

Impulsivity traits as correlates of antisocial behaviour in adolescents

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Abstract

Impulsivity has been linked to several risky behaviours, however, the multifaceted conceptualization of the construct has hardly been studied regarding adolescent antisocial behaviour. Thus, the aim of this study was to analyse the influence of impulsivity facets assessed by the UPPS-P scale on different types of antisocial behaviours (i.e. aggression, rule-breaking behaviour, theft, and vandalism), and whether sex moderated those relationships. The sample was composed of 575 Spanish adolescents aged 14 to 18. Four hierarchical multiple regression models were carried out, one for each antisocial behaviour. Results show that positive urgency and sensation seeking were related to all behaviours above and beyond prediction from the other facets. Lack of premeditation only predicted aggression whereas lack of perseverance predicted all nonviolent behaviours. After taking into account all the impulsivity facets, negative urgency was no longer related to antisocial behaviours. Males displayed higher levels of sensation seeking and sex moderated a quarter of the associations between impulsivity facets and antisocial behaviour. Results support the multidimensional conceptualization of impulsivity and reveal differential effects on diverse typologies of antisocial behaviour.

Keywords: impulsivity; UPPS-P; antisocial behaviour; adolescents; sex.

Impulsivity constitutes a central personality dimension in the etiology of crime and delinquency (Gottfredson & Hirschi, 1990; Moffitt, 1993). Related research has evidenced the influence of impulsivity, as well as lack of self-control, disinhibition, or sensation seeking - closely-related concepts - on the development of behaviour problems and delinquency (Jolliffe & Farrington, 2009; Lynam, 2011; Zuckerman, 2006). Several meta-analyses confirmed this relationship and concluded that self-control and personality dimensions characterised by a lack of impulse control and behavioural disinhibition represent some of the most important correlates of crime (Jolliffe & Farrington, 2009; Jones, Miller, & Lynam, 2011; Pratt & Cullen, 2000). The influence of disinhibited personality traits on behaviour problems was also confirmed in adolescent samples and in long-term studies, showing a significant association between impulsivity and antisocial behaviour (Caspi, 2000; Luengo, Carrillo de la Peña, Otero & Romero, 1994; Romero, Luengo & Sobral, 2001).

A growing number of investigations suggest that impulsivity is not a single personality dimension but it constitutes a multidimensional construct (Cloninger, Przybeck, & Svrakic, 1991). Whiteside and Lynam (2001) revealed the multi-faceted nature of impulsivity and developed the UPPS impulsive scale. They identified four impulsivity facets: Urgency, (lack of) Premeditation, (lack of) Perseverance, and Sensation Seeking. Urgency, later known as negative urgency, is the tendency to experience intense impulses under conditions of negative affect. Premeditation refers to the tendency to think about the consequences of an act before carrying it out. Perseverance is the ability to keep focused on a tedious or difficult task. Sensation Seeking incorporates two aspects: a tendency to pursue and enjoy exciting activities, and openness to new experiences that might be dangerous (Whiteside & Lynam, 2001).

The factorial structure of the UPPS scale has been replicated in adolescent samples (D'Acremont & Van der Linden, 2005). Subsequently, a new dimension named Positive Urgency was included to the UPPS, which refers to the predisposition of engagement in risk activities during positive emotional states (Cyders et al., 2007). This dimension has shown distinctness from the other facets proposed by Whiteside and Lynam (2001). Specifically, it was found that positive and negative urgency measures differentially predicted positive mood-based rash actions and negative mood-based rash actions, respectively (Cyders et al., 2007; Cyders & Smith, 2007). The UPPS-P scale has been developed for the assessment of these five factors (Lynam, Smith, Whiteside, & Cyders, 2006).

The UPPS-P factorial structure has shown invariance across sex, and may be considered a valid and reliable instrument for the assessment of impulsivity in both males and females (Cyders, 2013). Although very few studies have analysed the role of sex, some differences emerged regarding the facets of the UPPS-P. Males showed higher levels of positive urgency and sensation seeking (Cyders, 2013; d'Acremont & Van der Linden, 2005), whereas females displayed higher levels of negative urgency (d'Acremont & Van der Linden, 2005). However, the influence of sex in the prediction of risky behaviors remains unclear. Whilst some studies did not find differences between males and females, others showed some moderating effects on the relation between impulsivity dimensions and problematic behaviours (Cyders, 2013, Lynam & Miller, 2004; Miller, Flory, Lynam, & Leukefeld, 2003).

