

Permissive Attitude Towards Drug Use, Life Satisfaction, and Continuous Drug Use Among Psychoactive Drug Users in Hong Kong

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CME

Abstract

Objectives: To examine the effects of a permissive attitude towards regular and occasional drug use, life satisfaction, self-esteem, depression, and other psychosocial variables in the drug use of psychoactive drug users. Psychosocial factors that might affect a permissive attitude towards regular / occasional drug use and life satisfaction were further explored.

Methods: We analysed data of a sample of psychoactive drug users from a longitudinal survey of psychoactive drug abusers in Hong Kong who were interviewed at 6 time points at 6-month intervals between January 2009 and December 2011. Data of the second to the sixth time points were stacked into an individual time point structure. Random-effects probit regression analysis was performed to estimate the relative contribution of the independent variables to the binary dependent variable of drug use in the last 30 days.

Results: A permissive attitude towards drug use, life satisfaction, and depression at the concurrent time point, and self-esteem at the previous time point had direct effects on drug use in the last 30 days. Interestingly, permissiveness to occasional drug use was a stronger predictor of drug use than permissiveness to regular drug use. These 2 permissive attitude variables were affected by the belief that doing extreme things shows the vitality of young people (at concurrent time point), life satisfaction (at concurrent time point), and self-esteem (at concurrent and previous time points). Life satisfaction was affected by sense of uncertainty about the future (at concurrent time point), self-esteem (at concurrent time point), depression (at both concurrent and previous time points), and being stricken by stressful events (at previous time point).

Conclusions: A number of psychosocial factors could affect the continuation or discontinuation of drug use, as well as the permissive attitude towards regular and occasional drug use, and life satisfaction. Implications of the findings for prevention and intervention work targeted at psychoactive drug users are discussed.

Key words: Hong Kong; Permissiveness; Personal satisfaction; Psychotropic drugs

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Introduction

Since the mid-1990s, the drug scene in Hong Kong has entered a "New Drug Era", characterised by an upsurge in

the use of psychoactive drugs such as ecstasy and ketamine among young drug users, and heroin being replaced by psychoactive drugs as the drugs of choice.¹ The high tide of psychoactive drug use in young people in the early 2000s generated great public concern. In the past decade, the Hong Kong Government has invested large amounts of resources into the prevention, treatment, and research aspects of drug work.²

Little was known about ketamine and its abuser when it first appeared on the drug scene in Hong Kong in the late 1990s. Nonetheless over the past decade, an increasing amount of clinical research has been conducted to determine the physical harm and cognitive impairment caused by ketamine abuse.³⁻⁸ The availability of medical research findings on adverse physical and mental consequences of ketamine abuse has facilitated prevention work among young people, as well as the provision of relevant treatment service for abusers. For better intervention work geared towards ketamine abusers, we need to know the social, demographic, and psychological factors that may be associated with their continuation or discontinuation of psychoactive drug use. To

fill this research gap, a 3-year study titled “A longitudinal survey of psychoactive drug abusers in Hong Kong” was conducted between 2009 and 2011 to examine the influence of socio-demographic and psychosocial factors on drug use by psychoactive drug abusers.⁹ Based on the data of this study, this paper aimed to examine the effects of a number of psychosocial factors on drug use by the sample of drug abusers in the study, as well as to probe the psychosocial factors that affected their permissive attitude towards both regular and occasional drug use.

Methods

The above-mentioned longitudinal survey of psychoactive drug abusers, conducted between January 2009 and December 2011, recruited a sample of psychoactive drug abusers from 36 youth outreach agencies and drug treatment programmes, and interviewed them on a total of 6 occasions, spaced out at 6-month intervals. The selection criterion was “had ever used a psychoactive drug”.¹⁰ The sample size of the baseline survey at the first time point (T1) was 754, and that of the subsequent time points was 600 at T2, 434 at T3, 376 at T4, 347 at T5, and 288 at T6. The baseline sample comprised 754 subjects aged from 12 to 64 (mean, 20.6) years; 65.8% were male, 88.8% were not married, 63.2% had received only secondary Form 3 or less education, 31.1% were students, 68.0% did not have a religion, and 58.8% lived in public housing or rooms / quarters. Thus, the sample was largely composed of young, unmarried men, who had received a lower to upper secondary school education, lived in public housing, and were mostly users of psychoactive drugs (especially ketamine) rather than heroin. This is consistent with the social image of young psychoactive drug users in Hong Kong nowadays. As no drug use would be allowed in any treatment setting, and thus the drug-free status achieved during treatment would be artificial and could not show the effects of psychosocial factors, those subjects who were undergoing treatment in a residential treatment centre were not selected for analysis in the present study.¹¹ Informed written consent was obtained from those subjects aged ≥ 18 years, or from parents on a parent consent form for subjects aged ≤ 14 years. It was difficult to obtain parental consent for subjects aged between 15 and 17 years as many of them had a poor relationship with parents and / or were not living with them. In order not to miss out subjects in this important age-group, informal oral consent was obtained from their respective youth social worker, who was their supervisor as well as informal guardian, and who would explain to them the voluntary nature of participation in the study and the anonymity of interview data collected.

