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The effects of perceived parenting style on the propensity for illicit drug use: The importance of parental warmth and control.

Running Head: Perceived parental neglect in ecstasy-polydrug users

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## *Abstract*

*Introduction and Aims:* Research in adolescents has shown that parental warmth and control are important factors in drug use. The present study focused on investigating perceived parental warmth and control in a sample of post-adolescent ecstasy-polydrug users, and investigating their relationship to severity of drug use. *Design and Methods:* 128 (65 male) ecstasy-polydrug users, 51 (17 male) cannabis-only users, and 54 (13 male) nonusers were recruited from a university population. All participants completed the parenting styles and drug use questionnaires. *Results:* Compared to nonusers a greater proportion of ecstasy-polydrug users characterised their parents' style as neglectful. The modal style endorsed by nonusers was authoritative. Those who rated their parents' style authoritative had significantly lower lifetime consumption and average dose of ecstasy relative to those describing their parents as neglectful. Again relative to those describing their parents as neglectful, participants from authoritarian backgrounds had significantly smaller lifetime consumption of ecstasy and cocaine, and significantly smaller average dose of cannabis, ecstasy and cocaine. Contrary to expectation there was no significant association between perceived parental warmth and the severity of ecstasy use. *Discussion and Conclusions:* The present study is to our knowledge the first to quantify drug use, and relate it to perceived parental practises in a post-adolescent sample of ecstasy-polydrug users. The results provide further support for the relationship between perceived parental control and drug use.

## Introduction

Ecstasy (MDMA) is a popular drug among adolescents and young adults in contemporary society. Users believe that ecstasy makes them more loving, caring, sociable and confident [1]. During its early history, MDMA's empathogenic properties resulted in its use by some psychiatrists to enhance intimacy and communication between therapist and patient [2]. The use of ecstasy has increased over the last few decades causing much concern as the drug has been linked with memory and learning deficits [3, 4, 5], mood disorders [6] and in more serious cases, death [7].

Different factors have been found to influence the initiation into drug use as an adolescent, for example genetics [8] and social influences [9,10] e.g. parenting style [11]: individuals are more likely to use drugs if they feel neglected by their parents. The present paper investigates this: in short, if an individual feels that they are lacking the close empathic relationship with a parent, will they be more predisposed to use ecstasy rather than another illicit drug in order to make them feel more loving and caring ?[1].

Not much is known about why ecstasy is the drug of choice for young people in contemporary society. According to the British Crime Survey 2001/2002, ecstasy use has increased in people aged 16-24 since 1998. In addition, this age group reported the easiest drugs to obtain are cannabis and ecstasy, with ecstasy being the third most commonly used illicit drug after cannabis and amphetamines [12, 13]. The drugs of choice for most youths tend to be those which are easily available, with ecstasy in particular being used to increase energy, sociability, and excitement at social engagements [14]. As ecstasy is usually introduced into a pattern of polydrug use after the legal substances alcohol and tobacco, and also after cannabis and

amphetamines [15], it is reasonable to suppose that ecstasy fulfils a need not fully addressed by other illicit substances.

The psychopharmacological effects of illicit drugs on interpersonal behaviour remain a matter of conjecture. With regard to positive emotional expression, oxytocin is probably the key hormone playing a role in maternal bonding and other close personal relationships. Oxytocin is released through intimate touch [16] and associated with reproductive behaviour and long-term pair bonding [17], and social interaction [18]. This raises the possibility that the heightened feelings of warmth and closeness reported by ecstasy users may be mediated by the action of MDMA on oxytocin activity. Consistent with this, levels of Oxytocin and Vasopressin hormones were markedly increased after direct administration of ecstasy in humans [19]. This could be perceived to suggest that consumers of ecstasy use this substance in order to gain a heightened state of emotion and bonding that they may not have received from their parents. This study highlights the short-term effects of taking ecstasy on the individual's emotional state but it remains unclear if use is influenced by longer term perceptions of close relationships, such as those with parents. Ecstasy, more than other illicit drugs, appears to have the capacity to facilitate emotional expression and in some individuals its use may therefore reflect an attempt to address some underlying deficit in the capacity to develop close interpersonal relationships, which may stem from maladaptive parenting practices [24].