Despite agreement about the influence of impulsivity on the development of behaviour problems, few studies have assessed the role of impulsivity facets on different types of antisocial behaviour and delinquency. Related researches have shown,

consistent with the factorial structure of impulsivity, that each dimension might be differentially related to distinct risky behaviours (Cyders & Smith, 2008). Studies with undergraduate samples showed a positive association between negative urgency and aggression (e.g., Berg & Latzman, 2015; Carlson, Pritchard, & Dominelli, 2013; Settles et al., 2012). Specifically, Hecht & Latzman (2015) found that negative urgency was positively related with reactive aggression, whereas proactive aggression was associated with positive urgency.

Regarding lack of premeditation and sensation seeking, studies with undergraduate samples have shown that both dimensions are related to externalizing problems, disinhibited behaviours, general aggression including fighting, weapon use and theft, as well as antisocial behaviour (Carlson et al., 2013; Derefinko, DeWall, Metze, Walsh, & Lynam, 2011; Lynam & Miller, 2004; Miller et al., 2003). Other studies showed that lack of premeditation predicted reactive aggression, but not proactive (Latzman & Vaidya, 2013) and even that higher levels of premeditation were associated with aggression, both reactive and proactive (Hecht & Latzman, 2015). On the other hand, lack of perseverance has led to contradictory results and its relationship with different typologies of antisocial behaviour remains unclear (Carlson et al., 2013; Hecht & Latzman, 2015; Whiteside & Lynam, 2001).

A limited number of studies have assessed the influence of the UPPS-P facets on antisocial behaviour specifically in adolescent or preadolescent samples. The few studies that did displayed some influence of positive and negative urgency on behaviour problems, minor delinquency, and aggression (Marmorstein, 2013; Pihet, Combremont, Suter, & Stephan, 2012; Zapolski, Stairs, Settles, Combs, & Smith, 2010). Although lack of premeditation, lack of perseverance and sensation seeking have not emerged as

significant predictors, these facets have shown correlational associations with adolescent behaviour problems (Marmorstein, 2013; Zimmerman, 2010).

None of the reviewed studies assessed the differential associations of the impulsivity dimensions with different typologies of antisocial behaviour in adolescent or preadolescent samples. Furthermore, sex moderation effect has not taken into account in this kind of samples. Therefore, the aim of this study is to analyse the influence of the impulsivity dimensions assessed by the UPPS-P scale on antisocial behaviour (i.e. aggression, rule-breaking behaviour, theft, and vandalism) in a Spanish adolescent sample, as well as impulsivity sex differences and its influence on the relationships with antisocial behaviour. The following hypotheses are established: 1) males will display higher levels of positive urgency and sensation seeking, whereas females will show higher levels of negative urgency; 2) lack of premeditation, sensation seeking and urgency, both positive and negative, will be significantly associated with antisocial behavior in a correlational way; 3) UPPS-P facets will differentially predict different antisocial behaviours. Finally, sex moderation effect is assessed regarding each association.

1. Method

1.1. Participants

The final sample was composed of 575 students of Secondary Education and Vocational Training (46 % males), coming from six high schools located in Galicia (NW Spain). Less than 3 % of the adolescents from the initial sample declined to participate in the study ($n = 17$). Participants were between the ages of 14 and 18 ($M = 15.94$; $SD = 1.12$).

