Risk Factors and Youth Recidivism Prediction in General and Property Offenders

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The predictive validity of risk factors for recidivism in general offenders is well known, but few studies have considered specific crimes – such as non-violent property offences – in this context. The prediction of risk factors on recidivism among general and property offenders is analysed in an attempt to capture any motivational differences underlying diverse types of crimes. Subsamples of theft and property damage offenders were extracted from a general population of 210 juvenile offenders aged between 14 and 18 years. All participants were assessed using the Spanish version of the Youth Level of Service/Case Management Inventory (YLS/CMI) and their recidivism rates were evaluated in terms of the number of new records in a 24-month follow-up period. Factors pertaining to the Big Four (especially the antisocial peers risk factor) seem to be the most predictive factors for both general offenders and non-violent property offenders; the type of crime does not seem to make a significant difference to youth offenders' needs.

Key words: general offenders; property offenders; recidivism; risk; Youth Level of Service/Case Management Inventory (YLS/CMI).

Introduction

Youth reoffending rates in Spain (where minors from 14 to 17 years of age are judged under the juvenile system) range between 5% and 34%, depending on the type of crime (Capdevila, Ferrer, & Luque, 2005; Iborra, Rodríguez, Serrano, & Martínez, 2011; Ortega-Campos, García-García, & Frías-Armenta, 2014). In this context, intervention to decrease recidivism is critical for helping to prevent young people from continuing a criminal career into adulthood on a life-course-persistent trajectory (Moffit, 2006).

In this sense, determining the level of risk in youth offending becomes crucial for predicting recidivism (Cuervo & Villanueva, 2015; Schwalbe, Gearing, Mackenzie,

Brewer, & Ibrahim, 2012; Wilson & Hoge, 2013). This risk assessment is essential in order to respect the risk-needs principles (Andrews & Bonta, 2010; Andrews, Bonta, & Hoge, 1990). It has been shown that some interventions with low-risk youths can produce poor results, whereas the same interventions with high-risk offenders yield positive results. Moreover, intervention targets must be matched to criminological needs in youth. A comprehensive assessment can identify the relevant risk factors for treatment, the suitability of educational measures in juvenile courts and intervention in juvenile justice facilities. In this study, risk predictive factors are analysed in general (for all types of crimes) and for property offences in

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particular, in order to obtain a clear picture of specific profiles and needs of youth offenders that may help to define specific intervention profiles.

This risk assessment is mainly based on the presence of risk factors in youths' life contexts. Social learning theories (Andrews & Bonta, 2006; Catalano & Hawkins, 1996) aim to structure the wide range of risk factors in youth recidivism. Andrews and Bonta's (2006) General Personality and Social Psychological Model of Criminal Conduct offers a perspective on social learning theory that attempts to provide an in-depth explanation of the theoretical frame of risk factors. This model aims to understand the individual as an agent who interacts with his or her environment, working on the basis that these interactions can only be explained in an interactive, dynamic context; it also highlights the importance of the potential costs of and rewards for antisocial behaviour from a social learning perspective.

This model holds that four risk factors – antisocial attitudes, antisocial peers, antisocial personality patterns and a history of previous offences – are related to a higher risk of recidivism. These factors, also known as 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. These factors together are termed the 'Central Eight' and are those included by Hoge and Andrews (2006) in the Youth Level of Service/Case Management Inventory (YLS/CMI), the instrument used in the present study. Different studies put forward the strength of these eight factors in the prediction of youth recidivism (Andrews et al., 2012; Chu et al., 2015; Cuervo & Villanueva, 2015).

The predictive validity of risk factors for recidivism in general offending is therefore well known, but there are few studies on specific index crimes. For example, Cuervo, Villanueva, González, Carrión, and Busquets (2015) found that minors who commit crimes against persons present more individual risk

factors, such as antisocial personality and attitudes. In crimes against property, the minors are characterised by presenting a greater degree of inconsistent parenting. However, the predictive relation of these risk factors to recidivism is not present in the study.

