Original Article

Factors Influencing Synthetic Drug Use in Youth – An Experimental Case Study in Thainguyen City

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Abstract - *The situation of synthetic drug use among adolescents is becoming more and more complicated all over the world, especially in developing countries. Clearly identifying the factors affecting the use of synthetic drugs among young people will contribute to helping local authorities come up with reasonable solutions to limit this situation. The article summarizes previous studies on the factors affecting the use of synthetic drugs in young people, thereby building a model for empirical research in Thainguyen city, Vietnam. The initial 22 observed variables, after assessing the reliability, removed 2 variables, and after EFA, 20 left variables converged into 4 groups of factors: Personnel characteristics, family circumstances, social factors, and accessibility to the synthetic drug. Which, Social factors (SF) and Family circumstances (FC) are more effective in the synthetic drug-using decision of young people than other factors, while Accessibility to synthetic drugs (ATD) and Personnel characteristics are more effective in synthetic drug-using behaviours of young people than other factors.*

Keywords - *Adolescent, Synthetic drug use, Personnel characteristics, Family circumstances, Social factors, and Accessibility to the synthetic drug.*

I. INTRODUCTION

Many surveys on drug use among the general population show that synthetic drug use among young people remains more and more increasing, and early (12–14 years old) to late (15–17 years old) adolescence is a critical risk period for the initiation of substance use and that substance use may peak among young people aged 18–25 years (UNODC, 2018).

There are many factors that lead to the use of substances in young people that are at the personal level (including behavioural and mental health, neurological developments and gene variations resulting from social influences), the micro-level (parental and family functioning, schools and peer influences) and the macro-level (socioeconomic and physical environment) can render adolescents vulnerable to substance use.

Clearly identifying the factors affecting the use of synthetic drugs among young people will contribute to helping local authorities come up with reasonable solutions to limit this situation

In 2020, the Thainguyen police force arrested 876 cases, 1,015 subjects who committed drug crimes, seized 5,058.1 grams of Heroin and 4,042.1 grams of synthetic drugs.

The most worrying trend is that number of young criminals, especially youths without jobs, often gather at hotels, motels, dance halls, Karaoke bars... to use of synthetic drugs tends to increase, is still great difficult to control, difficult to detect, arrest and handle.

In fact, the statistical work on grasping and managing general drug addicts is still limited, not close to the actual situation, and has not yet established specific criteria for synthetic drug addicts.

The article focuses on understanding the factors affecting the use of synthetic drugs in Thai Nguyen city in order to help localities and families find ways to propagate, educate, and limit the effects of these drugs.

II. LITERATURE REVIEW

The increasing trend of synthetic drug use among adolescents is a global problem. Therefore, there are many theoretical and practical research that systematic review aimed to determine the risk and protective factors of drug abuse among adolescents worldwide.

Kelly Russel et al. (2008) used information in twelve studies from 40 electronic databases, websites, and key journals/meetings about factors affecting children and adolescents (≤ 18 years) who used Methamphetamine and those who did not. Results were presented separately by comparison group: factors associated with Methamphetamine

use in low-risk youth were: history of heroin/opiate use, family history of drug use, risky sexual behaviour and some psychiatric disorders, history of alcohol and smoking use; factors associated with Methamphetamine use in high-risk youth were: family history of crime, family history of drug use, family history of alcohol abuse, and psychiatric treatment, gender.

MattiasGunnarsson (2012) examines the relationship between psychological factors with increased risk of using illicit drugs. These factors are gender, personality traits, mental health status as well as family settings, the use of tobacco, alcohol, and illicit drugs, age of debut for substance use, subjective response to illicit drug use, attitudes towards drug use and future intentions of illicit drug use. Participants were 3419 male and female senior high school students (18 years) in a cross-sectional study. Results from the study showed that additional factors, such as problems within the rearing family, individual mental health problems and regular and excessive intake of legal substances, was associated with illicit drug use. Furthermore, significant associations between excessive use of illicit drugs, positive drug effects as well as the intention of future drug use were found.

LaylaAlhyas et al. (2015) have an experimental study with 41 samples about adolescents' perception of substance use and factors influencing its use: a qualitative study in Abu Dhabi. Factors that participants believed influenced substance use were classified into:(1) parent-adolescent relationship, (2) peer pressure, (3) substance accessibility, (4) religiosity, and (5) others (role of school and community). Research results show that many factors were believed to increase the risk of substance use among adolescents, but others were identified as protective factors. Risk factors can be named as peer pressure, inadequate knowledge of the harmful consequences of drug use, family-related factors (e.g. low monitoring and poor parent–adolescents relationship), affordability and availability of substances, boredom and affluence. Other identified protective factors included carrying out schools- and communities-based educational campaigns, enhancing social workers' ability to raise awareness and detect early signs of addiction and implementing Closed Circuit Television systems in schools.