1.2. Measures

1.2.1. Short Spanish version of the UPPS-P impulsive behaviour scale

The short Spanish version of the UPPS-P (Cándido, Orduña, Perales, Verdejo-García, & Billieux, 2012) is a 20-item measure composed of five subscales (4 items each): Positive Urgency (e.g. “I tend to act without thinking when I am really excited”), Negative Urgency (e.g. “When I am upset I often act without thinking”), (lack of) Premeditation (e.g. “I usually think carefully before doing anything”), (lack of) Perseverance (e.g. “I finish what I start”), and Sensation Seeking (e.g. “I quite enjoy taking risks”). All of the items were scored on a Likert scale 1 (*totally disagree*) to 4 (*totally agree*). The Cronbach’s Alphas ranged from .71 (Positive Urgency), to .85 (Sensation Seeking). This scale has previously been validated in a Spanish sample of undergraduates (Cándido et al., 2012). Regarding the current sample, a confirmatory factorial analysis was carried out and the results showed a better fit for the five specific but inter-related factors model ($\chi^2 (162) = 365.99$; RMSEA = .05; SRMR = .06; CFI = .94), according to the factorial structure of the UPPS-P short version.

1.2.2. Antisocial Behaviour Questionnaire

Four subscales of the Antisocial Behaviour Questionnaire (ABQ, Luengo, Otero, Romero, Gómez-Fraguela, & Tavares-Filho, 1999) were used in this study (6 items each): Aggression, which refers to proactive aggression (e.g. “Fighting and hitting someone”), Rule-breaking behaviours (e.g. “Spending the night out without permission), Theft (e.g. “Taking something from class without permission with the intention of stealing it), and Vandalism (e.g. “Setting fire to something: a dustbin, table, car, etc.”). The items were scored on a 4 point Likert scale from 0 (*never*) to 3 (*frequently*). The Cronbach’s Alphas ranged from .77 (Rule-breaking behaviours) to .80 (Aggression). The ABQ has previously proven to be a valid measure of antisocial

behaviour across different adolescent populations (e.g., Cutrín, Gómez-Fraguela, & Luengo, 2015; Sobral, Villar, Gómez-Fraguela, Romero, & Luengo, 2013).

1.3. Procedure

Data used in this study were collected in group sessions in the different high schools. Students filled out the questionnaires at school time, taking about one hour, and after parental informed consent was requested and received. Data collection was carried out in a single session, whereby collaborating researchers were present in order to explain the goals of the study and to address participant's doubts. Confidentiality and anonymity were ensured during all the procedure following the legal and ethic standards.

1.4. Data analysis

Descriptive analyses were carried out for impulsivity facets. A multivariate analyses of variance (MANOVA) was carried out to assess significant sex differences in the UPPS-P facets and the ABQ subscales. Zero-order correlations among the study variables were examined and then four hierarchical multiple regression models were implemented, one for each dimension of the ABQ. Analyses were performed using the SPSS statistical package, version 20.0.

2. Results

2.1. Descriptive statistics and zero-order correlations

Sex comparisons regarding impulsivity traits and antisocial behaviour are presented in table 1. With regards to the UPPS-P facets, MANOVA results showed a significant effect only in the sensation seeking dimension, and suggest that male adolescents display higher levels in this dimension. Likewise, males showed significantly higher levels of all types of antisocial behaviour.

Table 1. Participant characteristics in the UPPS-P facets and ABQ according to sex.

	Males		Females		Total		$F(1, 535)$	η_p^2
	M	SD	M	SD	M	SD		
Positive Urgency	1.45	.66	1.36	.68	1.41	.67	2.41	.00
Negative Urgency	1.26	.65	1.35	.72	1.31	.69	2.09	.00
(Lack of) Premeditation	1.64	.66	1.63	.66	1.64	.66	.04	.00
(Lack of) Perseverance	1.93	.63	1.89	.65	1.91	.64	.69	.00
Sensation Seeking	1.75	.80	1.47	.80	1.61	.81	16.59***	.03
Aggression	2.31	3.00	.79	1.74	1.49	2.51	46.49***	.09
Rule-breaking behaviour	2.72	3.17	1.61	2.02	2.13	2.67	19.95***	.04
Theft	1.94	3.08	.83	1.51	1.35	2.42	24.26***	.05
Vandalism	2.35	3.66	.76	1.93	1.51	2.96	33.20***	.07

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

$n = 575$.

Zero-order correlations were calculated among the UPPS-P facets and the ABQ subscales (see table 2). Bonferroni corrections were performed due to the multiple correlations assessed. Analyses showed that all of the antisocial behaviours were highly inter-correlated. Positive urgency, negative urgency and sensation seeking, significantly

correlated with all antisocial behaviours. Lack of premeditation significantly correlated with vandalism, and lack of perseverance significantly correlated with theft and vandalism.