Although there is a reasonable analogy between violent/non-violent crimes and crimes against persons/property, this study focuses on property crimes as one of the most common offences (Papageorgiou & Vostanis, 2000) and most overrepresented in non-persistent trajectories (the most frequent youth delinquency pathway; Cuervo & Villanueva, 2013; Moffit & Caspi, 2001). Moreover, the Spanish legal system gives more primacy to this differentiation (persons/property) instead of violent/non-violent offences, this later presenting a more diffuse and changing classification across the studies in relation to the specific offences included (Woolard & Fountain, 2016).

Numerous studies have highlighted the slightly higher percentage of crimes against property versus against persons – 54% vs 46%, respectively (Alcaraz, Bouso, & Verdejo, 2015; Capdevila et al., 2005; Iborra et al., 2011; INE, 2013; Jiménez, 2010; Núñez, 2012) – the most common of which are robbery, robbery with violence and intimidation, and burglary with forced entry (Alcázar et al., 2015; San Juan & Ocariz, 2009). However, this study focuses on non-violent property crimes, such as theft and property damage, which account for approximately 9% to 10% and 4% to 6% of the total, respectively (Alcázar et al., 2015; Bravo, Sierra, & del Valle, 2009; Desbrow, Fernández, Gran, Lozano, & Cárdbaba, 2014; Jiménez, 2010). Although the most common property crimes are those involving violence, Fernández (2013) explains that these violent acts are the product of a reiterative behaviour that begins with theft offences. Successful early intervention in cases of theft and property damage could therefore prevent this trend from escalating to violence.

Do gender and age play a part in this relation between risk predictive factors and property offending? In the main, studies support the gender neutrality of existing offender risk and needs assessments (Geraghty & Woodhams, 2015; Van der Knaap, Alberda, Oosterveld, & Born, 2012). However, in general offending, several studies have underscored the presence of specific female risk factors that play an important role in the development of female offending trajectories (Andrews et al., 2012; Shepherd, Luebbers, Ogloff, Fullam, & Dolan, 2014); factors including familial and social relationships, trauma, victimisation, mental health, self-harm and substance abuse are believed to play a major role in female delinquency. However, very little is known about risk factors and sex in property offending. A commonly-accepted phenomenon in relation to age is the *age-crime curve* (Farrington, 1987), in which violent crime increases each successive year from age 12, peaks at age 17, and then drops from ages 18 to 27. However, to the authors' knowledge, no specific studies deal with the contribution of age to the relation between risk factors predicting recidivism in specific property offenders.

Objective of the Study

This study analyses the prediction of risk factors on recidivism among general offences (all types of crime) and property offences specifically. It is possible that significant risk predictive factors may differ due to motivational differences underlying different types of crimes. To date, most studies have focused on the differentiation between violent and non-violent crime but have neglected to explore the different forms that non-violent property offences can take. A valid and reliable inventory for predicting the level of risk is applied to all participants in this study – namely, the YLS/CMI (Hoge & Andrews, 2006). The study also includes an adequate prospective follow-up period (24 months), since it has been shown that most youth reoffending takes

place within that time (Capdevila et al., 2005; Mulder, Brand, Bullens, & van Marle, 2011). The hypotheses posed are as follows: all risk factors in the Central Eight will predict recidivism in property offending, but contextual risk factors, such as parenting and education/employment, will offer more predictive power (Cuervo et al., 2015). Sex and age will contribute to recidivism prediction in the property offenders group in the same direction as in the general offenders group.

Method

Participants

The study was undertaken on all the youths with a disciplinary record in the Juvenile Court of a Spanish province between January 2008 and February 2010 ($n = 210$). All participants were assessed by the Youth Offending Team as a result of having committed a criminal offence (indexed offence). The youths' ages ranged from 14 to 18.07 years, with a mean of 16.06 years ($SD = 1.16$), and 151 were male (71.9%).

The type of crime committed was against persons in 48% of the cases and involved property in 51.4% of the cases. In the property group, two subgroups were extracted: all youths charged with property damage (16%, $n = 33$), and all youths charged with theft (16%, $n = 33$). In the theft group, 75.8% were boys with a mean age of 16.03; in the property damage group, 85% were boys with a mean age of 16.01. The level of risk of reoffending was low for both groups (0 to 8 points on the YLS/CMI): $M = 6.8$, $SD = 7.3$ for the theft group, and $M = 4.9$, $SD = 5.3$ for the property damage group. No significant differences were found between the two groups regarding sex distribution, mean age or risk level.

