from the immediate environment and from interactions in their school or leisure environments will influence their involvement in further crimes.

Data showed that shortcomings in education or work, a failure in planning or managing good leisure/recreation activities and a tendency towards an antisocial personality lead the minor to recidivate. The education/employment domain is also a main precursor of recidivism in other studies that use the Inventory YLS/CMI as well as those that use another instrument (Garrido, 2009; Rennie & Dolan, 2010; Weerman, 2010; Viljoen et al., 2009). Similarly, school failure and truancy appeared as determining factors related to juvenile recidivism in a range of studies (San Juan, Ocáriz & De la Cuesta, 2007; Bravo, Sierra & Del Valle, 2009; Iborra, Rodríguez, Serrano & Martínez, 2011). Indeed, students with problems at school need to be identified, since failure at school can lead them to engage in delinquent behaviour (Hart, O'Toole, Price-Sharps & Shaffer, 2007). Moreover, an intervention in behavioural problems at school with a focus on truancy and behavioural management, as well as support in academic performance, will prevent escalation to truancy-related problems. Consequently, a broader, ecological perspective will be more effective in treating youths (Schwalbe, Macy, Day & Fraser, 2008).

Likewise, inappropriate leisure activity is a powerful variable in predicting recidivism or in the relation with high-risk behaviours (Willoughby et al., 2007). Deficient management of leisure time, associated with the lack of positive gratifying interests, could lead the minor to fill his or her time with drug use or illegal activities. The opposite effect can also occur: time spent in youth programs (sponsored sports, clubs or other youth organizations) was a significant predictor of positive developmental outcomes in adolescence (Scales, Benson & Leffert, 2000); in fact, diversion programs can decrease offending more than a stronger intervention bound to the formal system (McAra & McVie, 2007).

In summary, the most significant risk factors in relation to recidivism seem to be factors from the minors' social context, related to their education, and management of their spare time. Hence, these are dynamic and modifiable factors that can be modulated by presenting the minors with the real cost or consequences of their negative behaviour and with the consequences of a positive life style. According to this data, the young person's environment, in the broadest sense, is crucial to predict recidivism. Since leisure, and education are the variables that have the most influence on reoffending, the intervention strategies should focus on the proximal context in which the juvenile interacts. The social situation, the lifestyle and youths' individual routines will be crucial in order to stop delinquency (Wikstrom & Butterworth, 2006). Intervention with the community will therefore be essential to modulate juveniles' relationships with the legal system and, hence, recidivism, thereby enhancing prosocial strength (Onifade et al., 2008; Bravo et al., 2009; Andrews, Bonta & Wormith, 2011). Inclusion of community factors would thus be beneficial not only in prediction, but also in intervention. If this kind of intervention is not encouraged, programs designed essentially to affect the personal skills and behaviours of young offenders may have a very limited impact (Bravo et al., 2009).

In the case of protective factors, it was hypothesized that the "Big Four" would be the ones related to lower rates of recidivism and number of criminal charges. This assumption was not confirmed. The positive global effect of protective factors on general recidivism and on the reduction of future crimes has been proved (Lodewijks, de Ruiter & Doreleijers, 2010; Farrington et al., 2012; Hoge & Andrews, 2006). Juveniles who do reoffend have a lower number of protective factors than their non-

recidivist counterparts. However, of all the protective factors, positive leisure had the least presence in the sample; in other words, juveniles do not have enough positive or constructive activities that develop their aptitudes or skills. In contrast, the most protective factor was found to be rejection of substance abuse: 28.6% of the minors not only stated that they would not use any drugs, but even openly rejected them. All the protective factor differences between recidivist and non-recidivist were significant.

Finally, several limitations in the current study are worth mentioning. First, this study analysed recidivism only with reference to juvenile system records. Consequently, this analysis may have underestimated recidivism rates for youths who were 18 at the time of their offence. However, it is important to note that our findings are consistent with other Spanish studies in terms of percentages of recidivism rates (Capdevila et al., 2005; García-España, García, Benítez & Pérez, 2011; Garrido et al., 2006), and even with those found by Jennings (2002), in United Kingdom or Cain (1997), in Australia. Secondly, it would be particularly desirable to increase the number of participants, which would add greater value to the results of prediction, particularly in relation to recidivist minors. Another option would be to analyse separately offence type, for example violent offences versus non-violent offences, since this variable seems to be a strong predictor of recidivism among juveniles (Calley, 2012; Mulder, Vermunt, Brand, Bullens & Van Marle, 2012; Rennie & Dollan, 2010).