Compared to the effects of ecstasy, it appears that other illicit drugs produce markedly different effects, with cocaine reducing oxytocin levels [20, 21] and the endogenous cannabinoid system being involved in the regulation of oxytocin [22,23].

Parenting style is usually categorised along two dimensions: parental warmth and parental control. Four of the most widely accepted styles are authoritative,

authoritarian, permissive and neglectful. Authoritative is the optimum style, offering both warmth and discipline, while authoritarian parenting demonstrates less warmth, but still imposes rigid controls on behaviour. Permissive parents indulge their children, offering much parental warmth with little control. Children who perceive their parents as neglectful are at greatest risk of behaviour like delinquency, risky sexual behaviour and drug and alcohol abuse [25, 26]. Each of these parenting styles reflects different naturally occurring patterns of parental values, practices, and behaviours [27] and a distinct balance of warmth and control, which may be qualitatively different [28] according to the typology. Longitudinal data suggests that perceptions of parenting style are formed relatively early in life and are stable over time [29] and parenting style has been found to predict child well-being in the domains of social competence, academic performance, psychosocial development, problem behaviour and substance abuse [30, 31, 32].

Research suggests that certain parenting styles are linked with the propensity for substance abuse among adolescents. For example, alcohol abuse was higher among adolescents who perceived low parental control [33] and the children of authoritative parents were less likely to use illicit substances than those of neglectful parents [29]. A further study found that adolescents who rated their parents more highly on these dimensions had lower tobacco, alcohol and “other drug” consumption [34]. One study revealed that children of parents who exhibited little warmth and control significantly increased their drug and alcohol use during adolescence, whereas children who perceived their parents as high in both warmth and control were less inclined to do so [11]. Similar results were obtained in another study [35]. In an initial investigation, another group of researchers found that adolescents from low control families used drugs significantly more than those from high control families [36].

Furthermore, at follow up substance use remained less prevalent among those from high control families [37]. Addiction is also related to parental practises with drug addicts rating their parents as less emotionally warm than controls [38].

Research in this area has mostly focussed on adolescent samples (although college students who reported neglectful styles had higher alcohol use [39]). Little other research has been conducted among young adult student populations in relation to the effects of parenting style on substance use, and it would thus be of value to determine if the impact of parenting style on the propensity for illicit drug use persists into early adulthood.

As noted above, in view of the fact that the various illicit drugs appear to affect interpersonal behaviour in different ways, it would be of value to establish whether or not specific patterns of parenting are associated with a propensity to use particular illicit drugs. Previous studies have utilised aggregated indices of polydrug use, focussed on only current or recent drug use, or used limited response scales which do not adequately quantify historical patterns of use [29, 37, 38, 39, 40]. Therefore, it would be useful to have a more systematic approach to drug use data to see if parenting style is related to severity of drug use.

Therefore, the present study differs from previous research in that the sample is a post-adolescent (18-25 years old) group of ecstasy-polydrug users and nonusers. Indices quantifying ecstasy, cocaine, cannabis and amphetamine use will be collected, and in addition to assessing differences in perceived parenting style, the relationship with severity of drug use will be investigated. It was predicted that ecstasy use would be associated with perceptions of parents as lacking in parental warmth. It is unclear how the consumption of other drugs will relate to parenting style. On the basis of the research findings set out above it is reasonable to expect that the propensity to use

cocaine and cannabis will be associated with a parenting style perceived as lacking in control and that the severity of use will be inversely related to perceived control.

## Method

### Participants

Participants were recruited via direct approach to university students, and the snowball technique [41]. Data were available for 233 participants. Of these 54 (41 female, 13 male) did not use illicit drugs; 51 (34 female, 17 male) indicated that the only illicit drug used was cannabis and 128 (63 female, 65 male) were ecstasy-polydrug users all of whom consumed two or more illicit drugs. While we had intended to focus on ecstasy-polydrug users and nonusers, the presence of a substantial number of cannabis only users allowed us to treat this group separately.

### Materials

Patterns of drug use and other relevant lifestyle variables were investigated via means of a background questionnaire. To assess parental warmth and control, we used the acceptance/involvement and strictness/supervision scales of the Parenting Style Questionnaire [11]. The validity and reliability of the scales have been documented in previous research [e.g. 11, 34, 37].