Instrument

Hoge and Andrews' (2006) YLS/CMI, translated into Spanish by Garrido, López, Silva, López, and Molina (2006) as the *Inventario de Gestión e Intervención para Jóvenes* (IGI-

J), is an instrument for evaluating the risk of youths reoffending. Information to complete the IGI-J must be collected from several sources, such as an interview with the family and the youth, previous charges, social services, educational institutions, and so forth.

This inventory consists of 42 items grouped into eight risk factors. Each factor has 3 to 7 items and the administrator marks the risk items that apply to the youth (1 = *presence*; 0 = *absence*). The factors included in the questionnaire are: 1) Prior and Current Offences and Dispositions ('Three or more prior convictions'); 2) Family Circumstances/Parenting ('Inconsistent parenting'); 3) Education/Employment ('Disruptive classroom behaviour'); 4) Peer Relations ('Some delinquent friends'); 5) Substance Abuse ('Chronic alcohol use'); 6) Leisure/Recreation ('No personal interests'); 7) Personality/Behaviour ('Poor frustration tolerance'); 8) Attitudes, Values and Beliefs ('Defies authority'). The total of the youth's scores on all items provides the level of risk for recidivism, which is classified into four score ranges: Low (0–8), Moderate (9–22), High (23–32), and Very High (33–42). According to the overall score obtained from the IGI-J, the youth offending team will then decide the kind of arrangements that should be made for the young person. The IGI-J has been shown to have adequate psychometric properties in previous studies ($\alpha = .87$; Cuervo & Villanueva, 2013).

Procedure

When a youth is charged with committing a crime or an offence, he or she is assessed by the youth offending team at the juvenile court. In this study, the interviews took place at the juvenile court around 3 to 6 months after each individual was charged. During the two previous months, for two days a week the members of staff from the technical team received training from an expert to understand the protocol of the IGI-J and establish common criteria for assessing the young people. The IGI-J was completed in these

interviews and the specific score obtained reflects the risk of recidivism for each offender; the youth offending team can then use this information to propose a particular measure or educational intervention.

The index offences are classified as follows: only non-violent theft and property damage are taken into account in this study. Theft is understood not to involve force or violence (as opposed to assault and robbery) – for example, shoplifting. Property damage is regarded as damage or destruction of public or private property (breaking windows, keying cars, or tagging structures with paint or other forms of graffiti).

Finally, a youth was considered a reoffender if he or she was charged with another new offence within the 24-month follow-up period after assessment by the youth offending team and having completed the IGI-J, which was taken as the baseline. The number of new criminal records (recidivism variable) was recorded over this 24-month period.

Data Analysis

Since a large number of young people do not reoffend, a generalised linear regression with negative binomial distribution was chosen for this study, as it has become a standard estimation strategy in penological research (DeLisi, Trulson, Marquart, Drury, & Kosloski, 2010; Walters, 2007). The measure of the dependent variable – youth recidivism – has a skewed and over-dispersed distribution that violates the key assumptions of traditional Ordinary Least Squares (OLS) regressions (Weerman & Hoeve, 2012), thus suggesting the use of negative binomial regression. Predicted tables of the likelihood of recidivism were developed from each of the models.

Results

The results of the negative binomial regression analysis of recidivism in which age, sex and all IGI-J factors that serve as predictors are reproduced in Table 1 for

Table 1. Estimated parameters for general offenders ($n = 210$) in a 24-month follow-up period.