Two important aspects have implications for future research. One suggestion deriving from these results would be to consider including ecological variables in the Spanish version of the Inventory, given the proven influence of immediate contexts in youth recidivism, such as educational and working centres, spare-time settings or

neighbourhood. Furthermore, to highlight the importance of protective factors, they could be assessed by an ordinal scale rather than by a presence-or-absence method. In this way, data could be analysed in a more discriminative way. In spite of these limitations, the results of this study support the social learning theories and the differential contribution of risk factors to recidivism, emphasizing the more social variables such as leisure, education and antisocial personality. They also confirm that the YLS/CMI is able to predict general recidivism in the Spanish sample prospectively in two years and the number of criminal charges, which has not previously been analysed. The importance of protective factors in recidivism and its measurement is also emphasized.

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Table 1. Descriptive statistics for Inventory subscales between reoffenders and non-reoffenders (risk factors)

Factors	Total M(SD) (N=210)	Non-reoffenders M(SD) (N=161)	Reoffenders M(SD) (N=49)	t	Sig.
1. Prior and current offences/adjudications	0.14(0.46)	0.13(0.44)	0.18(0.52)	0.69	0.487
2. Family circumstances/parenting	1.380(1.38)	0.74(1.19)	1.98(1.53)	5.20	0.000
3. Education/employment	1.628(1.62)	1.27(1.42)	3.10(1.46)	7.81	0.000
4. Peer relations	1.486(1.48)	2.45(1.38)	0.98(1.34)	6.68	0.000
5. Substance abuse	0.838(0.83)	0.32(0.70)	0.67(1.14)	2.03	0.047
6. Leisure/recreation	1.191(1.19)	1.26(1.14)	2.39(0.90)	7.13	0.000
7. Personality/behaviour	1.437(0.90)	0.59(1.13)	1.90(1.84)	4.71	0.000
8. Attitudes/orientation	0.950(0.51)	0.35(0.76)	1.04(1.27)	3.58	0.001
Total risk score	7.51(7.05)	5.63(6.00)	13.67(6.78)	7.96	0.000

Table 2. Descriptive statistics for Inventory subscales between reoffenders and non-reoffenders (protective factors)

Factors	Total M(SD) (N=210)	Non-reoffenders M(SD) (N=161)	Reoffenders M(SD) (N=49)	t	Sig
2. Positive family circumstances/parenting	0.17(0.37)	0.21(.40)	0.02(.14)	4.99	0.000
3. Good school/employment achievement	0.16(0.36)	0.20(.40)	0.04(.20)	3.71	0.000
4. Positive peer relations	0.17(0.37)	0.21(.40)	0.02(.14)	4.99	0.000
5. Rejection to substance abuse	0.29(0.34)	0.35(.47)	0.08(.27)	4.87	0.000
6. Positive leisure/recreation	0.16(0.36)	0.20(.40)	0.00(.00)	6.42	0.000
7. Prosocial personality/behaviour	0.23(0.42)	0.29(.45)	0.06(.24)	4.51	0.000
8. Prosocial attitudes	0.24(0.42)	0.29(.45)	0.06(.24)	4.62	0.000
Total	1.41(2.05)	1.75(2.19)	0.29(.79)	7.10	0.000

Table 3. Logistic regression analysis of recidivism in a follow-up period of 2 years