Based on social learning theory and opportunity perspective of deviance, logistic regression analysis was performed on a probability sample of 8,076 Macao students collected in 2014. Spencer D. Li et al. (2017) investigated whether delinquent peer association, recreational use of time with friends, attitudes toward drug use, and the availability of synthetic drugs are significant predictors of synthetic drug use among adolescents. Results show that students who had more drug-using peers, perceived drug use to be less harmful, and had easier access to synthetic drugs were more likely to use drugs. The findings indicate that preventing synthetic drug use among adolescents should target individual risk factors and the availability of drugs.

World drug report 2018 (UNODC, 2018) shows that there are many differences in drugs use and associated issues among young people and older people. The report shows two contrasting settings to illustrate the wide range of circumstances that drive drug use among young people. 1. Drugs are used in recreational settings to add excitement and enhance the experience; Club drugs such as "ecstasy", methamphetamine, cocaine, ketamine, LSD, and GHB. From previous studies, the report shows that groups of the young male, youth who suffer psychological shocks, young people who like to gather, have unhealthy sexual lifestyles, young people with unhappy families and live in a less stable society are at higher risk for synthetic drug use in night clubs.2. Young people living in extreme conditions use drugs to cope with their difficult circumstances. The most commonly used drugs are likely to be inhalants, which can include paint thinner, petrol, paint, correction fluid, and glue. Many street children are exposed to physical and sexual abuse, and substance use is part of their coping mechanism in the harsh environment they are exposed to on the streets.

Factors affecting drugs use in young people are divided into three groups: at the personal level (including behavioural and mental health, neurological developments and gene variations resulting from social influences), the micro-level (parental and family functioning, schools and peer influences), and the macro-level (socioeconomic and physical environment) can render adolescents vulnerable to substance use. It is the critical combination of the risk factors that are present and the protective factors that are absent at a particular stage in a young person's life that makes the difference in their susceptibility to drug use.

The Chief Public Health Officer (2018) shows that a range of interacting risk and protective factors in a young person's life either place them at greater risk of problematic substance use or protect them from this risk. These factors are shaped through the life course, from the prenatal environment to adulthood. Some risk factors may be more powerful than others at certain stages of development, such as peer pressure during the teenage years. The Report divides factors into 4 groups: Societal/structural, Community, Interpersonal and Individual.
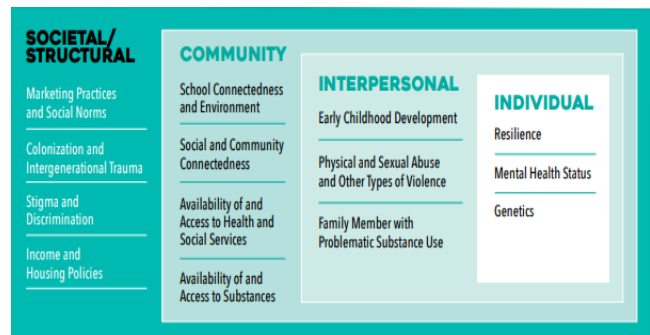

Fig. 1 Examples of risk and protective factors associated with problematic substance use in youth
Source: The Chief Public Health Officer (2018)

Khosravi Mohsen et al. (2020) investigated the social status of addicts in Birjand City, Iran, with 361 adolescents and young people who were addicted to narcotics since the beginning or had turned to synthetic drugs before the age of 30. The results showed that most drug addicts live in the social-ecological community of northern Birjand. Also, there is a significant relationship between the age of the person with the duration of addiction and the age of the onset of addiction, between education and the age of the onset of addiction, between the age of addiction and the frequency of use per day and between the addicts in the family and the addiction to synthetic drugs.

The New York State Education Department and The New York State Office of Addiction Services (2020) summarizes that risk and protective factors occur at the biological, psychological, family, community, and cultural levels, have a cumulative effect on mental health as well as can be lead to substance use. An individual may be exposed to one or many factors, which can have a cumulative effect. Effective prevention offers evidence-based instruction and skills that bolster protective factors to neutralize, counteract, or decrease the influence of risk factors that contribute to healthy youth development and prosaically tendencies (USDHHS, 2016). Many researches also show that schools can function either as a risk or protective factor for substance use: schools that serve as protective factors have a comprehensive positive school climate and support regimen for all students and staff (USDHHS, 2016; SAMHSA, 2018); on the other hand, school behaviour problems, academic under-performance, and youth substance are often correlated (USDHHS, 2016). The report also affirms the important role of schools in the education to prevent using an integrated drug and also in the process of detoxification education for drug addicts.