Table 2. Zero-order correlations among the UPPS-P facets and ABQ subscales.

	PU	NU	Prem	Pers	SS	Agg	RBB	The	Vand
PU	--								
NU	.51**	--							
Prem	-.11	-.21**	--						
Pers	-.06	-.20**	.62**	--					
SS	.43**	.18**	-.01	.04	--				
Agg	.31**	.17**	-.16	-.08	.28**	--			
RBB	.35**	.21**	-.07	-.10	.38**	.71**	--		
The	.28**	.18**	-.09	-.13**	.24**	.63**	.68**	--	
Van	.28**	.16**	-.14**	-.12**	.31**	.69**	.68**	.73**	--

Note: PU = Positive Urgency; NU = Negative Urgency; Prem = Premeditation; Pers = Perseverance; SS = Sensation Seeking; Agg = Agression; RBB = Rule-breaking behaviour; The = Theft; Vand = Vandalism.

$n = 544$.

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

2.2. Partial relationships between Impulsivity and Aggression

Results of the hierarchical multiple regression models are presented in table 3. Age and sex (1 = male, 2 = female) were included at step 1; the five facets of the UPPS-P were entered at step 2; whereas at the final step, interactions between each impulsivity facet and sex were added. The hierarchical multiple regression model which assessed aggression as a dependent variable accounted for a significant amount of variance at step 1 ($R^2 = .10$, $F(2, 443) = 23.45$, $p < .001$). Male sex was significantly associated with aggression. The model increased the amount of variance in the step 2, after the inclusion of the UPPS-P scales ($\Delta R^2 = .12$, $F(5, 438) = 13.70$, $p < .001$). Lack of premeditation, positive urgency and sensation seeking significantly predicted aggression. At step 3, the addition of the interactions led to a small but significant increase of the variance accounted by the model ($\Delta R^2 = .03$, $F(5, 433) = 3.94$, $p < .001$). The interaction Negative urgency x Sex was significant. Males with higher levels of negative urgency displayed greater levels of aggression. The final model accounted for over a quarter of the variance in aggression ($R^2 = .23$).

Table 3. Hierarchical multiple regression predicting antisocial behaviour from impulsive traits.

Step and variable	Agression		Rule-breaking behaviour		Theft		Vandalism	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.10		.04		.05		.07	
Age		.01		.02		.01		-.03
Sex		-.30***		-.17***		-.22***		-.26***
Step 2	.12		.18		.10		.11	
Positive Urgency		.21***		.19***		.18**		.15**
Negative Urgency		.04		.06		.07		.05
Premeditation		-.13*		.02		.03		-.05
Perseverance		-.02		-.13*		-.17**		-.14**
Sensation seeking		.12*		.27***		.12*		.18***
Step 3	.03		.02		.03		.05	
Positive Urgency x Sex		-.09		-.01		-.08		-.06
Negative Urgency x Sex		-.10*		-.05		-.09		-.13*
Premeditation x Sex		.00		-.06		.00		-.11*
Perseverance x Sex		-.04		.02		.01		.12*
Sensation Seeking x Sex		-.05		-.13**		-.08		-.09

Note: Regression coefficients are standarized.

$n = 464$.

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

2.3. Partial relationships between Impulsivity and Rule-breaking Behaviours

The model which assessed rule-breaking behaviour as a dependent variable accounted for a significant amount of variance at step 1, after the inclusion of age and sex ($R^2 = .04$, $F(2, 451) = 10.55$, $p < .001$). Males showed higher levels of rule-breaking behaviour. The inclusion of the impulsivity facets at step 2 increased the variance of the model ($\Delta R^2 = .18$, $F(5, 446) = 20.50$, $p < .001$). Positive urgency, sensation seeking, and lack of perseverance significantly predicted rule-breaking behaviours. Addition of the interactions between impulsivity facets and sex at step 3 increased the variance by a small but significant degree ($\Delta R^2 = .02$, $F(5, 441) = 2.75$, $p < .05$). The interaction Sensation seeking x Sex was significant and showed that males with higher levels of sensation seeking displayed more rule-breaking behaviour. The final model accounted for over a quarter of the variance in rule-breaking behaviour ($R^2 = .23$).