Dependent Variable

The dependent variable was drug use in the last 30 days. Subjects were asked whether or not they had used any illicit drug in the 30 days immediately prior to the interview (yes = 1, no = 0).

Independent Variables

Permissiveness to Drug Use

This variable referred to the extent the individual thought that drug use is acceptable. Two types of drug use were distinguished: regular or occasional use. A permissive attitude was differentiated into 2 variables: permissiveness to regular drug use (“Regular drug use is acceptable”), and permissiveness to occasional drug use (“Using drugs occasionally is acceptable” and “Using drugs with friends in recreational settings such as disco / rave parties is acceptable”). For all 3 questions, the scoring ranged from 1 (strongly disagree) to 4 (strongly agree). The alpha value for permissiveness to occasional use in the baseline sample was 0.76.

Educational Strain

The discrepancy between ‘aspired’ and ‘perceived’ education level that will be achieved may produce strain in an adolescent. The strain theory in sociology posits that the discrepancy between aspired goal of success and available legitimate means to achieve the goal is a source of strain in the individual that, if not handled properly, will result in various kinds of delinquent behaviour, including drug abuse.¹² Subjects were asked how disappointed they would be if they could not study to their desired level of education in future (from 1 as ‘no big deal’ to 4 as ‘very disappointed’).

Discrimination by Others

Public discrimination can produce a ‘labelling’ effect on active or treated drug abusers, thereby posing obstacles in their recovery process.^{13,14} Subjects were asked whether or not they have ever experienced discrimination from other people because of their drug use (1 as ‘never’, 2 as ‘some’, and 3 as ‘a lot’).

Views of Life

Subjects were asked about their opinion about several aspects of life, including: (i) sense of uncertainty about the future, (ii) doing extreme things such as drug use shows vitality of young people, (iii) wish to have a normal life in future, (iv) thinking that parents do not know how to teach children, and (v) thinking that schools do not know how to teach students. For each item, a 5-point scoring system was used (from 1 as ‘strongly disagree’ to 5 as ‘strongly agree’, except for item [iii] which used reverse scoring).

Life Satisfaction

A person’s life satisfaction can be measured both in an overall manner (overall satisfaction with life as a whole) or with regard to specific domains (such as standard of living, health condition, personal achievements, social relationships, work).¹⁵⁻¹⁷ In this study, an overall measure was used to assess life satisfaction. Subjects were asked how much they agreed that they are satisfied with life (from 1 as ‘strongly disagree’ to 5 as ‘strongly agree’).

Self-esteem

The self-esteem of subjects was measured using the Rosenberg Self-Esteem Scale.¹⁸ The scale consisted of 10 questions, each asking the subject to self-evaluate with respect to self-confidence and self-image. A 5-point scoring system was used for the items, and the total score ranged from 5 to 50. The alpha value of the scale was 0.83 in the baseline sample.

Depression

A simplified version of the Beck Depression Scale with 13 items was used to measure the depression level of subjects.¹⁹ The subjects were asked if they: feel sad, feel discouraged about the future, have a hard time enjoying things, feel guilty, are disappointed in themselves, blame themselves for their faults and weaknesses, think about killing themselves, have no interest in people, put off making decisions, worry about their looks, have to push themselves to do things, feel tired, and have no appetite. An example of the use of the validated Chinese version of this simplified scale is Mok et al's study of secondary school students in Hong Kong.²⁰ The alpha value of the simplified depression scale was 0.85 in the baseline sample.

Stricken by Traumatic Events

The subjects were asked if they had experienced any traumatic or distressing events in the past 6 months, such as the divorce of parents or the loss of a family member (no = 0, yes = 1).