### Procedure

Written informed consent was obtained. The study was approved by the Ethics Committee of Liverpool John Moores University and was administered in accordance with the ethical guidelines of the British Psychological Society. Following



administration of the measures, participants were fully debriefed, paid £15 in store vouchers, and given drugs education leaflets.

### Design

Dependent variables included various indicators of drug use such as lifetime and average dose, age of first use, as well as measures of perceived parental warmth and control.

For the initial analyses the independent variable was drug use with three levels (nonuser, cannabis-only user, and ecstasy-polydrug user). Participants' judgements regarding the degree of warmth and control exhibited by their parents were used to separate individuals into the four parenting style groups. Scores on parental warmth and parental control were each subjected to a tertiary split. Those scoring in the middle third of the range were excluded. The four parenting styles were identified as follows authoritative (those scoring in the top one third for control and warmth), authoritarian (top one third for control, bottom one third for warmth), permissive (top third for warmth, bottom third for control), and neglectful (bottom third for both control and warmth). For the remaining analyses, parenting style constituted the independent variable.

### Results

Assessments of parental warmth were highest among cannabis-only users and lowest among ecstasy-polydrug users. Parental control was judged to be highest by nonusers and again lowest among ecstasy-polydrug users. Preliminary analyses revealed that the two distributions were significantly negatively skewed. Following the procedure set out by [43] the two variables were first reflected and then the square root was taken. The transformed distributions did not differ significantly from

normality. Two ANOVAs were conducted with each transformed measure as the dependent variable and drug group between participants. In relation to parental warmth the group effect was just short of significance  $F(2,230) = 2.71, p=.068$ . Nonetheless, orthogonal difference contrasts revealed that ecstasy-polydrug users rated their parents' style as significantly less warm compared to the average of the other two groups,  $p<.05$ . The overall group effect with respect to parental control was statistically significant,  $F(2,230) = 8.06, p<.001$ . Orthogonal difference contrasts revealed that ecstasy-polydrug users rated their parents' style as significantly less controlling compared to the average of the other two groups,  $p<.001$ . However the contrasts also revealed that cannabis-only and nonusers did not differ significantly from each other either in terms of their ratings of parental warmth or control,  $p>.05$  in both cases.

In order to establish whether individual parenting styles were associated with a differential propensity for illicit drug use, individuals were categorised according to which of the four styles was characteristic of their mother's and father's parenting behaviour, following the procedure set out in the design sub-section. It is clear that the relative incidence of the four parenting styles differed between the three drug using groups. Inspection of Table 2 reveals that 43% of the ecstasy-polydrug users in the sample judged their parents' style to be neglectful, a substantially higher proportion than was the case for nonusers and cannabis only users. The majority of nonusers and cannabis only users (43% in both cases) judged their parents' style to be authoritative, while a somewhat smaller proportion (34%) of ecstasy-polydrug users judged this to be the case. Interestingly, 31% of nonusers were from authoritarian households, a substantially higher proportion compared to the drug using groups. The proportions of participants falling within each parenting style differed significantly between the

groups,  $\chi^2$  (df=6, N=121) = 13.93,  $p < .05$ . Subsequent pairwise analyses yielded  $\chi^2$  (df=3, N=56) = 3.32 and  $\chi^2$  (df=3, N=93) = 10.39 for nonusers versus cannabis only and nonusers versus ecstasy-polydrug respectively. Analysis of the difference between cannabis only and ecstasy-polydrug users yielded  $\chi^2$  (df=3, N=93) = 4.23. At an adjusted alpha level of .0167, only the pairwise difference between nonusers and ecstasy-polydrug users was statistically significant.

<Insert Table 2 about here>

Comparing the drug use measures across each of the four parenting styles (Table 3), it is clear that all groups had substantial exposure to cannabis. However, lifetime dose and average dose was substantially higher among those participants who judged their parents' style to be permissive or neglectful. The same trends are evident in relation to ecstasy use. While lifetime dose and average dose are higher among the permissive and neglectful parenting style groups, some degree of ecstasy use is evident in all groups. Cocaine use is especially prevalent among those participants who judged their parents' style to be neglectful. In terms of the group means it is far less evident among the remaining groups both in relation to lifetime dose and average dose. Amphetamine use was less prevalent among the present sample and restricted to a few individuals spread among the different groups. Mean consumption of alcohol was highest among the permissive parenting style group. Among the other groups the mean level of consumption did not differ markedly. Similarly mean number of cigarettes smoked per day was broadly similar across the groups.