2.4. Partial relationships between Impulsivity and Theft

Regarding theft, the hierarchical multiple regression model accounted for a significant amount of variance at step 1 ($R^2 = .05$, $F(2, 453) = 12.94$, $p < .001$). Male sex was significant associated with theft. At the step 2, the amount of variance of the model increased after the inclusion of the UPPS-P scales ($\Delta R^2 = .10$, $F(5, 448) = 10.81$, $p < .001$). Positive urgency, sensation seeking and lack of perseverance significantly predicted theft. The addition of the interactions at step 3 led to a small but significant increase of the variance of the model ($\Delta R^2 = .03$, $F(5, 443) = 3.72$, $p < .01$). None of the interactions were significant. The final model accounted for 17 % of variance in theft.

2.5. Partial relationships between Impulsivity and Vandalism

Finally, the model which assessed vandalism as a dependent variable accounted for significant amount of variance at step 1 after accounting for age and sex ($R^2 = .07$, $F(2, 464) = 19.39$, $p < .001$). Males displayed significantly higher levels of vandalism. The variance of the model increased at step 2 with the addition of the impulsivity facets ($\Delta R^2 = .11$, $F(5, 459) = 13.23$, $p < .001$). Positive urgency, sensation seeking, and lack of perseverance significantly predicted vandalism. At the final step, the variance accounted for a small but significant degree ($\Delta R^2 = .05$, $F(5, 454) = 6.03$, $p < .001$). The interactions Negative urgency x Sex, Premeditation x Sex, and Perseverance x Sex, were significant. Males with higher levels of negative urgency or lack of perseverance, and females with lack of premeditation, significantly showed more vandalism. The final model accounted for over a quarter of the variance in vandalism ($R^2 = .23$).

3. Discussion

The current study tested the effects of impulsivity traits on adolescent antisocial behaviour and the role of sex in those relationships. Firstly and consonant with some prior research, male adolescents displayed significantly higher levels of sensation seeking (Cyders, 2013; d'Acremont & Van der Linden, 2005). Secondly, as was expected, impulsivity traits significantly correlated with antisocial behaviours, although with some differences. Positive urgency, negative urgency and sensation seeking were related to all antisocial behaviours. Lack of premeditation was associated with vandalism, and lack of perseverance was related to theft and vandalism. Regression analyses revealed that positive urgency and sensation seeking predicted all antisocial behaviours. Lack of premeditation uniquely predicted aggression, whereas lack of perseverance predicted rule-breaking behaviours, theft and vandalism. When all

impulsivity dimensions were entered in the model, negative urgency no longer predicted antisocial behaviour.

3.1. UPPS-P dimensions and antisocial behaviour

Positive urgency has emerged as one of the most important predictors of adolescent antisocial behaviour. Adolescence is characterised by a psychosocial immaturity associated with intense emotional experiences, therefore a deficit in emotional regulation strategies may contribute to behaviour problems (Silk, Steinberg, & Morris, 2003). Moreover, intense emotions limit cognitive resources, and interfere in the rational decision making (Steinberg, 2008), promoting the satisfaction of immediate personal needs (Cyders & Smith, 2008). Thus, positive urgency would be associated with higher reward and non-punishment sensitivity, the centrepiece of “behavioral activation system” (Gray, 1987), and it would foster the development of antisocial behaviour.

Sensation seeking also predicted all of the antisocial behaviours in this study. Previous research suggests that sensation seeking constitutes one of the most influential temperamental correlates of adolescent delinquency (Romero et al., 2001; Zuckerman, 2006). Specifically, studies employing the multidimensional conceptualization of impulsivity assessed by the UPPS-P have revealed the predominance of sensation seeking as one of the best predictors of behavior problems, although mainly in undergraduate samples (Carlson et al., 2013; Derefinko et al., 2011; Lynam & Miller, 2004; Marmorstein, 2013).