Parameter	Estimate	Std. error	Wald	df	p	95% confidence interval	
						Lower bound	Upper bound
0 new offences	−7.066	2.168	10.624	1	.001	−11.315	−2.817
1 new offence	−5.855	2.157	7.367	1	.007	−10.083	−1.627
2 new offences	−5.233	2.163	5.852	1	.016	−9.473	−0.993
3 new offences	−4.087	2.208	3.424	1	.064	−8.415	0.242
5 new offences	−2.963	2.351	1.588	1	.208	−7.570	1.645
Male	0.971	0.445	4.760	1	.029	0.099	1.844
Age	−0.628	0.142	19.648	1	.000	−0.905	−0.350
IGI-J factor 4 score	0.518	0.106	24.010	1	.000	0.311	0.726

general offenders. The presented model is significant, $-2 \log\text{-likelihood} = 231.65$, $p = .00$, pseudo Nagelkerke value $R^2 = .27$. Furthermore, the parallel-line test indicates that the model meets the requirements, $\chi^2(12, n = 210) = 3.20$, $p = .99$. The Wald statistic shows that the variable with the greatest effect on recidivism is IGI-J factor 4 (antisocial peers), followed by univariate effects of sex and age. Being male has a significant and substantial negative effect on recidivism, while age increases as recidivism decreases.

Table 2 presents the predicted values of the likelihood of recidivism in general offenders, as coefficients in the model in Table 1 indicate. Values for the average age (16 years) and limits of $\pm 2 \times (1.16)$ SDs $\pm 2*(1.16)$ are shown. For all age groups, scores on non-recidivism are higher when there is no risk in IGI-J factor 4, Peer Relations (range = .63–.99). In relation to sex, likelihood of non-recidivism is 1.33 times higher for 14-year-old girls than for boys, 1.09 times higher at 16 years of age, and 1.03 times higher at 18 years of age.

Table 2. Likelihood of recidivism for general offenders ($n = 210$).

Age	Sex	IGI-J factor 4 score	0 new offences	1 new offence	2 new offences	3 new offences	5 new offences
14	M	0	0.63	0.24	0.06	0.05	0.02
14	F	0	0.84	0.11	0.02	0.02	0.01
16	M	0	0.87	0.09	0.02	0.01	0.00
16	F	0	0.95	0.03	0.01	0.01	0.00
18	M	0	0.96	0.03	0.01	0.00	0.00
18	F	0	0.99	0.01	0.00	0.00	0.00
14	M	4	0.02	0.30	0.22	0.28	0.11
14	F	4	0.24	0.41	0.14	0.13	0.05
16	M	4	0.34	0.38	0.12	0.10	0.04
16	F	4	0.67	0.22	0.05	0.04	0.01
18	M	4	0.74	0.18	0.04	0.03	0.01
18	F	4	0.89	0.08	0.02	0.01	0.00

Table 3. Estimated parameters for property damage offenders ($n = 33$) in a 24-month follow-up period.

Parameter	Estimate	Std. error	Wald	df	p	95% confidence interval	
						Lower bound	Upper bound
0 new offences	2.533	0.714	12.599	1	.000	1.135	3.932
1 new offence	3.807	0.944	16.278	1	.000	1.958	5.657
2 new offences	4.566	1.185	14.840	1	.000	2.243	6.889
IGI-J factor 2 score	1.219	0.488	6.254	1	.012	0.264	2.175

When IGI-J factor 4 (Peer Relations) yields the score of 4, sex and age differences can be observed in non-recidivism and recidivism. For all ages, likelihood of non-recidivism continues to be higher for girls than for boys. In relation to risk factors, likelihood of non-recidivism decreases dramatically at 14 years of age when the youth has peers involved in antisocial activities and practices (.02 for girls and .24 for boys). As they grow older (16 and 18 years of age), the likelihood of non-recidivism increases (range = .34–.89), even when the score for IGI-J factor 4 is high.

Negative binomial regression analysis for the property damage offenders is shown in Table 3. The only IGI-J factor that significantly predicts recidivism here is factor 2, Family Circumstances/Parenting. The presented model is significant, -2 log-likelihood = 13.10, $p = .01$, pseudo Nagelkerke value $R^2 = .22$, but the parallel-lines test is not significant, $\chi^2(2, n = 33) = 3.17$, $p = .20$. The variables of sex and age are not included in the model.

The likelihood of recidivism for property damage offenders is presented in Table 4, wherein it can be observed that recidivism increases with the IGI-J factor 2

score; non-recidivism is 2.3 times more likely when there are no negative family circumstances compared with youths who are attributed the score of 2 for this factor.