Subjective Weathering

This refers to the negative feeling of being more "weathered" by hardships in life than others in the same group.²¹ Subjects were asked to compare themselves with people of their age-group and indicate whether or not (i) they feel that they are more mature, (ii) they began to take up household and other duties at a younger age, or (iii) they feel older at heart. The alpha value of the scale in the baseline sample was 0.56.

Controls

Gender, age, student status (whether or not a student), and drug use history (number of years of drug use) were control variables. Altogether, the independent variables included 14 psychosocial variables and 4 control variables.

Data Analysis

The 6 waves of data were stacked into an individual time point structure. Not all subjects were able to complete all 6 interviews. The subjects completed a mean of 3.6 interviews across the 6 time points. The coefficients of the measured predictor variables represented weighted averages of the within-individual (i.e. change over time) and between-individual effects. We used random-effects models that allowed for data that are unbalanced in time by including all respondents in its estimation, regardless of their attrition status or the number of waves they contribute to the individual time point data set.²² With the panel data,

we were in a much better position to adjust for possibly unobservable variables that affected drug use and other outcomes of interest. For instance, some individuals might be more naturally oriented to abstinence, but others might not be so inclined. Such a feature of the individual could appear as an unmeasured person-specific, time-invariant error component, thus generating heterogeneity bias, which could seriously affect coefficient estimates. The panel nature of the data and the use of random-effects models permit the correction for unmeasured heterogeneity. The possibly unmeasured variables were treated as random variables and assumed to take a normal distribution, to be time constant, and not to correlate with other measured predictors.²³

Random-effects probit regression analysis (xtprobit in Stata 13.1) was performed to estimate the relative contributions of the independent variables to the binary dependent variable of drug use in the last 30 days, with the data pooled from T2 to T6 (T1 data did not have any previous time point to compare with, and was therefore not included).²⁴ For the selection of independent variables for inclusion in the probit regression, the bivariate association of each independent variable with the dependent variable was examined for each of the 6 time points. If an independent variable was significantly related to the dependent variable at ≥ 4 of these 6 time points, then this variable would be selected for the regression. There was a certain degree of arbitrariness in using 4 time points as the criterion, but '4 out of 6' already constituted over half of the total number of time points.

Results

Drug Use in the Last 30 Days as Outcome Variable

In order to select independent variables for inclusion in the regression model for the dependent variable of drug use in the last 30 days, the bivariate correlations between the independent variables and drug use in the last 30 days were examined. Among those 18 independent variables, 7 yielded a significant bivariate relationship with drug use in the last 30 days at ≥ 4 time points, and were thus included in the regression model. They included permissiveness to regular drug use, permissiveness to occasional drug use, a belief that doing extreme things shows the vitality of young people, life satisfaction, self-esteem, depression, and being stricken by stressful life events. Table 1 shows the results of the random-effects probit regression.

There were 3 types of independent variable in the regression model. The first type was the time points from T3 to T6 that could show if there was any effect due to time. The second type was selected psychosocial variables at the same or concurrent time point. The third type was the same set of independent variables at the previous time point (-1) that could show the causal effects of independent variables, if any. Model 1 contained only time points and psychosocial variables at the concurrent time point, whereas Model 2 contained not only time points and psychosocial variables at the concurrent time point, but also psychosocial variables at

Table 1. Random-effects probit models of drug use in the last 30 days (“Yes” or “No”) on selected psychosocial variables based on data pooled from second (T2) to sixth (T6) time point.

All beta values were standardised probit coefficients. rho is the proportion of the total variance explained by the panel-level variance. A significant rho denotes enough variability between the individuals to favour a random-effects probit regression (a panel estimator) over a standard probit regression (a pooled estimator).