<Insert Table 3 about here>

All of the measures of lifetime dose and average dose possessed distributions which differed substantially from normality. All of the distributions were negatively skewed and kurtosis was problematic. In all cases z values exceeded 4.0 and remained

unacceptably high following data transformation and as a consequence non parametric tests were used. Table 4 reveals that the groups differed significantly in terms of their lifetime consumption and average dose of cannabis, cocaine, and ecstasy. As noted above consumption levels were generally higher among those participants who described their parents' style as permissive or neglectful. Subsequent post hoc analyses (see Table 4) with  $\alpha = .008$  revealed that participants who described their parents' style as authoritative had a significantly smaller lifetime and average doses of ecstasy compared to those indicating a neglectful style. Participants who described their parents' style as authoritarian had significantly lower average doses of cannabis, ecstasy, and cocaine compared to those indicating a neglectful style. The authoritarian-neglectful difference was also statistically significant for lifetime use of cocaine and ecstasy. No other pairwise comparisons were statistically significant at the adjusted alpha level.

<Insert Table 4 about here>

In terms of the daily consumption of cigarettes, there were no significant differences between the groups. Those who described their parents' style as permissive or neglectful consumed more units of alcohol per week on average, and the overall group difference was statistically significant. However, at the adjusted alpha level, none of the pairwise comparisons were statistically significant.

The age-of-first-use variables possessed distributions which did not differ significantly from normality. Nonetheless, there were too few participants in the authoritarian and permissive groups to conduct ANOVA. Instead all participants for which data were available were included and regression analysis was used with the age-of-first-use measures as dependent variables, and the transformed parental control and warmth measures as independent variables. The regression models accounted for

a significant proportion of the total variance in all but two cases: age of first ecstasy and age of first amphetamine use (Table 5). In all of the remaining cases, cannabis, cocaine, alcohol, and tobacco, the parental control measure was a statistically significant predictor while parental warmth was not. It appears that a higher degree of control is associated with a later age of initial use (since the parental control variable was transformed the negative sign on the regression coefficient is indicative of a positive relationship).

<Insert Table 5 about here>

Focussing solely on illicit drug users, Table 6 contains the correlation coefficients between lifetime use and average dose on the one hand, and parental warmth and control on the other. Only two of the correlations were statistically significant, these were the correlations between total use of cocaine and parental warmth and between total use of ecstasy and parental control.

<Insert Table 6 about here>

## Discussion

The present study assessed perceived parenting style in a young adult sample of substance users and nonusers: three drug use groups were formed; ecstasy-polydrug users, cannabis only users and nonusers. Ecstasy-polydrug users rated their parents' style significantly lower on both the warmth and control subscales of the parenting style questionnaire than the other two groups but the parental control measure was the only variable to reach statistical significance. Despite this, when using orthogonal difference contrasts, ecstasy-polydrug users were found to rate their parents as significantly less warm compared to the other two drug groups. Cannabis only and nonusers did not differ significantly from each other in terms of their ratings of parental warmth or control. It was predicted that warmth would be an important predictor of severity of use as ecstasy users may be seeking the empathy and closeness that they did not perceive to have at home. This was not the case - parental control emerged as a more important factor.

Using a tertiary split methodology, individuals were assigned to one of four parenting styles. Ecstasy-polydrug users' parents were characteristic of a neglectful style whilst the majority of the other two groups judged their parents' style to be authoritative. This finding is supportive of current research literature [25,26]. Only the pairwise difference between nonusers and ecstasy-polydrug users was statistically significant. This suggests there are fewer differences between the cannabis only group and nonusers than the ecstasy-polydrug use group and nonusers. This finding supports the previously reported literature, which states that individuals are more likely to start their substance use behaviour with softer, lower classification substances, and then develop their use to incorporate harder substances [44]. Thus, parenting practices that

are supportive and possibly controlling are more likely to curb this pattern of behaviour, and reduce the likelihood of a move into riskier behaviour.

