



Assessing the links among adolescent and youth offending, antisocial behaviour, victimization, drug use, and gender

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ABSTRACT. This *ex post facto* study focuses on three risk factors for youth crime, namely involvement in antisocial behaviour, having been a victim of personal crime, and drug use. Previous research on these risk factors raises unresolved questions about directions of influence. Also, compared to research on males, study of female offending is still very scant, though justice statistics have recently documented a significant increase in rates of crime perpetrated by young women. Thus, the purpose of the present study was to assess the bidirectional relationships between offending and antisocial behaviour, victimization and drug use in a sample of 4980 participants aged 10 to 25, analysing those associations for both gender and age groups. Statistical analyses were carried out using linear regressions and a structural equation model. Results showed significant differences in patterns of interactions among variables included in the study between males and females, as well as between early-middle adolescence and late adolescence-youth. Findings of this study have important practical implications in relation to policy-making to prevent youths at risk to continue their lifestyle based on non-compliance with mainstream norms.

KEYWORDS. Youth offending. Victimization. Drug use. Gender differences. *Ex post facto* study.

RESUMEN. Este estudio *ex post facto* se centra en el análisis de tres factores de riesgo relacionados con la delincuencia juvenil: la implicación en comportamientos antisociales,

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el hecho de haber sido víctima de algún acto delictivo, y el consumo de drogas. La investigación previa sobre estos factores de riesgo sigue presentando cuestiones no resueltas sobre las direcciones de influencia. Además, los estudios con población femenina son mucho más escasos que aquellos desarrollados con población masculina. El propósito del presente estudio es analizar las relaciones bidireccionales entre la delincuencia, la conducta antisocial, la victimización y el consumo de drogas en una muestra de 4980 participantes con edades comprendidas entre 10 y 25 años, en función de los grupos de género y edad. Los análisis estadísticos se llevaron a cabo con regresiones lineales y un modelo de ecuaciones estructurales. Los resultados mostraron diferencias significativas en los patrones de interacción entre las variables de estudio en hombres y mujeres, así como entre los grupos de la adolescencia temprana-media y la adolescencia tardía-juventud. Se comentan las principales implicaciones prácticas en relación a políticas de prevención para los jóvenes en riesgo de continuar con un estilo de vida fundamentado en el incumplimiento de las normas socialmente establecidas.

PALABRAS CLAVE. Delincuencia juvenil. Victimización. Consumo de drogas. Diferencias de género. Estudio *ex post facto*.

In this paper we focus on three risk factors for youth crime, namely involvement in antisocial behaviour, having been a victim of personal crime, and drug use. Previous research on these risk factors raises unresolved questions about directions of influence. Do antisocial behaviour, victimization and drug use contribute independently to the explanation of offending among youth? Does each of them impact on offending in the same way? Are there bidirectional influences among offending and involvement in antisocial activities, victimization and substance abuse? Additionally, are those relationships equivalent for adolescents and young adults and for boys and girls? The present study aims to enhance our understanding of the links among these variables.

With respect to her concept of life-course persistent problem behaviour, Moffitt (1993, p. 683) argues that “the cause sequence begins very early and the formative years are dominated by chains of cumulative and contemporary continuity”, adding that, as a consequence, little opportunity is afforded to learn new behavioural repertoires of prosocial alternatives or to practice conventional social skills. Similarly, drawing on a longitudinal study, Weisner, Kim and Capaldi (2005) conclude that early involvement in antisocial behaviour decreases an individual’s opportunities to interact positively with others and conversely fosters chances of affiliation with deviant peers, trapping the individual in a risky and dangerous lifestyle.

Alongside this process, although most of this antisocial behaviour is temporary and limited to a short period of time in adolescence, for some

adolescents the situation becomes more serious because there is a progression from minor to major offending activity (Estévez and Emler, 2010; Ortega, Sánchez, Ortega-Rivera, Nocentini and Menesini, 2010; Peña and Graña, 2006). Minor offences are usually antisocial acts, typically defined as acts that disturb the peace and disrupt the social order and that “are likely to cause harassment, alarm or distress to members of the public not of the same household as the perpetrator” (Crime and Disorder Act 1998, UK). However, these behaviours may leave the door open for other less trivial acts that explicitly involve offending, such as shoplifting. In fact, theft (including shoplifting) is the most common offence committed by adolescents, which can be considered as the prevalent initial crime for both genders (Barry, 2006; Cunneen and White, 2002). In other words, one route into offending essentially entails continuity and progression of a delinquent behavioural style.