According to previous findings, negative urgency was significantly correlated to all antisocial behaviours (Marmorstein, 2013; Zapolski et al., 2010). However, and contrary to expectations, when all impulsivity facets were entered in the model, negative

urgency no longer predicted antisocial behavior. To a large extent, negative urgency might influence certain disorders related to deficit in emotional regulation associated with negative affect, such as borderline personality disorder, eating disorders, or alcoholism, more common in clinical samples (Silk et al., 2003; Whiteside & Lynam, 2001). Furthermore, negative urgency may influence reactive aggression, considered a hostile response to threatening or dangerous situations and typically associated with negative emotions (Hecht & Latzman, 2015; Miller et al., 2003).

The findings of this study are quite noteworthy given the differential effects of lack of premeditation and lack of perseverance on different antisocial behaviours. According to prior studies, the former uniquely predicted aggression (Derefinko et al., 2011). Whiteside and Lynam (2001) suggest that risky behaviours derived from lack of premeditation result from a dysfunctional decision-making process. On the other hand, lack of perseverance was significantly associated with nonviolent antisocial behaviours. This impulsivity trait may be related to disorders that involve attentional problems and deficits in executive functioning and, in turn, influence the development of behaviour problems. Likewise, preference for simple tasks, and lack of persistence in complex activities, are included in the criminological self-control definitions (Gottfredson y Hirschi, 1990; Moffitt, 1993).

Regression models used in the current study accounted for over a quarter of the variance in aggression, rule-breaking behaviours, and vandalism. However, only 17 % of the variance in theft was accounted for by the model which included impulsivity facets and sex moderation effect, suggesting a differential effect of impulsivity on several typologies of antisocial behaviour. Consonant with previous works, impulsivity accounted for a lower variance in theft when compared to other antisocial behaviours

(Luengo et al., 1994). Probably impulsivity would associate to a large extent with violent and interpersonal behaviours (Nussbaum et al., 2002), whereas property offenses might be influenced to a lesser extent by impulsive factors that requires more planning.

3.2. Sex

Sex moderated a quarter of the associations between UPPS-P facets and antisocial behaviour. Males with higher levels of negative urgency displayed more aggression and vandalism, males with higher rates of sensation seeking showed more rule-breaking behaviours, and males with lack of perseverance showed greater levels of vandalism. On the other hand, females with a lack of premeditation displayed more vandalism. Except for one interaction, personality pathways were stronger predictors of antisocial behaviour for men, as has been reported in some studies (Lynam & Miller, 2004).

3.3. Implications

The results of this study have theoretical and practical implications. These findings support the factorial approach of the impulsivity construct. Specific impulsivity traits bear differential relations to violent and nonviolent behaviour, suggesting that these types of antisocial behaviour may be influenced by different processes. Results endorse the utility of the UPPS-P scale in adolescent samples, where it appears as a valid and reliable tool in the prediction of different typologies of antisocial behaviour. Some studies have previously evidenced its predictive capacity regarding problematic behaviours, although mainly in younger adults. Thus, given the importance of impulsivity on involvement in adolescent risky behaviours, it is appropriate to provide an instrument which permits a detailed vision of impulsivity dimensions and its relationship with different antisocial behaviours at this stage. These findings are

relevant in the field of adolescent delinquency prevention, where they would increase the effectiveness of prevention programs.

3.4. Limitations

The present study has several limitations. Firstly, data used in this study was collected through self-report questionnaires filled out by the adolescents, therefore results might be partially influenced by shared method variance. The use of different sources of information as well as different methods of data collection must be taken into account in future studies. Secondly, a cross-sectional design was used to assess the relationship between impulsivity dimensions and antisocial behaviour. This limits the establishment of causal relationships among them. Thus, long-term studies should be carried out to assess the stability of impulsivity facets through life and whether they are differentially associated with distinct problematic behaviours at different developmental stages.

4. Conclusion

Impulsivity is a multi-faceted construct that contributes to the prediction of antisocial behaviour in adolescents, although with some differences regarding the impulsivity traits and the typology of antisocial behaviour. This highlights the usefulness of assessing each impulsivity facet in order to develop effective interventions. Furthermore, although sex does not exert much influence in the relationship between impulsivity and antisocial behaviour, its influence varies depending on the impulsivity trait and the typology of antisocial behaviour.

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