| Independent variable | Model 1 (n = 1997) | | Model 2 (n = 1881) | |
|---|---------------------|----------------|---------------------|----------------|
| | β | Standard error | β | Standard error |
| T3 | -0.176 | 0.113 | -0.037 | 0.106 |
| T4 | -0.077 | 0.120 | 0.092 | 0.117 |
| T5 | -0.368 | 0.129 | -0.111 | 0.126 |
| T6 | -0.271 | 0.142 | -0.005 | 0.136 |
| Concurrent time point | | | | |
| Permissiveness to regular drug use | 0.357 [†] | 0.055 | 0.270 [†] | 0.050 |
| Permissiveness to occasional drug use | 0.644 [‡] | 0.068 | 0.438 [‡] | 0.064 |
| Think that doing extreme things shows the vitality of young people | 0.009 | 0.052 | -0.011 | 0.047 |
| Life satisfaction | -0.436 [‡] | 0.057 | -0.350 [‡] | 0.051 |
| Self-esteem | -0.005 | 0.067 | -0.049 | 0.062 |
| Depression | 0.216 [†] | 0.063 | 0.140 [*] | 0.058 |
| Stricken by stressful events | 0.065 | 0.046 | 0.061 | 0.041 |
| Previous time point | | | | |
| Drug use in the last 30 days (-1) | | | 0.471 [‡] | 0.054 |
| Permissiveness to regular drug use (-1) | | | 0.003 | 0.049 |
| Permissiveness to occasional drug use (-1) | | | -0.052 | 0.060 |
| Think that doing extreme things shows the vitality of young people (-1) | | | 0.025 | 0.046 |
| Life satisfaction (-1) | | | -0.012 | 0.050 |
| Self-esteem (-1) | | | -0.135 [*] | 0.060 |
| Depression (-1) | | | 0.034 | 0.058 |
| Stricken by stressful events (-1) | | | 0.046 | 0.042 |
| Log likelihood | -910.99 | | -823.34 | |
| Wald Chi-square | 257.31 [‡] | | 411.80 [‡] | |
| Degrees of freedom | 11 | | 19 | |
| rho | 0.562 [‡] | | 0.244 [‡] | |

* $p < 0.05$.

† $p < 0.01$.

‡ $p < 0.001$.

the previous time point (-1). For the variables in the previous time point, drug use in the last 30 days at the previous time point was added in order to ascertain its causal effect on drug use in the last 30 days at the current time point.

In Table 1, none of the time points yielded any significant regression coefficients, suggesting that the relationship between the psychosocial variables and drug use in the last 30 days did not significantly vary across different time points. At the concurrent time point (Model 1), permissiveness to regular drug use, permissiveness to occasional drug use, life satisfaction, and depression were significantly related to drug use in the last 30 days. When psychosocial variables and drug use in the last 30

days (-1) were added to the regression (Model 2), the same psychosocial variables at the concurrent time point were significant, and the effects of variables from the previous time point came from drug use in the last 30 days (-1) and self-esteem (-1). In Model 2, at the same time point, the strongest influence on drug use in the last 30 days was permissiveness to occasional drug use ($\beta = 0.438$, $p < 0.001$). The influence of permissiveness to regular drug use was smaller but still quite strong ($\beta = 0.270$, $p < 0.01$). Another strong variable was life satisfaction ($\beta = -0.350$, $p < 0.001$). Depression was also a significant variable, although not as strong as the other 3 variables ($\beta = 0.140$, $p < 0.05$). As to the effects of variables from the previous

time point, only 2 had significant effects: drug use in the last 30 days (-1) which yielded a β coefficient of 0.471 ($p < 0.001$), and self-esteem (-1) with β of -0.135 ($p < 0.05$).

In summary, drug use in the last 30 days was significantly affected by the 2 permissive attitudes towards drug use, life satisfaction, and depression at the same time point. The more permissive the attitude towards drug use, the lower the life satisfaction, and the higher the level of depression, the more likely drug use had occurred in the last 30 days. Variables in the previous time point that also significantly affected drug use were drug use in the last 30 days (-1) and self-esteem (-1). Subjects who had used a drug at the previous time point, and those who had a lower level of self-esteem at the previous time point, were more likely to have used a drug in the last 30 days at the current time point.

Permissive attitude towards drug use as a powerful predictor of continuous drug use has been a robust finding in drug use research in Hong Kong.²⁵ In this paper, the effects of psychosocial variables on the 2 permissive attitudes towards drug use were also explored by performing regressions involving the 2 permissiveness variables as outcome variables.

Permissiveness to Regular Drug Use as Outcome Variable

As before, bivariate correlations of the independent variables with the dependent variable were examined for the selection of variables into the regression model. Independent variables that had yielded a significant bivariate relationship with permissiveness to regular drug use at ≥ 4 time points were: gender, a belief that doing extreme things shows the vitality of young people, wish to have normal life in future, life satisfaction, self-esteem, and depression. These variables were included in the random-effects ordered probit regression analysis. Table 2 shows the results of the regression.