Whether or not victimization predicts offending has also been addressed in several studies in the last two decades. Some of this research indicates that young people who have been victimized report greater involvement in delinquent activities (Harrell, 2007). Indeed, according to some authors, being a victim of personal crime is one of the most important warning signals for future offending (Shaffer and Ruback, 2002; Smith and Ecob, 2007). More specifically, in a study with more than five thousand juveniles from 11 to 17 years old, Shafer and Ruback (2002) found that prior victimization predicted subsequent violent offending one year later (52% among victims versus 17% among non-victims). Other studies report a relationship in the other direction; delinquent activity directly increases the risk of personal victimization (Chen, 2009; Sampson and Lauritsen, 1990; Wittebrood and Nieuwebeerta, 1999). A recent study by Deadman and MacDonald (2004) indicated that offenders were three times more likely to be victims of crime than non-offenders. The bidirectional victimization-offending link has been also demonstrated in the longitudinal study by Lauritsen, Sampson and Laub (1991) with a wide sample of adolescents aged 13 to 17.

Various criminological theories have been developed to interpret the victim-offender overlap. According to both lifestyle exposure theory (Hinderlang, Gottfredson and Garofalo, 1978) and routine activities theory (Cohen and Felson, 1979), the risks of criminal victimization principally arise from individual’s lifestyles and routine activities. As Hinderlang *et al.* (1978) claim, since individuals are more likely to interact with those who

are similar to themselves, the victimization risk is directly proportional to the number of characteristics shared with offenders or to the similarity of their shared lifestyle. This idea implies, on the one hand, that being a victim of crime is linked to exposure or proximity to offender populations and, on the other, that offenders are more likely to become victims of crime because their lifestyles frequently bring them to interact with other offenders (Musitu, Estévez, and Jiménez, 2010; Sampson and Lauritsen, 1990).

The subculture of violence theory, formulated by Wolfgang and Ferracuti (1967), proposes that in certain areas and for certain groups, there is a sub-culturally valued system that supports the use of violence. From this perspective, victims of crime may become offenders because of the existence of 'norms' which justify retaliation and offenders may become victims because they hold values that endorse the use of violence to resolve conflicts (Singer, 1981, 1986). In these subcultures, harm and violence are seen as legitimate responses and the value system within the group supports this way of resolving disagreements (Deadman and MacDonald, 2004). From a more psychological perspective, social learning theory suggests that the fact of experiencing violence as a victim may result in the victim learning violent and aggressive behaviours (Estévez, Jiménez and Musitu, 2008; Siegfried, Ko and Kelley, 2004); other researchers believe that trauma makes a significant contribution in the explanation of the victim-aggressor link, since victimization and exposure to the feeling of not being safe may develop into a state of chronic threat which in turn leads the youth to get involved in defiant and aggressive behaviours (Schwab-Stone *et al.*, 1995).

Young people in negative environments may, moreover, become desensitized to violence and hence be more likely to engage in high risk activities, such as antisocial acts and drug use (Buelga, Musitu and Murgui, 2009; Jiménez, Musitu, and Murgui, 2008). Or they may decide to respond to their own victimization experience through revenge or even protective aggression. Following Emler (2009; Estévez and Emler, 2009), some youths turn to antisocial and offending behaviour in the search of a protection that do not find in formal authority (teachers, the criminal justice system); such a traumatic event in the life of a child or adolescent as being a victim of crime may undermine confidence in safety and protection, in turn resulting in 'disappointment' in authority figures and subsequent involvement in misbehaviours, pursued as the best remedy for reducing the risk of being victimized further.

Finally, the relationship between drug use and offending behaviour has been analysed in several studies with adolescent samples. However one reason for further investigation of this relationship is that substance use by young people involved in juvenile justice systems has increased in the last years (Copeland, Howard, Keogh, and Seidler, 2003) and uncertainty persists as to whether drug use predisposes users to crime or vice versa (Pudney, 2002). On the one hand, Goldstein (1989) claims the use of drugs may lead to involvement in offending either because the effects of these substances directly facilitate the development of such behaviours (psycho-pharmacological effect) or because the need to support substance use motivates offending for instrumental reasons (economical motivation).