Focussing primarily on the warmth and control subscales, control emerged as the more important contributory factor. In view of the possible mediating role of ecstasy on oxytocin [18,19], it was predicted that low warmth would be most important factor, as individuals whose parents were less warm would seek the empathogenic properties of the drug. As control appears to be a more important factor, it may be that ecstasy polydrug users do not use in order to seek a close interpersonal relationship that was perhaps lacking with a parent [24]. Nevertheless, it is interesting that lack of parental control was a significant factor in ecstasy polydrug use, and not cannabis use, consistent with their opposing actions on oxytocin. Therefore, consistent with other research, it is possible that individuals use ecstasy for its stimulant-like properties. It appears that low parental control is a more important predictor of ecstasy polydrug use than warmth. Both the cannabis only and nonuser groups rated their parents significantly higher on the control measure. In addition, there was a highly significant correlation between lifetime dose of ecstasy and parental control.

In relation to the parenting style categories, the majority of ecstasy users fell into the neglectful category while in the cannabis only and nonuser groups, the majority rated their parents as authoritative. This difference was only significant for ecstasy users versus nonusers. This provides further support for previous research where permissive and neglectful styles are associated with drug use [e.g. 11, 33].

There was also support for increased usage in those parenting styles characterised by low levels of parental control. Of all four parenting typologies, individuals who perceived their parents as permissive or neglectful had the highest

mean consumptions of all drugs, and also used the drugs at a younger age than their authoritative and authoritarian counterparts. These differences were non-significant for comparisons between permissive, authoritative and authoritarian typologies. However the individuals in the neglectful group had a significantly higher lifetime and average dose of ecstasy compared to the authoritative group, and a significantly higher lifetime dose of cocaine and ecstasy, and average dose of cannabis, cocaine and ecstasy than the authoritarian group. They also used alcohol, tobacco, cannabis and cocaine at an earlier age than the other groups. This further supports the assertion that low perceived parental control is related to severity of drug use in particular, ecstasy use.

As the study was retrospective in nature, we cannot rule out that these differences in perceived parental warmth and control are a consequence, and not a cause of ecstasy use. However, prospective longitudinal studies [45] have shown that perceptions of parenting style are apparent in early adolescence and remain stable over a number of years: children who rated their parents as less warm and less controlling were more likely to be using drugs at subsequent follow up sessions. Therefore there is some support that drug use is a consequence of a number of factors, including parental warmth and control.

There were a number of limitations with the present study. It was judged that the frequency and duration of alcohol and tobacco consumption would make it difficult to obtain reliable measures of lifetime use and average dose. Therefore in relation to alcohol and tobacco, the only measures sought relate to current patterns of use including the number of units of alcohol consumed per week and the number of cigarettes smoked per day.



Due to limited resources we were unable to provide an objective measure of recent drug use (e.g. from hair or urine samples). However, a number of published studies in ecstasy users have not used these techniques [47, 48, 49, 50]. Future research should seek to build on the present study by recruiting a polydrug non-ecstasy group to see if these perceptions of parenting style are peculiar to ecstasy users. As with most retrospective studies in this area, there are problems implicit in attempting to derive indicators of lifetime use from participant data e.g. the “memory paradox” [51]. In addition, individuals may also have periods of irregular use or abstinence which would need to be accounted for. Despite such problems, a number of studies have found that self-reported indices of drug use, including lifetime dose, are significantly correlated with various measures [52, 53, 54].

Although outside the scope of the present study, it is possible that other factors play a role in an individual’s decision to use drugs [8, 9]. Therefore, it would be useful for future research to assess peer relationships, and an individual’s own perceptions of why they use drugs. Drug use in general may also be related to other personal factors, both social and psychological e.g. low educational attainment [55], substance using parents [56], and drug availability [57] may all play a part.

The results of the present study could be used to identify vulnerable individuals who are particularly at risk from drug use. Drug prevention programmes could then be tailored to such individuals to tackle some of the potential causes of drug use before onset. Such programmes should focus on the need for control as the majority of ecstasy polydrug users reported their parents as lacking control compared to nonusers and cannabis users.

In conclusion, the present study found that post adolescent ecstasy users rated their parents as less controlling than nonusers. To our knowledge, this is the first

study to quantify ecstasy polydrug use and relate it to perceived parental practises in a sample of post adolescent individuals, and the results of the present study should be used in educating the parents of adolescents, and identifying individuals who are at particular risk from drug use.