At the concurrent time point (Model 1), independent variables that were significantly related to permissiveness to regular drug use were: gender, belief that doing extreme things shows the vitality of young people, wish to have a normal life in future, life satisfaction, and self-esteem. Depression did not yield a significant regression coefficient. In Model 2, which included both concurrent and previous time points, the same set of variables at the concurrent time point in Model 1 were significant. A belief that doing extreme things shows the vitality of young people yielded the strongest coefficient ($\beta = 0.270$, $p < 0.001$), followed by gender ($\beta = 0.231$, $p < 0.01$), wish to have a normal life in future ($\beta = -0.187$, $p < 0.001$), and self-esteem ($\beta = -0.185$, $p < 0.001$). Life satisfaction was also a significant variable, although its coefficient was smaller than other variables ($\beta = -0.085$, $p < 0.05$).

As to effects from variables at the previous time point, variables that had significant effects were drug use in the last 30 days (-1) [$\beta = 0.138$, $p < 0.001$], permissiveness to regular drug use (-1) [$\beta = 0.160$, $p < 0.001$], and self-esteem

(-1) [$\beta = -0.142$, $p < 0.01$]. Nonetheless, life satisfaction (-1) and depression (-1) had no significant effect on permissiveness to regular drug use.

The sixth time point yielded a significant regression coefficient in Model 1, indicating that the change in sample characteristics at T6 was significantly related to permissiveness to regular drug use at that time point. One of the reasons for the occurrence of changes in the sample characteristics was that more and more subjects left the study at later time points and there was a higher tendency for drug-using subjects to drop out. Regardless of changes in the sample characteristics, the relationships among the variables were not affected.

Permissiveness to Occasional Drug Use as Outcome Variable

Independent variables that had a significant bivariate relationship with permissiveness to occasional drug use at ≥ 4 time points were: gender, number of years of drug use, thinking that doing extreme things shows vitality of young people, thinking that school does not know how to teach students, life satisfaction, self-esteem, and depression.

Ordered probit regression results (Table 3) showed that in Model 1, gender, number of years of drug use, thinking that doing extreme things shows vitality of young people, thinking that school does not know how to teach students, and life satisfaction were significantly related to permissiveness to occasional drug use. In Model 2, at the concurrent time point, these variables also yielded significant coefficients, except number of years of drug use. A belief that doing extreme things shows vitality of young people was most strongly related to permissiveness to occasional drug use ($\beta = 0.310$, $p < 0.001$), followed by gender ($\beta = 0.192$, $p < 0.05$), life satisfaction ($\beta = -0.109$, $p < 0.01$), self-esteem ($\beta = -0.097$, $p < 0.05$), and thinking that school does not know how to teach students ($\beta = 0.087$, $p < 0.01$). Variables at the previous time point that yielded significant effects on permissiveness to occasional drug use were: drug use in the last 30 days (-1) [$\beta = 0.141$, $p < 0.001$], permissiveness to occasional drug use (-1) [$\beta = 0.584$, $p < 0.001$], and self-esteem (-1) [$\beta = -0.150$, $p < 0.001$].

Life Satisfaction as Outcome Variable

Variables that had a significant bivariate relationship with life satisfaction at ≥ 4 time points included: ever been discriminated by other people, sense of uncertainty about the future, thinking that doing extreme things shows vitality of young people, thinking that parents do not know how to teach children, thinking that schools do not know how to teach students, self-esteem, depression, and stricken by stressful events.

The regression results are shown in Table 4. At the concurrent time point, uncertainty about the future, thinking that doing extreme things shows vitality of young people, self-esteem, depression, and stricken by stressful events were significant variables. When the previous time point was also considered (Model 2), uncertainty about the future

Table 2. Random-effects ordered probit models of permissiveness to regular drug use on selected demographic and psychosocial variables based on data pooled from second (T2) to sixth (T6) time point.