This latter direction of influence has been demonstrated in several studies in which it has been shown that drug use in adolescence predicts development of externalizing problems and involvement in criminal activities and has, moreover, a long-term effect reaching into young adulthood (Marcus, 2007; Oliva and Parra, 2008). Among the research attempting to discern the drugs/offending connection and according to Reddington (2007), one of the most comprehensive studies has been recently developed by the National Center on Addiction and Substance Abuse (2004). Findings of this report show that 80% of youth arrested have one or more of the following characteristics: test positive for drug use, have taken drugs or drunk alcohol before committing their crime, admit substance abuse, or commit a drug or alcohol-related crime.

On the other hand, other authors have pointed out that offending may allow experimentation with drugs (Inglés *et al.*, 2007) since partaking in offending activities weakens adherence to authority and established social norms and thus enhances the probability of involvement in other illegal risk behaviours such as illegal drug use (Estévez, Jiménez, and Musitu, 2007; Weisner *et al.*, 2005). Long-term effects have also been found in longitudinal studies showing that early delinquent behaviour is related to subsequent drug use (Pedersen, Mastekaasa, and Wichstrom, 2001; Reebye, Moretti, and Lessard, 1995). Thus, the recent study by Weisner *et al.* (2005) found that offending behaviour in early adolescence was related to high levels of drug use in the early adulthood.

Aims and hypothesis of the current study

Notwithstanding the persuasiveness of various theoretical perspectives and the existence of some supportive evidence, as yet little research has focused directly on the antisocial behaviour-victimization-drug-offending links among young people. Most research so far published has examined each of these variables separately, or at best has considered unidirectional relationships between pairs of variables. Moreover, apart from a few longitudinal studies with samples of adolescents and young adults, research has traditionally analysed levels of involvement in risk activities among juveniles, while the far-reaching consequences of some of the behaviours considered in the present study justify the examination of relationships not only in this population group but also among young adults.

Finally, compared to research on males, study of female offending is still in its infancy, though justice statistics have recently documented a significant increase in rates of crime perpetrated by young women (Odgers *et al.*, 2007). Taking into account findings from previous research as well as the aforementioned questions that still remain unclear in the scientific literature, the general purpose of the present study was to assess the bidirectional relationships between offending and antisocial behaviour, victimization and drug use. These relationships were examined in two age groups corresponding respectively to early-middle adolescence and late adolescence-youth and for males and females separately. On the basis of the scientific literature reviewed, we expected to find significant differences in both directions of influence for the groups considered and for all study variables.

Method

Participants

This research uses data from the British 2005 Offending Crime and Justice Survey (OCJS), which was jointly designed and conducted for the Home Office by the National Centre for Social Research (NatCen) and the British Market Research Bureau (BMRB). The 2005 OCJS sample includes 4980 respondents aged from 10 to 25 and resident in general households in England and Wales. For the purposes of the present study, the sample was split into two age groups corresponding respectively to early and middle adolescence (10-16 years) and to late adolescence and youth (17-25 years).

Age groups established in this study were based on findings from previous research showing that antisocial and offending behaviour usually declines at the age of 17 (Moffitt, 1993). Of the total sample, 26% were males aged 10-16 ($n = 1328$), 24% were females aged 10-16 ($n = 1200$), 23% were males aged 17-25 ($n = 1141$) and 26% were females aged 17-25 ($n = 1311$).

Instruments

Measures of offending behaviour, antisocial behaviour, victimization, alcohol and drug consumption were used in the current study.

The measure of offending behaviour covers 20 different offences referring to thefts (*e.g.*, theft from a shop), assaults (*e.g.*, assault resulting in injury), criminal damages (*e.g.*, criminal damage to a vehicle), burglaries (*e.g.*, burglary of a dwelling), robberies (*e.g.*, commercial robbery) and selling of drugs (*e.g.*, selling a class A drug). Participants were asked if they had been involved in each of these offences in the last twelve months. A general score based on frequency of involvement was used in the present study. Alpha reliability coefficient for this scale was .88.

The measure of antisocial behaviour was composed of 4 items. Respondents had to indicate if they had been involved in each of these in the last twelve months. A general measure of frequency was calculated for the current study. Questions referred to: a) having been noisy or rude in a public place so that someone complained; b) writing things or spraying paint on a building, fence, train or anywhere else where it is not allowed; c) threatening or having been rude to someone because of their skin colour, race or religion; d) annoying neighbours by the respondent's behaviour. Cronbach alpha for this scale was .75.

The measure of victimization was derived by combining responses to 5 items indicating whether the respondent had been a victim of any of the following crimes in the last twelve months: robbery or attempted robbery, theft or attempted theft from the person, theft or attempted theft of personal property, assault with injury, assault without injury. Coefficient alpha for this scale was .73.