		B	SE	Wald	df	Sig.	Exp(B)	I.C. 95% (B)	
								LL	UL
Model 1	Risk score	0.16	0.02	33.59	1	0.000	1.18	1.11	1.24
	Male(1)	0.04	0.52	0.00	1	0.932	1.04	0.37	2.93
	Age	-0.48	0.18	7.01	1	0.008	0.61	0.43	0.88
	Foreign(1)	-1.03	0.45	5.27	1	0.022	0.35	0.14	0.85
	Constant	5.64	2.88	3.83	1	0.050	282.00		
N=210; -2 log likelihood=169.253; R cuadrado de (Cox y Snell) .245; Nagelkerke R² .369									
Model 2	Protective	-0.72	0.20	12.61	1	0.000	0.48	0.32	0.72
	Male(1)	0.41	0.50	0.66	1	0.416	1.51	0.56	4.07
	Age	-0.54	0.16	11.08	1	0.001	0.57	0.41	0.79
	Foreign(1)	-0.54	0.41	1.72	1	0.189	0.57	0.25	1.30
	Constant	8.10	2630	9.50	1	0.002	3317.42		
N=210; -2 log likelihood=185.917; R cuadrado de (Cox y Snell) .182 Nagelkerke R² .275									
Model 3	Risk score	0.13	0.03	17.15	1	0.000	1.14	1.07	1.22
	Protective	-0.32	0.20	2.53	1	0.111	0.72	0.48	1.07
	Male(1)	-0.01	0.53	0.00	1	0.975	0.98	0.34	2.82
	Age	-0.50	0.18	7.72	1	0.005	0.60	0.42	0.86
	Foreign(1)	-0.91	0.45	4.11	1	0.042	0.39	0.16	0.96
	Constant	6.46	2.90	4.96	1	0.026	644.86		
N=210; -2 log likelihood=166.061; R cuadrado de (Cox y Snell) .256; Nagelkerke R² .386									

Table 4. Negative binomial regression effects of total risk score and control variables and their association with number of criminal files in a follow-up period of 2 years**.**

	B	SE	Chi² Wald	df	Sig.	I.C. 95% Wald	
						LL	UL
Intercept	2.51	0.88	8.04	1	0.007	0.77	4.25
Male	0.47	0.46	1.01	1	0.313	-.446	1.390
Foreign nationality	-0.50	0.32	2.43	1	0.119	-1.137	0.129
Risk score	0.12	0.02	27.31	1	0.000	0.077	0.168
Protective	-0.29	0.16	3.09	1	0.078	-0.619	0.033
Age	-0.49	0.13	13.42	1	0.000	-0.766	-0.232

N=210; log likelihood= -157,614; AIC= 327.641; BIC= 347.310

Table 5. Logistic regression analysis of subscales and their association with recidivism in a follow-up period of 2 years

							I.C. 95% (B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	LL	UL
Step 1	Education/employment	1.63	0.29	31.17	1	0.000	5.12	2.88	9.10
	Constant	-4.59	0.67	45.66	1	0.000	0.01		
Step 2	Education/employment	1.28	0.31	17.00	1	0.000	3.62	1.96	6.69
	Leisure/recreation	0.81	0.30	7.34	1	0.007	2.26	1.25	4.09
	Constant	-5.90	0.92	41.04	1	0.000	.00		
Step 3	Education/employment	1.00	0.33	9.19	1	0.002	2.72	1.42	5.21
	Leisure/recreation	0.71	0.30	5.47	1	0.019	2.03	1.12	3.68
	Personality/behaviour	0.77	0.37	4.27	1	0.039	2.16	1.04	4.50
	Constant	-6.21	0.92	45.35	1	0.000	0.00		

N=210. Note: -2 log likelihood=175.076, R² (Cox y Snell) .223 Nagelkerke .337

Table 6. Negative binomial regression analysis of risk factors and their association with number of criminal files in a follow-up period of 2 years

	B	SE	Chi² Wald	df	Sig.	I.C. 95% Wald	
						LL	UL
(Intercept)	-3.15	0.40	61.29	1	0.000	-3.94	-2.36
1. Prior and current offences	-0.63	0.28	5.09	1	0.024	-1.18	-0.08
3. Education/employment	0.37	0.13	7.43	1	0.006	0.10	0.64
4. Peer relations	0.28	0.13	4.47	1	0.034	0.02	0.55
6. Leisure/recreation	0.40	0.19	4.21	1	0.040	0.01	0.79
7. Personality/behaviour	0.29	0.10	7.59	1	0.006	0.08	0.50

Table 7. Chi-square analysis between reoffenders and non-reoffenders (protective factors)

Factors	Total	Non-R	R	Sig.
2. Positive family circumstances/parenting	16.7%	16.2%	0.5%	0.001
3. Good school/employment achievement	16.2%	15.2%	1%	0.007
4. Positive peer relations	16.7%	16.2%	0.5%	0.001
5. Rejection to substance abuse	28.6%	26.7%	1.9%	0.000
6. Positive leisure/recreation	15.7%	15.7%	0%	0.000
7. Prosocial personality/behaviour	23.3%	21.9%	1.4%	0.001
8. Prosocial attitudes	23.8%	22.4%	1.4%	0.000

Non-R = Non-reoffenders

R = Reoffenders

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