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Table 1

Age, Education, Perceived Parental Warmth and Control for Illicit Drug Users and Nonusers

	Nonusers			Cannabis only users			Polydrug users		
	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n
Age (years)	21.00	1.79	54	20.92	1.78	51	21.70	1.94	128
Years of Education	15.44	1.92	54	15.40	2.06	51	15.12	2.76	128
Parental Warmth	11.75	2.21	54	12.12	2.18	51	11.14	2.83	128
Parental Control	6.82	1.39	54	6.39	1.50	51	5.77	1.85	128
Age at First Use (years)									
Amphetamine	-	-	-	-	-	-	17.38	2.32	47
Cannabis	-	-	-	16.95	2.25	50	15.54	2.25	107
Cocaine	-	-	-	-	-	-	18.82	1.92	102
Ecstasy	-	-	-	-	-	-	17.72	1.97	114
Alcohol	14.32	1.88	52	14.10	1.96	48	14.04	1.93	125
Tobacco	16.92	2.19	7	14.77	1.99	28	14.11	2.39	93

Table 2.

Number (percentage) of Participants by Parenting Style for each of the Three Drug User Groups.

	Authoritative	Authoritarian	Permissive	Neglectful	Total
Nonusers	12 (43)	9 (31)	3 (11)	4 (14)	28 (100)
Cannabis only users	12 (43)	4 (14)	6 (21)	6 (21)	28 (100)
Ecstasy- Polydrug users	22 (34)	7 (11)	8 (12)	28 (43)	65 (100)
Total	46 (38)	20 (17)	17 (14)	38 (31)	121 (100)

Table 3 Age, Years of Education, Parental Control and Warmth and Indicators of Drug Use by Parenting Style

	Authoritative			Authoritarian			Permissive			Neglectful		
	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n
Age (years)	21.33	1.97	46	21.45	2.11	20	21.12	1.54	17	21.76	2.24	38
Years of Education	15.85	1.99	46	14.65	2.35	20	15.06	1.89	17	14.95	2.52	38
Parental Warmth	14.12	0.44	46	9.40	1.03	20	13.55	0.46	17	7.93	2.28	38
Parental Control	7.90	0.51	46	7.83	0.49	20	4.54	0.57	17	3.87	1.43	38
Lifetime use <sup>1</sup>												
Amphetamine (grams)	11.86	61.18	42	0.65	2.91	20	10.06	39.46	16	30.38	107.63	28
Cannabis (joints)	866.68	2286.94	34	396.06	1389.67	18	2861.13	4540.03	15	2753.51	5234.56	34
Cocaine (grams)	7.88	29.48	38	3.06	12.25	16	8.88	23.00	12	41.72	83.68	25
Ecstasy (tablets)	71.68	163.66	46	30.00	71.11	20	305.00	581.02	17	221.41	251.55	38
Average Dose (per week) <sup>1</sup>												
Amphetamine (grams)	0.05	0.24	41	0.00	0.00	19	0.04	0.15	16	0.06	0.24	25
Cannabis (joints)	2.69	6.51	34	1.16	3.50	16	8.11	11.10	15	7.35	12.66	33
Cocaine (grams)	0.05	0.13	38	0.03	0.13	16	0.11	0.26	12	0.21	0.37	25
Ecstasy (tablets)	0.55	1.29	46	0.33	0.80	20	1.51	2.30	17	1.16	1.29	38
Age at First Use (years) <sup>1</sup>												
Amphetamine	17.26	2.27	9	-	-	-	18.41	4.29	3	17.14	2.90	15
Cannabis	17.06	2.48	29	16.34	1.65	9	15.36	1.60	13	14.93	2.75	31
Cocaine	19.53	1.81	17	19.01	0.74	5	19.23	1.78	8	17.94	2.15	25
Ecstasy	18.37	1.73	18	18.29	1.23	6	17.79	2.93	7	17.34	2.52	26
Alcohol	14.54	1.99	42	14.66	1.92	20	13.06	2.08	17	13.83	2.22	36
Tobacco	15.17	2.69	15	14.96	2.07	12	13.58	2.17	11	13.51	2.17	27
Cigarettes per day	2.45	5.00	46	3.78	5.17	20	4.53	6.28	17	5.38	7.75	38
Alcohol (units per week)	14.80	11.86	45	16.16	9.78	19	24.62	15.31	17	19.23	12.83	37

Notes:

1. For nonusers, lifetime use and average dose is entered as zero. Some users were unable to quantify aspects of their previous use.