The measure of alcohol consumption was obtained by asking participants how often they had felt drunk in the last twelve months. Response alternatives were the following: most days, once or twice a week, twice or three times a month, once a month, once every two months, less often than that. The measure of drug use was assessed by asking respondents whether

they had taken any of eight different drugs in the last twelve months, namely: glue-solvents, amyl nitrites (poppers), cannabis, amphetamines, ecstasy, LSD, cocaine and heroine.

Procedure

For this *ex post facto* study (Montero and León, 2007; Ramos-Álvarez, Moreno-Fernández, Valdés-Conroy, and Catena, 2008), an original multi-staged stratified random sample was used to recruit participants. Addresses were randomly selected from the postcode address file and respondents aged 10 to 25 were chosen to take part in the study. All participants were interviewed by interviewers employed by NatCen and BMRB, conducting the survey in the respondent's home between January and October 2005. Interviews were carried out using a laptop computer and three separate computer-assisted modes: a) Computer Assisted Personal Interviewing (CAPI) was used in the first part of a face to face interview with the interviewer reading the questions from the computer screen and imputing the answers, b) Computer Assisted Self Interviewing (CASI) was used in the second part of the interview for more sensitive questions; respondent imputed their responses directly as a self-completion survey, c) Audio-CASI, was used for the questions referring to antisocial behaviour and offending behaviour, whereby in addition to the questions and response codes appearing on the screen respondents could listen to them through headphones, thus assisting participants with literacy problems. Further details about the OCJS and published reports can be accessed at:

http://www.homeoffice.gov.uk/rds/offending_survey.html

Results

Preliminary descriptive analyses were conducted for males and females aged 10-16 and 17-25 years old separately. Table 1 shows the percentages obtained in the current sample for each of the variables included in the analyses. Results revealed higher percentages in offending behaviour for males than for females in both age groups, with females aged 17-25 reporting they had committed at least one offence in the last year at 14.40%; for females aged 10-16 the corresponding value was 22.40%. The values for the two groups of males were very similar, 28.90% for those aged 10-16 and

28.60% for the 17-25 age group. Multiple offending was also more frequent among males in both age groups; overall 25.40% of males versus 11.80% of females had committed more than three offences. Percentages for antisocial behaviour were higher in both groups of 10-16-year adolescents, especially among males. The prevalence of victimization was also highest among males aged 10-16 years (36.20% at least once) followed by males aged 17-25 (27.90%). Almost half of the 10-16-year adolescents had felt drunk at least once a month in the last year; percentages were higher for 17-25-year youths: 45.60% of males and 34.70% of females had felt drunk twice or more a month. Finally, drug use was much more frequent within the oldest groups, especially among males: around 10% of males and girls aged 10-16 versus 25% of females and 44% of males aged 17-25 reported taking at least one type of drug in the last year.

TABLE 1. Percentages of involvement in risk activities in last year by gender.

<i>Variable</i>	<i>10-16 years old</i>		<i>17-25 years old</i>	
	<i>Boys</i>	<i>Girls</i>	<i>Boys</i>	<i>Girls</i>
Offending behaviour				
Never	71.10	77.60	71.40	85.60
Once	8.60	7.30	8.50	4.60
Twice	5.30	5.40	4.70	3.60
Three times	2.70	2.30	2.30	1.80
More than three times	12.30	7.40	13.10	4.40
Antisocial behaviour				
Never	60	65.30	73.30	85.30
Once	24.90	20	20	11
Twice or more	15.10	14.70	6.70	3.70
Victim of personal crime				
Never	63.80	76.50	72.10	80.20
Once	23.60	16.80	20.70	15.30
Twice or more	12.60	6.70	7.20	4.50
Alcohol use (being drunk)				
Less than once a month	52.20	53.90	34.60	46.40
Once a month	17.90	16.30	19.80	18.90
Twice or more	29.90	29.80	45.60	34.70
Other drugs use				
None	90.40	88.20	66	75
One	7.10	8.20	19.50	16.70
Two ore more	2.50	3.60	14.50	8.30

Following this, correlational analyses among all study variables were carried out as a first step in examining associations. As can be seen in Table 2, all correlations were statistically significant except for the pairs victimization and alcohol use and victimization and drug use for males in the 10-