Finally, Table 5 presents the model that predicts recidivism in theft offenders, -2 log-likelihood = 19.56, $p = .00$, pseudo Nagelkerke value $R^2 = .62$. The Wald statistic shows that the variable with the highest effect on recidivism is IGI-J factor 4 (Peer Relations), followed by IGI-J factor 8 (Attitudes, Values and Beliefs), age and IGI-J factor 7 (Personality/Behaviour). The parallel-line test indicates that the model meets the requirements, $\chi^2(8, n = 33) = 2.14$, $p = .98$.

In Table 6, only minimum and maximum values obtained in this study, are included for all IGI-J factors, with the exception of the most predictive factor in the model (factor 4), in which all the values (0–4) are shown. At 18 years of age, with the highest scores in factors 7 (Personality/Behaviour) and 8 (Attitudes, Values and Beliefs), the probability of recidivism is almost non-existent. Only when the maximum score of 4 is reached in factor 4 in combination with scores of 0 for factors 7 and 8 a minimum likelihood of recidivism begins to appear (.13). At 14 years of age, the

Table 4. Likelihood of recidivism for property damage offenders ($n = 33$).

IGI-J factor 2 score	0 new offences	1 new offence	2 new offences
0	0.92	0.05	0.01
1	0.76	0.16	0.04
2	0.40	0.37	0.11

Table 5. Estimated parameters for theft offenders ($n = 33$) in a 24-month follow-up period.

	Estimate	Std. error	Wald	df	p	95% confidence interval	
						Lower bound	Upper bound
0 new offences	-20.484	10.203	4.031	1	.045	-40.481	-0.486
1 new offence	-18.706	10.062	3.456	1	.063	-38.427	1.015
3 new offences	-17.855	10.076	3.140	1	.076	-37.604	1.895
IGI-J factor 4	1.495	0.629	5.658	1	.017	0.263	2.727
IGI-J factor 7	1.452	0.721	4.052	1	.044	0.038	2.865
IGI-J factor 8	-2.842	1.209	5.521	1	.019	-5.212	-0.471
Age	-1.566	0.703	4.967	1	.026	-2.943	-0.189

likelihood of reoffending increases as the factor 4 score increases. With all the factor scores at 0, likelihood of non-recidivism for 18-year-old offenders is 1.26 times higher than for 14-year-old offenders.

Conclusion

The main aim of this study is to evaluate the prediction of risk factors on youth recidivism among both general and property offenders. It was hypothesised that significant risk predictive factors differ due to underlying motivational differences for committing different types of crime. However, the results do not fully support this hypothesis. There does not seem to be a significant difference in the needs of youth offenders between general offences and property offences expressed by risk predictor factors. Overall, factors pertaining to the Big Four seem to be most predictive of recidivism, regardless of the type of crime.

This study reveals that the YLS/CMI risk factors are effective in predicting youth recidivism in general and non-violent property offenders. However, only some of the Big Four and the Central Eight emerge as significant predictors. For general offenders, only the Peer Relations risk factor is central; for property damage offenders, only the Family Circumstances/Parenting factor is significant, and for theft offenders, only Peer Relations, Personality/Behaviour, and Attitudes, Values and Beliefs are significant, with this last

model being the most explanatory (Nagelkerke $R^2 = .62$). That most of the risk factors are not significant predictors may, at least in part, be due to the fact that there are high inter-correlations between them, as suggested by Grieger and Hossler (2014) as well as the authors of the model, Andrews and Bonta (2010).

What seems clear is the predominance of the Peer Relations risk factor over the others, as shown in the models for general offenders and theft offenders. In addition, having anti-social peers seems to be especially relevant to the risk of recidivism around the age of 14 years compared to older youths (16 to 18 years of age). These antisocial peers may be influencing crucial choices about costs and rewards in antisocial behaviour, as suggested by social learning perspectives. This age is characterised precisely by the focus on peers and social life, as young adolescents want to be liked and be a part of the group (Smetana, 2011). At the same time, this age coincides with a strong increase in recidivism, which takes place from 12 years of age onwards (Farrington, 1987). It is therefore especially important to break this negative association with problematic peers around the age of 14 years.