Table 4 Statistical Test Results for Parenting Style Group Differences in Age, Years of Education and Indicators of Drug Use

Dependent Variable	Group Effect Outcome for Kruskal-Wallis Test	Pairwise analyses: Outcome for Mann Whitney U Test					
		Authoritative versus			Authoritarian versus		Permissive versus
		Authoritarian	Permissive	Neglectful	Permissive	Neglectful	Neglectful
Age	$\chi^2$ (df=3, N=121) =2.09, p>.05	p>.05	p>.05	p>.05	p>.05	p>.05	p>.05
Years of Education	$\chi^2$ (df=3, N=118) =3.99, p>.05	p>.05	p>.05	p>.05	p>.05	p>.05	p>.05
Lifetime use							
Amphetamine	$\chi^2$ (df=3, N=106) = 5.17, p>.05	p>.05	p>.05	p>.05	p>.05	p=.046	p>.05
Cannabis	$\chi^2$ (df=3, N=101) = 11.29, p<.05	p>.05	p=.046	p=.010	p=.048	p=.011	p>.05
Cocaine	$\chi^2$ (df=3, N=91 ) = 9.50, p<.05	p>.05	p>.05	p=.036	p>.05	p=.006*	p>.05
Ecstasy	$\chi^2$ (df=3, N=121) = 15.08, p<.01	p>.05	p>.05	p=.001*	p>.05	p=.001*	p>.05
Average Dose							
Amphetamine	$\chi^2$ (df=3, N=101) = 3.99, p>.05	p>.05	p>.05	p>.05	p>.05	p=.041	p>.05
Cannabis	$\chi^2$ (df=3, N=98 ) =11.96, p<.01	p>.05	p>.05	p=.014	p=.021	p=.005*	p>.05
Cocaine	$\chi^2$ (df=3, N=91 ) =8.65, p<.05	p>.05	p>.05	p>.05	p>.05	p=.008*	p>.05
Ecstasy	$\chi^2$ (df=3, N=121) =12.43, p<.01	p>.05	p>.05	p=.003*	p>.05	p=.003*	p>.05
Cigarettes	$\chi^2$ (df=3, N=121) =6.10, p>.05	p>.05	p>.05	p=.019	p>.05	p>.05	p>.05
Alcohol	$\chi^2$ (df=3, N=118) =8.55, p<.05	p>.05	p=.009	p>.05	p>.05	p>.05	p>.05

\*p<.008

Table 5

Regression Analyses of Age of First Use of Various Illicit Drugs, Alcohol, and Tobacco, with Parental Warmth and Control as Independent Variables

Dependent Variable	R Squared	F value for the Regression Model	Parental Warmth		Parental Control	
			Standardised Beta Value	t	Standardised Beta Value	t
Age at First Use (years) <sup>1</sup>						
Amphetamine	.009	F < 1	0.016	0.08	-0.103	-0.50
Cannabis	.106	F(2,155) = 9.22***	0.019	0.23	-0.335	-3.91***
Cocaine	.117	F(2,99) = 6.56**	-0.113	-1.05	-0.273	-2.53*
Ecstasy	.034	F(2,112) = 1.95	-0.062	-0.58	-0.145	-1.36
Alcohol	.070	F(2,223) = 8.45***	0.133	1.89	-0.290	-4.10***
Tobacco	.076	F(2,126) = 5.15**	0.080	0.87	-0.293	-3.20**

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

Table 6

Spearman's correlations between lifetime use and average dose of amphetamine, cannabis, cocaine and ecstasy, and parental warmth, and parental control for users of each specific drug

		Parental Warmth	Parental Control
Lifetime use			
Amphetamine	rho	-.002	-.061
	p	.989	.734
	n	34	34
Cannabis	rho	-.003	-.159
	p	.975	.074
	n	127	127
Cocaine	rho	-.288	-.187
	p	.049	.209
	n	47	47
Ecstasy	rho	-.137	-.242
	p	.146	.009
	n	115	115
Average Dose (per week)			
Amphetamine	rho	.210	.107
	p	.284	.589
	n	28	28
Cannabis	rho	.033	-.143
	p	.718	.118
	n	121	121
Cocaine	rho	-.161	-.116
	p	.290	.447
	n	45	45
Ecstasy	rho	-.056	-.154
	p	.558	.104
	n	113	113