16-year old group. A significant correlation was found, however, between being a victim of crime and drug use among 17-25-year males ($r = .17, p < .01$). For the younger group, offending behaviour was highly correlated with antisocial behaviour (males, $r = .41, p < .00$; females $r = .42, p < .00$), having been a victim of crime (males, $r = .28, p < .00$; females, $r = .22, p < .01$), alcohol use (males, $r = .27, p < .00$; females, $r = .23, p < .01$) and other drugs use (males $r = .29, p < .00$; females, $r = .48, p < .01$) in both genders, and especially to this latter in the group of girls. For the oldest group, high correlations were also found between offending behaviour and antisocial behaviour (males, $r = .28, p < .00$; females, $r = .27, p < .01$) and victimization (males, $r = .19, p < .01$; females, $r = .35, p < .01$); correlations with alcohol use were less strong (males, $r = .10, p < .01$; females, $r = .11, p < .01$), but they were also high with drug use, and especially for females (males $r = .29, p < .01$; females, $r = .37, p < .01$).

TABLE 2. Bivariate correlations with Bonferroni correction among variables by gender.

Variables	10-16 years old				17-25 years old			
	1	2	3	4	1	2	3	4
1. Antisocial behaviour	-				-			
2. Victim of crime	.23**	-			.21**	-		
	.23**				.26**			
3. Alcohol use	.27**	.02	-		.21**	.05	-	
	.34**	.02			.19**	.09		
4. Other drugs use	.29**	.05	.33**	-	.31**	.18**	.19**	-
	.37**	.10**	.38**		.24**	.20**	.26**	
5. Offending behaviour	.41**	.28**	.27**	.29**	.29**	.19**	.10*	.29**
	.42**	.23**	.23**	.48**	.27**	.35**	.12**	.37**

Note. Values obtained for boys are shown above and for girls below.

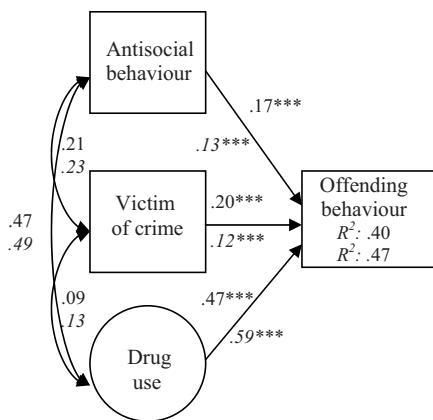
** $p < .01$; * $p < .05$

In the next step, AMOS software version 4.0. of the SPSS program (Arbuckle and Wothke, 1999) was used to analyze, by means of structural equation models, patterns of interaction among variables. We tested four models to examine the influence of antisocial behaviour, victimization and drug use on offending behaviour in males and females aged 10 to 16 (Models 1 and 2) and aged 17 to 25 (Models 3 and 4). All models were composed of five

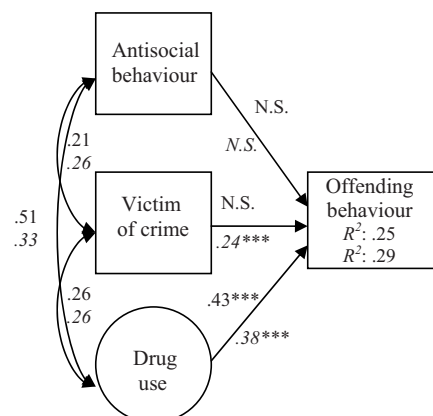
observable variables and one latent factor. Observable variables were those shown in Table 2, of which antisocial behaviour, victim of crime and offending behaviour consisted of only one indicator and, therefore, their factor loadings were 1 with an error 0. Alcohol use and other drug use were used as indicators of the only latent factor included in the model and named drug use; alcohol use was fixed to 1 during estimation by the program and the factor loading for other drug use took values between .61 and .77 in the four models calculated.

Figure 1 presents the structural models with the standardized path coefficients and their confidence intervals. With respect to goodness of fit, several indexes were examined. For the chi-square likelihood-ratio statistics, a non-significant value indicates that the model is well adjusted to the data; however, since this fit index is very sensitive to the sample size, other fit indexes must be considered. Comparative Fit Index (CFI), Incremental Fit Index (IFI), Non-Normed Fit Index (NNFI), and Root Mean Square Error of Approximation (RMSEA) are widely used. For the CFI, IFI, and NNFI, values above .95 or higher are acceptable, and for the RMSEA values of .05 or less are acceptable (Batista and Coenders, 2000).