Table 1. Some research about factors influencing synthetic drug use in youth

No	Author (year)	Article/book/report	Kind of research	Factor
1	Kelly Russel et al. (2008)	Risk factors for methamphetamine use in youth: a systematic review	Literature review (12 researches)	Among low-risk youth: history of heroin/opiate use, family history of drug use, risky sexual behaviour and some psychiatric disorders, history of alcohol use. Among high-risk youth: family history of crime, family history of drug use, family history of alcohol abuse, psychiatric treatment, gender.
2	Mattias Gunnarsson (2012)	Psychological factors associated with substance use in adolescents	An experimental study with 3419 male and female senior high school students (18 years)	Gender, personality traits, mental health status as well as family settings, the use of tobacco, alcohol, and illicit drugs, age of debut for substance use, subjective response to illicit drug use, attitudes towards drug use and future intentions of illicit drug use.
3	Layla Alhyas et al. (2015)	Adolescents' perception of substance use and factors influencing its use: a qualitative study in Abu Dhabi	An experimental study with 41 samples	(1) parent-adolescent relationship, (2) peer pressure, (3) substance accessibility, (4) religiosity and (5) others (role of school and community). Many factors were believed to increase the risk of substance use among adolescents, but others were identified as protective factors.
4	Spencer D. Li et al. (2017)	Predictors and Implications of Synthetic Drug Use Among Adolescents in the Gambling Capital of China	An experimental study with 8,076 Macao students	Delinquent peer association, recreational use of time with friends, attitudes toward drug use, and the availability of synthetic drugs
5	UNODC (2018)	Drugs and age: Drugs and associated issues among young people and older people	The data on population used in the World Drug Reports are taken from World Population Prospects: The 2017 Revision	The personal level (including behavioural and mental health, neurological developments and gene variations resulting from social influences), the micro-level (parental and family functioning, schools and peer influences) and the macro-level (socioeconomic and physical environment)

6	The Chief Public Health Officer (2018)	Report on the State of Public Health in Canada, 2018: Preventing problematic substance use among youth.	Reports from other research	4 groups: Societal/structural; Community; Interpersonal, and Individual
7	Khosravi Mohsen et al (2020)	Socioeconomic Factors Affecting Adolescent and Youth Addiction to Synthetic Drugs	An experimental study with 361 adolescents and young people who were addicted to narcotics	Social status of addicts: age, education and family.
8	The New York State ED and ODS (2020)	Supports Evidence-Based Program Guidance for Substance Use Prevention Education in Schools	Reports from other research	Biological, psychological, family, community, and especially emphasize the school education role.

Source: Research result

III. METHODOLOGY

A. Research Model

Based on the synthesis of factors affecting synthetic drug use among young people in the above studies, 22 elements are grouped into 4 groups of factors: Personal characteristics (PC); Family circumstances (FC); Social factors (SF) and Accessibility to synthetic drugs (ATD) are included in the research model.

Table 2. Factors influencing synthetic drug use in youth

Factors	Elements
PC- Personal characteristics	PC1-Age
	PC2-Gender
	PC3-Year of education
	PC4- Sexual behaviour
	PC5-Psychiatric disorders
	PC6- Alcohol, cigarette and opiate use
	PC7-Child abuse
	PC8-Personality and life viewpoint
ATD – Accessibility to synthetic drugs	ATD1- Ability to use drugs
	ATD2- Ability to buy drugs
	ATD3-Ability to access place
	ATD4-Ability to see drugs
FC-Family circumstances	FC1-Family without Mom or Dad or both
	FC2-Poor family
	FC3-Unhappy Family
	FC4-Parents' attitudes towards children
	FC5-Family have used alcohol people
	FC6-Family have used drugs people
SF- Social factors	SF1-Peer pressure
	SF2-Residence
	SF3-Community
	SF4-School/Job

B. Data and Collecting Methods

This research concentrates on discovering factors that lead to and effects of synthetic drug use in Youth. So, respondents of this research are chosen from young people that use the synthetic drug.

Primary data is collected by questionnaire survey with 126 young people who used synthetic drugs in Drug addiction treatment and counselling facility in Thai Nguyen province and Voluntary addiction treatment and social work facility in Thai Nguyen city; Methadone Treatment Facility Thai Nguyen city.