All beta values are standardised ordered probit coefficients. The significance of the panel-level variance denotes sufficient variability between individuals to favour a random-effects ordered probit regression (a panel estimator) over a standard ordered probit regression (a pooled estimator).

| Independent variable | Model 1 (n = 2009) | | Model 2 (n = 1896) | |
|---|--------------------|----------------|--------------------|----------------|
| | β | Standard error | β | Standard error |
| T3 | -0.026 | 0.080 | 0.010 | 0.081 |
| T4 | -0.056 | 0.084 | -0.007 | 0.089 |
| T5 | -0.109 | 0.087 | -0.056 | 0.093 |
| T6 | -0.238* | 0.096 | -0.138 | 0.100 |
| Gender (1 for male, 2 for female) | 0.297† | 0.089 | 0.231† | 0.081 |
| Concurrent time point | | | | |
| Think that doing extreme things shows the vitality of young people | 0.328‡ | 0.035 | 0.270‡ | 0.036 |
| Wish to have own family, job, and normal life in future | -0.200‡ | 0.032 | -0.187‡ | 0.032 |
| Life satisfaction | -0.110† | 0.039 | -0.085* | 0.039 |
| Self-esteem | -0.117* | 0.046 | -0.185‡ | 0.049 |
| Depression | -0.061 | 0.044 | -0.041 | 0.045 |
| Previous time point | | | | |
| Drug use in the last 30 days (-1) | | | 0.138‡ | 0.036 |
| Permissiveness to regular drug use (-1) | | | 0.160‡ | 0.041 |
| Think that doing extreme things shows the vitality of young people (-1) | | | 0.064 | 0.035 |
| Wish to have own family, job, and normal life in future (-1) | | | -0.055 | 0.033 |
| Life satisfaction (-1) | | | -0.004 | 0.039 |
| Self-esteem (-1) | | | -0.142† | 0.047 |
| Depression (-1) | | | -0.026 | 0.045 |
| Log likelihood | -1729.00 | | -1597.84 | |
| Wald Chi-square | 194.74‡ | | 268.30‡ | |
| Degrees of freedom | 10 | | 17 | |
| Panel-level variance | 0.547‡ | | 0.331‡ | |

* $p < 0.05$.

† $p < 0.01$.

‡ $p < 0.001$.

($\beta = -0.113$, $p < 0.01$), self-esteem ($\beta = 0.352$, $p < 0.001$), and depression ($\beta = -0.313$, $p < 0.001$) were significant at the concurrent time point; whereas life satisfaction (-1) [$\beta = 0.374$, $p < 0.001$], permissiveness to occasional drug use (-1) [$\beta = -0.077$, $p < 0.05$], depression (-1) [$\beta = -0.093$, $p < 0.05$], and stricken by stressful events (-1) [$\beta = -0.071$, $p < 0.05$] were variables in the previous time point that had significant effects on life satisfaction.

Discussion

Based on data of a sample of young and active or former drug users interviewed at 6 time points at 6-month intervals for a longitudinal survey of psychoactive drug abusers in

Hong Kong, this paper examined the effects of a number of psychosocial factors on the continuation or discontinuation of drug use in the sample, as well as psychoactive factors that affected the permissive attitude towards regular and occasional drug use, and life satisfaction. Results from random-effects probit regression analysis showed that the attitudinal variables of permissiveness to regular and occasional drug use exerted the greatest influence on drug use in the last 30 days, followed by life satisfaction and depression. Drug use in the last 30 days (-1) was also affected by drug use in the last 30 days as well as self-esteem at the previous time point (-1). Self-esteem, nonetheless, did not directly affect drug use at the same time point.

While a pro-drug attitude leading to drug use

Table 3. Random-effects ordered probit models of permissiveness to occasional drug use on selected demographic, drug use history and psychosocial variables based on data pooled from second (T2) to sixth (T6) time point.

All beta values are standardised ordered probit coefficients. The significance of the panel-level variance means that there is sufficient variability between individuals to favour a random-effects ordered probit regression (a panel estimator) over a standard ordered probit regression (a pooled estimator).