Models 1 and 2: 10-16 years old



Models 3 and 4: 17-25 years old



Notes. Curve lines represent correlations. Continuous lines represent significant paths among observable variables (squares) and latent factors (circles). Robust standard errors were used to determine the significance of the standardized paths (** $p < .001$). Coefficients obtained for males are shown above and for females below and in italics. N.S. = non significant.

FIGURE 1. Structural models with standardized path coefficients and confidence intervals.

Models 1 and 2 showed a good fit with the data: $\chi^2(2, N=1328) = 1.687$ ($p = .430$), CFI = .99, IFI = .99, NNFI = .99, and RMSEA = .00 for boys; and $\chi^2(2, N=1200) = 13.509$ ($p < .001$). CFI = .98, IFI = .98, NNFI = .98, and RMSEA = .06 for girls. These models revealed a significant influence on offending of involvement in antisocial behaviours, having been a victim of crime and the use of drugs in both genders. A more in-depth analysis of the data indicated that the relationship with antisocial behaviour was slightly stronger for males (males: $\beta = .17, p < .001$; females: $\beta = .13, p < .001$), the association with victimization was also stronger in this group (males: $\beta = .20, p < .001$; females: $\beta = .12, p < .001$) but the use of drugs was more closely related to offending in females (males: $\beta = .47, p < .001$; females: $\beta = .59, p < .001$). These models accounted for 40% of the variance in offending behaviour for males and 47% for females.

Fit indexes for Models 3 and 4 were the following: $\chi^2(2, N=1141) = 7.583$ ($p < .023$), CFI = .99, IFI = .99, NNFI = .98, and RMSEA = .04 for males; and $\chi^2(2, N=1311) = 12.920$ ($p = .002$). CFI = .98, IFI = .98, NNFI = .98, and RMSEA = .06 for females. Different paths of influences were found for males and females in this model. For males, only drug use showed a significant association with offending behaviour ($\beta = .43, p < .001$). For the group of females, two variables were found to be statistically significant in the prediction of offending: victimization ($\beta = .24, p < .001$) and, as in the case of males, drug use ($\beta = .44, p < .001$). Antisocial behaviour was not related to offending for either group aged 17 to 25 years old. These models accounted for 25% and 29% of the variance in offending behaviour for males and females respectively.

In order to analyse the opposite direction of influence, that is to say, the influence of involvement in offending behaviour on antisocial behaviour, victimization and drug use, we carried out several linear regressions. Table 3 presents the standardized betas (β) with their significance levels and the R^2 for each of the variables in the four groups. As shown in this table, offending behaviour was a significant predictor of the three variables considered in all cases. Thus, these results along with the associations found in Figure 1 revealed on a whole that, for 10-16-year adolescents, antisocial behaviour, having been a victim of crime and drug use predicted and were predictors of offending. For the 17-25-year youths only drug use showed a bidirectional relation of influence with offending in both genders, and victimization in the group of females. Models 3 and 4 indicated that antisocial behaviour was not

necessarily an antecedent of offending in this range of age, whilst the regression analyses revealed that the fact of being involved in offending activities may implicate subsequent antisocial behaviour.

TABLE 3. Linear regressions with offending behaviour as predictor.

<i>Dependent variables</i>	<i>Males 10-16</i>		<i>Females 10-16</i>		<i>Males 17-25</i>		<i>Females 17-25</i>	
	β	R^2	β	R^2	β	R^2	β	R^2
Antisocial behaviour	.40***	.16	.47***	.22	.33***	.11	.31***	.10
Victimization	.33***	.11	.27***	.07	.33***	.11	.32***	.10
Drug use	.20***	.04	.32***	.10	.32***	.10	.29***	.08

*** $p < .001$

The factor drug use was, as mentioned, the only one showing a statistically significant bidirectional relationship with offending in the four groups, obtaining moreover the highest coefficients in the structural models. Table 4 shows the percentages of drug use in the last year by gender, as well as results of the multiple regression analysis carried out (forward stepwise method) to examine the influence of using different types of drugs in the prediction of offending behaviour. On the one hand, regarding consumption levels, cannabis and amyl nitrite (poppers) seem to be the drugs more consumed among 10-16-year adolescents, while percentages found for other drugs use were around 1-2%. Percentages of drug use among 17-25-year youths were higher on all cases -except for glue- and particularly for cannabis ($M = 26.70\%$), amyl nitrite ($M = 4.60\%$), cocaine ($M = 7.50\%$) and ecstasy ($M = 6.90\%$). On the whole, girls showed a higher consumption of drugs in the youngest group and boys in the oldest group.