The fact that Prior and Current Offences and Dispositions is not a predictive factor in theft (the only one of the Big Four that is not) could be a reflection of the differences in the Spanish legal environment (for similar results

Table 6. Likelihood of recidivism for theft offenders ($n = 33$).

IGI-J factor 4 score	IGI-J factor 7 score	IGI-J factor 8 score	Age	0 new offences	1 new offence	3 new offences
0	4	3	18	1.00	0.00	0.00
1	4	3	18	1.00	0.00	0.00
2	4	3	18	1.00	0.00	0.00
3	4	3	18	1.00	0.00	0.00
4	4	3	18	0.99	0.01	0.00
0	0	0	18	1.00	0.00	0.00
1	0	0	18	1.00	0.00	0.00
2	0	0	18	0.99	0.01	0.00
3	0	0	18	0.96	0.03	0.00
4	0	0	18	0.84	0.13	0.02
0	4	3	14	0.98	0.01	0.00
1	4	3	14	0.93	0.06	0.01
2	4	3	14	0.73	0.22	0.03
3	4	3	14	0.25	0.54	0.11
4	4	3	14	0.00	0.35	0.29
0	0	0	14	0.79	0.17	0.02
1	0	0	14	0.35	0.49	0.09
2	0	0	14	0.01	0.44	0.26
3	0	0	14	0.00	0.03	0.19
4	0	0	14	0.00	0.00	0.00

in the Singaporean context, see Chu et al., 2015). In fact, Cuervo and Villanueva (2015) explain that the legal systems of Spain and Canada – from where the YLS/CMI originates – are not fully compatible, which means that it is more difficult to score an item from this subscale in the Spanish sample. For example, presenting ‘three or more current convictions’ is unusual in the Spanish system, since youths do not normally have more than one charge at the same time.

The Attitudes, Values and Beliefs factor is negatively skewed in the regression analyses for youths who had committed theft (Table 5), which is quite unexpected and deserves additional research. It may be the case that the features comprising this factor – such as not seeking help or actively rejecting it, defying authority and showing little concern for others – are not core to this type of crime, which is usually regarded as a minor infraction. Whatever the case, this factor and

the Personality/Behaviour factor may be the most abstract ones in the YLS/CMI and therefore difficult to assess in the brief interview that takes place in the juvenile court. In fact, authors such as Andrews and Bonta (2010) and Skilling and Sorge (2014) suggest assessing these two factors with specific instruments due to the difficulty of capturing them in a risk inventory coded as merely presence or absence.

The Family Circumstances/Parenting factor, which does not pertain to the Big Four, is the best predictor of recidivism in property damage offenders. However, taking both property offending groups together, the results do not support the importance of contextual factors in property offending. In theft, mainly individual risk factors seems central (personality and attitudes), while in property damage, parenting emerges as significant. Finally, the variables of sex and age yielded results that support classical views and

previous studies: boys and younger offenders present a greater risk of recidivism, mainly in the model for general and theft offenders. Therefore, as the young person matures, the risk of recidivism falls. However, no interaction effects were found between sex, age and risk factors.

The present study has several limitations. First, the data are taken from a single Spanish province and therefore the results cannot be generalised to the rest of Spain or to other countries. Likewise, in future research it would be useful to focus on whether the nature of the index crime is violent or non-violent, such as comparing non-violent property offences (theft and property damage) with violent property offences (robbery and assault). Future studies into juvenile offending trajectories might usefully include the index crime and also the crime committed on reoffending, since this would allow more accurate predictions to be made and make it possible to view trends of escalation from minor crimes to more serious crimes.

Despite the limitations of the present research, the results have clear practical implications for professionals who work with youth offenders on a daily basis. The importance of the antisocial peers risk factor to recidivism, in the case of both general and property offences, makes it a target for intervention for the prevention of reoffending, especially at the youngest age covered by the Spanish Law of Criminal Liability of Minors (14 years of age). Moreover, factors pertaining to the Big Four seem to be the most efficient predictors for both general offenders and non-violent property offenders. In this sense, there does not seem to be a clear difference between general crimes and this subgroup in regard to the needs of youth offenders. However, the role of antisocial attitudes in the recidivism of theft offenders deserves further exploration.

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