| Independent variable | Model 1 (n = 1867) | | Model 2 (n = 1687) | |
|---|---------------------|----------------|---------------------|----------------|
| | β | Standard error | β | Standard error |
| T3 | -0.121 | 0.074 | 0.017 | 0.073 |
| T4 | -0.331 [‡] | 0.089 | -0.118 | 0.089 |
| T5 | -0.457 [‡] | 0.083 | -0.173 | 0.095 |
| T6 | -0.603 [‡] | 0.092 | -0.212 [*] | 0.091 |
| Gender (1 for male, 2 for female) | 0.363 [†] | 0.110 | 0.192 [*] | 0.070 |
| No. of years of drug use | -0.182 [‡] | 0.046 | -0.010 | 0.033 |
| Concurrent time point | | | | |
| Think that doing extreme things shows the vitality of young people | 0.383 [‡] | 0.036 | 0.310 [‡] | 0.034 |
| Think that school does not know how to teach students | 0.087 [†] | 0.034 | 0.087 [†] | 0.031 |
| Life satisfaction | -0.128 [†] | 0.039 | -0.109 [†] | 0.036 |
| Self-esteem | -0.067 | 0.047 | -0.097 [*] | 0.044 |
| Depression | 0.061 | 0.045 | 0.024 | 0.042 |
| Previous time point | | | | |
| Drug use in the last 30 days (-1) | | | 0.141 [‡] | 0.034 |
| Permissiveness to occasional drug use (-1) | | | 0.584 [‡] | 0.047 |
| Think that doing extreme things shows the vitality of young people (-1) | | | -0.017 | 0.035 |
| Think that school does not know how to teach students (-1) | | | 0.026 | 0.031 |
| Life satisfaction (-1) | | | -0.037 | 0.036 |
| Self-esteem (-1) | | | -0.150 [‡] | 0.042 |
| Depression (-1) | | | -0.045 | 0.041 |
| Log likelihood | -2608.21 | | -2259.26 | |
| Wald Chi-square | 287.89 [‡] | | 646.54 [‡] | |
| Degrees of freedom | 11 | | 18 | |
| Panel-level variance | 1.112 [‡] | | 0.155 [†] | |

* $p < 0.05$.

† $p < 0.01$.

‡ $p < 0.001$.

behaviour is not a novel finding, it is interesting to note that in this study, the effect of permissiveness to occasional drug use on drug use in the last 30 days was greater than that of permissiveness to regular drug use. This can be explained by the perspective of “normalisation of recreational drug use.”^{26,27} As a coping mechanism to strong competition and the harsh reality facing young people today, more and more of them, regardless of age, gender, and socio-economic background, like going to parties / clubs and consume psychoactive drugs for the temporary pursuit of security and youth identity. Recreational drug use has become an increasingly acceptable attitude and behaviour. In Hong Kong, a pro-drug attitude and drug use among young people have been facilitated by a process of “neutralisation”

of ketamine use, in which (i) ketamine was perceived as a ‘soft’ drug that, unlike ‘hard’ drugs such as heroin, was much less addictive and much easier to quit if necessary, and (ii) ketamine use was considered to be only a ‘bad habit’ and not a drug addiction. A belief that as long as heroin is avoided, they are safe.²⁸ It is therefore not surprising that among the subjects in this study, a permissive attitude towards recreational drug use was an even stronger predictor for drug use in the last 30 days than a permissive one towards regular use. Nonetheless, it should be noted that a permissive attitude towards recreational drug use among drug users does not necessarily imply that they will become a frequent user. This study did not allow us to probe further into how far the attitude towards recreational drug

Table 4. Random-effects ordered probit models of life satisfaction on selected psychosocial variables based on data pooled from second (T2) to sixth (T6) time point.

All beta values are standardised ordered probit coefficients. The significance of the panel-level variance denotes sufficient variability between individuals to favour a random-effects ordered probit regression (a panel estimator) over a standard ordered probit regression (a pooled estimator).