TABLE 4. Percentages of drugs taken in the last year by gender and multiple regression analysis with offending behaviour as dependent variable.

Variable	10-16 years		17-25 years		Boys 10-16	Girls 10-16	Boys 17-25	Girls 17-25
	Boys	Girls	Boys	Girls	β (R^2 .11)	β (R^2 .32)	β (R^2 .07)	β (R^2 .17)
Cannabis	9	10.20	31.80	21.60	.24***	.11***	.15***	.16***
Amyl Nitrite	1.30	2.30	6	3.20	N.S.	N.S.	N.S.	.09*
Glue	.90	1.90	.9	.30	.07*	.07**	.06*	N.S.
Amphetamine	.50	1.30	4.80	3.10	.08*	N.S.	.13***	N.S.
Cocaine	.70	.80	9.40	5.70	.08*	.08*	.08*	.06*
Ecstasy	.90	1.40	8.40	5.40	.12***	.23***	N.S.	N.S.
LSD	.80	1	5.20	2.10	N.S.	.37***	N.S.	.22***
Heroin	.10	.10	.20	.20	N.S.	N.S.	N.S.	N.S.

*** $p < .001$; ** $p < .01$; * $p < .05$; N.S. = non significant.

On the other hand, in the prediction of offending behaviour, different significant beta coefficients were found for different types of drugs in the four groups. In general, prediction of offending considering drug use as independent variable was stronger in the group of girls aged 10 to 16 (R^2 .32; consistent with results obtained in Figure 1). Cannabis -followed by cocaine but to a lesser extent- was the drug showing the closest relation with offending for both genders and age groups, and particularly in the group of youngest boys. Ecstasy was found to be highly correlated with offending in 10-16-year adolescents, especially in girls. Also for girls of all ages, LSD showed a significant association, and for boys of all ages, this was the case of amphetamines. Thus, in general, apart from cannabis, statistically significant in all cases in the prediction of offending behaviour, stimulants were more related to involvement in offending in boys and hallucinogens in girls.

Discussion

In this study, bidirectional relationships between offending and antisocial behaviour, victimization and drug use were examined in two age groups of males and females corresponding respectively to early-middle adolescence and to late adolescence-youth. First of all, results indicated that antisocial behaviour, having been a victim of crime and the use of drugs were all predictors of offending behaviour in the group of adolescents aged 10-16

teenagers and in both genders. However, in the older group, aged 17-25, only drug use showed a direct influence on offending among both males and females while victimization had a direct influence for the latter. On the one hand, percentages of involvement in antisocial behaviours found in the current sample were somewhat higher for 10-16 year olds than for 17-25 year olds, a fact that could be related to the result obtained. Thus, 40% of boys and 34.70% of girls aged 10-16 were involved in such activities, which is consistent with Moffitt's (1993, p.692) observation that "Its prevalence is so great that it is normative rather than abnormal". However, as also stressed by this author, although antisocial behaviour declines from age 17, this does not mean that all individuals will desist in such activities in the future. Some, as is also suggested by our results, will follow a criminal career in a progression from minor to more serious activities (Pudney, 2002), which seem to be somehow more established after 17.

On the other hand, our findings indicated that being a victim of crime in the early-middle adolescent period may be a predictor of offending for both boys and girls and also for the latter in late adolescence and youth. Most previous research into the victimization-offending link had been based on juveniles and there are hardly any comparisons by gender. Our result for the general sample of 10-16-year adolescents is consistent with previous research (*e.g.* Shaffer and Ruback, 2002; Smith and Ecob, 2007). Following Siegfried and colleagues (2004), early victimization can divert the course of an adjusted development in the individual and lead to a considerable number of negative and far-reaching consequences for the way teenagers perceive the world and the way they function socially; in other words, victimization may negatively affect their interpersonal skills (problem solving skills, empathic response), their feelings, behaviours and ultimately their patterns of aggression towards others and general attitudes towards social norms (Martínez-Ferrer, Murgui-Pérez, Musitu-Ochoa, and Monreal-Gimeno, 2008).

Future research should further investigate the nature and development of this process in both genders and clarify whether the strength of this relationship varies with gender and age and with samples of different cultures. Our findings supported the idea of a stronger victim-offender link among females, as well as results recently obtained with samples of adolescents from the United States by Kim and Fendrich (2002) who found that delinquent girls aged 9-18 were more likely than boys to have experienced trauma and

victimization in the past. Odgers *et al.* (2007) also reported higher percentages of abuse and exposure to violence in offenders girls aged from 13 to 19. As Odgers and colleagues claim, these findings underscore the complexity of female victimization experiences and their potential damaging impact on their future psychosocial and behavioural adjustment.

Finally, as regards drug use, the models calculated in the present study pointed to a direct effect on offending among both males and females at all ages. A more detailed analysis of the data indicated that among 10-16-year adolescents, that influence was even stronger for females. These findings are consistent with those reported by Barry (2006) who found that need for money to buy drugs was often cited by the adolescent and youth offenders she interviewed for her research as an important reason for starting to offend, but more especially among the young women. Other authors have found in this same line that female offenders are more likely than male offenders to exhibit severe substance use (Kim and Fendrich, 2002), which constitutes their most powerful impetus for starting committing offences (McIvor, Murray, and Jamieson, 2004).

In the present sample, cannabis was the most commonly used drug by both genders and age groups, as also reported in previous studies (Musitu, Jiménez, Estévez, and Villarreal-González, 2009; Observatorio Español sobre Drogas, 2009; Rodham, Hawton, Evans and Weatherall, 2005). This is a worrying result given that cannabis has been related to poor psychological wellbeing (Ciairano, Bosma, Miceli, and Settanni, 2008) and, as indicated in the current study, it seems to be the strongest predictor of offending for both genders at both age levels. Wei, Loeber, and White (2004) also found a close association between cannabis consumption and delinquency in a sample of male adolescents. Results revealed that, following cannabis, ecstasy was the next drug in importance related to offending among 10-16-year adolescents. Specific drugs were closely associated with different ages and differentially for males and females, which raise the question of whether the type of drug taken is specific to particular groups and how this may in turn influence involvement in offending. Further research is needed to clarify the matter which could have relevant practical implications for the design of prevention programs.

Regarding possible influence in the opposite direction, the regression analysis revealed that offending behaviour may indeed foster antisocial behaviour, victimization and drug use. This result was significant for the sample as a whole general. This implies that offenders are at a heightened risk

for continued engagement in high-risk contexts, including affiliation with other delinquent and antisocial friends or even intimate partners (Kim and Capaldi, 2004; Monahan, Steinberg, and Cauffman, 2009) and reinforcement of other deviant behaviours as drug use (Weisner *et al.*, 2005). Wiesner and colleagues have remarked upon the circularity in the offending-drug relationship, pointing out that involvement in offending behaviour is predictive of substance use which may in turn entrap youths in a criminal lifestyle; they came to this conclusion after sampling both adolescents and young adults, as in the present study. In fact, lifestyle and routine theories have also been applied in relation to drug use (Pettway, Dolinsky, and Grigoryan, 1994), suggesting that drug users and offenders share similar characteristics, as for example the use of dysfunctional strategies to resolve problems (Gómez-Fraguela, Luengo-Martín, Romero-Triñanes, Villar-Torres, and Sobral-Fernández, 2006).

This same link has been found as in the case of the victimization-offending relationship: from these theoretical perspectives, it is predicted that an association between them will be observed if victims and offenders share similar general life styles and routines. Thus, the longitudinal study by Smith and Ecob (2007) showed that offending was strongly related to a later rise in victimization and vice versa in a sample of 12-18 adolescents. Our findings are in line with these for the youngest sample but we suggest, as mentioned above, that this association may be stronger for young adult females.

Having said that, the authors acknowledge at this point that, since this study has a cross-sectional design, directions of causality cannot be categorically confirmed, which constitutes the most important limitation of the present study. Nonetheless, some implications of these findings must be stressed as a guide for future research and intervention strategies and programs: formal authority figures for children and adolescents such as teachers, counsellors, judges and juvenile justice personnel, together with other professionals, ought to consider in depth the significant effects that victimization exert on behaviour in adolescence in order to mitigate its effects, as has been recently remarked by Siegfried and colleagues (2004). As suggested by these authors, as well as by results obtained in the current study, interventions should mainly focus on high risk groups of young people and especially on teenagers of both genders, since rates of female delinquency have increased in recent years (Odgers *et al.*, 2007). Preventing programs and early interventions on victims of crime and drug consumers are needed (Auerbach,

May, Stevens, and Kiesler, 2008), given the connexion between substance use, victimization and antisocial and offending behaviour in young people. Protecting youths against victimization and involvement in antisocial behaviour, along with problems of drug abuse may be key aspects in the prevention of violence and reducing overall levels of crime in current societies.

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