| Independent variable | Model 1 (n = 1880) | | Model 2 (n = 1687) | |
|---|---------------------|----------------|---------------------|----------------|
| | β | Standard error | β | Standard error |
| T3 | -0.017 | 0.075 | -0.047 | 0.074 |
| T4 | -0.048 | 0.090 | -0.112 | 0.091 |
| T5 | 0.024 | 0.081 | -0.083 | 0.095 |
| T6 | -0.002 | 0.090 | -0.074 | 0.089 |
| Concurrent time point | | | | |
| Ever been discriminated by other people | -0.040 | 0.033 | -0.066 | 0.033 |
| Sense of uncertainty about future | -0.099 [†] | 0.034 | -0.113 [†] | 0.033 |
| Think that doing extreme things shows the vitality of young people | -0.067 [*] | 0.033 | -0.042 | 0.033 |
| Think that parents do not know how to teach children | -0.061 | 0.035 | -0.024 | 0.035 |
| Think that school does not know how to teach students | -0.052 | 0.033 | -0.053 | 0.032 |
| Self-esteem | 0.426 [‡] | 0.043 | 0.352 [‡] | 0.045 |
| Depression | -0.349 [‡] | 0.044 | -0.313 [‡] | 0.043 |
| Stricken by stressful events | -0.092 [†] | 0.031 | -0.046 | 0.030 |
| Previous time point | | | | |
| Life satisfaction (-1) | | | 0.374 [‡] | 0.046 |
| Drug use in the last 30 days (-1) | | | -0.027 | 0.033 |
| Permissiveness to regular drug use (-1) | | | 0.024 | 0.035 |
| Permissiveness to occasional drug use (-1) | | | -0.077 [*] | 0.038 |
| Ever been discriminated by other people (-1) | | | 0.029 | 0.034 |
| Sense of uncertainty about future (-1) | | | -0.033 | 0.033 |
| Think that doing extreme things shows the vitality of young people (-1) | | | -0.010 | 0.034 |
| Think that parents do not know how to teach children (-1) | | | -0.034 | 0.035 |
| Think that school does not know how to teach students (-1) | | | 0.011 | 0.032 |
| Self-esteem (-1) | | | -0.075 | 0.043 |
| Depression (-1) | | | -0.093 [*] | 0.043 |
| Stricken by stressful events (-1) | | | -0.071 [*] | 0.030 |
| Log likelihood | -2085.46 | | -1826.29 | |
| Wald Chi-square | 446.54 [‡] | | 615.90 [‡] | |
| Degrees of freedom | 12 | | 24 | |
| Panel-level variance | 0.482 [‡] | | 0.109 [†] | |

* $p < 0.05$.

† $p < 0.01$.

‡ $p < 0.001$.

use may affect the frequency of use, given that our binary measurement of the outcome variable of drug use (“yes” or “no”) was crude and did not distinguish a recreational mode from a regular one of drug taking. Future longitudinal studies are warranted to examine the relationship between permissiveness towards recreational drug use and drug use frequency over time.

Life satisfaction and depression also significantly affected drug use. Subjects who were less satisfied with life

were more likely to have used a drug in the last 30 days. This echoed the finding of a negative relationship between life satisfaction and high-risk behaviour in many overseas and local studies.²⁹⁻³¹ For depression, subjects with a higher level of depression were more likely to have used drugs in the last 30 days. This was consistent with the finding of a positive relationship between depression and substance use in many studies.³² Nonetheless, the effect of depression revealed here should be interpreted with caution, because

it might be confounded by other psychiatric problems if subjects included in this study had a psychiatric diagnosis. Unfortunately, our analysis was limited by the lack of measures of a co-morbid psychiatric diagnosis. Future research on psychosocial factors in drug use should pay attention to the possible impact of co-morbid psychiatric disorders alongside depression.

What were the psychosocial factors that might affect permissive attitudes towards regular and occasional drug use? Results showed that a belief that doing extreme things shows the vitality of young people was significant in the regressions of both attitudes. The stronger this belief, the more the permissiveness to regular and occasional drug use. Subjects who wished to have a normal life in future were less likely to be permissive to regular drug use, whereas those who believed that schools do not know how to teach students were more likely to be permissive to occasional drug use.

Life satisfaction and self-esteem significantly affected permissiveness to both regular and occasional drug use. The higher the level of life satisfaction, and the higher the self-esteem, the lower the levels of permissiveness to regular and occasional drug use. In addition, a permissive attitude towards both kinds of drug use at this time point were affected by self-esteem (-1) at the previous time point.

Lastly, we revealed which psychosocial factors significantly affected life satisfaction. Variables at the concurrent time point that affected life satisfaction were: sense of uncertainty about the future, self-esteem, and depression. Effects due to variables at the previous time point came from life satisfaction (-1), permissiveness to occasional drug use (-1), depression (-1), and being stricken by stressful events (-1).

The findings of this study have several implications for prevention and intervention work targeted at young psychoactive drug users. First, the current subculture of drug use, with respect to the growing acceptance of recreational drug use and the neutralisation of ketamine use, need to be more thoroughly studied and considered in the design of strategies for more effective prevention and intervention services. Second, increasing life satisfaction of young drug users will not only directly contribute to a greater likelihood of stopping drug use, but also reduce the permissiveness of their attitude towards both regular and occasional drug use, thereby having an indirect effect on drug use. Lastly, the results of this study suggest that the clues to how life satisfaction of young drug users can be improved include helping them to reduce their sense of uncertainty about the future, boosting their self-esteem, and lowering their level of depression.

Declaration

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