C. Data processing

SPSS 22.0 software was used to analyze the data.

a) Sample characteristics

In recent years, the number of young people who use drugs for treatment at the drug addiction treatment and counselling facility under the Department of Labour - Invalids and Social Affairs in Thai Nguyen Province tends to increase. Of the more than 500 patients in treatment facilities in Thai Nguyen city, more than 25% are under 25-year-old people (more than 5% than the year 2020).

Table 3. Sample characteristics

Item	Frequency	Percentage
Age	**126**	**100**
14 and below	*1*	0.8%
15-17	31	24.6%
18-25	*94*	74.6%
Gender	*126*	**100**
Male	*81*	64.3%
Female	*45*	35.7%
Year of education	*126*	**100**
Under 9th grade	*3*	2.4%
9th- under12th	*49*	38.9%
12th and above	*74*	58.7%

Source: Research result

Of 126 young respondents of this research (25 years old and below), 74,6% of them is in the group 18-25 years old, but an appropriate 1/3 of people in this group told that they started using the synthetic drug earlier age.

General observation of detoxification centres in Thai Nguyen shows that the number of young men using synthetic drugs is larger than that of women. Out of 126 respondents, only 45 are female, accounting for 35.7%.

Among 126 respondents, it can be seen that the number of young people who do not reach the level of education by age is quite high, especially in the age group of 18-25 (there are 74.6% of people aged 18-25, but only 58.7% of people have completed 12th grade;) shows that young addicts often have a high dropout rate.

IV. RESULTS AND DISCUSSIONS
A. Reliability test Cronbach's Alpha
Table 4 shows that Cronbach's Alpha of all groups are both more than 0.700 so these group factors' reliability are acceptable in Academic research.

From 22 proposed elements after literature review, 20 elements indicators have Corrected Item - Total Correlation> 0.300 are accepted to remain in the model, and 2 elements indicators have Corrected Item - Total Correlation< 0.300 are deleted, including PC4 (Sexual behaviour) and FC2 (Poor family). And all retained elements have Cronbach's Alpha if the Item Deleted is smaller than Cronbach's Alpha of groups, so they have a correlation with other factors and should be retained in the model.

The remaining 20 elements continued to be included in the second scale analysis. The results of the reliability analysis of the second scale show the reliability of the variables of the factors reached above 0.800, so all scales are correlated with the sum > 0.300, satisfactory. Therefore, these 20 elements included in the second model analysis are kept in the model.

Table 4. Scale analysis results for the independent variables

Factor	Element	First time		Second time	
		Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PC	PC1	.713	.739	.739	.779
	PC2	.662	.748	.659	.792
	PC3	.464	.779	.501	.818
	PC4	.101	.828	Deleted	
	PC5	.531	.768	.532	.813
	PC6	.506	.772	.528	.813
	PC7	.553	.764	.564	.807
	PC8	.542	.767	.517	.814
Reliability		Cronbach's Alpha=.795		Cronbach's Alpha=.828	
ATD	ATD1	.576	.806		
	ATD2	.667	.765		
	ATD3	.643	.776		
	ATD4	.704	.747		
Reliability		Cronbach's Alpha=.822			
FC	FC1	.763	.726	.791	.821
	FC2	.161	.872	Deleted	
	FC3	.726	.732	.758	.831
	FC4	.732	.734	.774	.825
	FC5	.595	.769	.614	.864
	FC6	.533	.782	.570	.873
Reliability		Cronbach's Alpha=.804		Cronbach's Alpha=.872	
SF	SF1	.667	.780		
	SF2	.698	.765		
	SF3	.646	.790		
	SF4	.617	.802		
Reliability		Cronbach's Alpha=.829			

Source: Research result

B. Explore Factor Analysis (EFA)
KMO coefficient = 0.741, ensures the requirements that 0.5 <KMO <1; with significance level Sig. = 0.000 meets the conditions Sig. <0.005 (Table 5).

Table 5. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.741
Bartlett's Test of Sphericity	Approx. Chi-Square	1396.180
	Df	190
	Sig.	.000

Source: Research result

With a rotation matrix, 5 total factor models explained approximate 62,1 % of the variation of total factor. Rotation matrix result of converging factors warrant the request of

Factor loading: With 126 samples, Factor loading samples of the elements must be greater than 0.55 (According to Hair et al.), and as a result, in Table 6, all factors in the model have Factor loading of more than 0.55, and they have remained.

Table 6. Rotated component matrix

	Component			
	1	2	3	4
PC1	.777			
PC2	.749			
PC7	.696			
PC3	.652			
PC6	.644			
PC8	.639			
PC5	.594			
FC1		.878		
FC4		.877		
FC3		.866		
FC5		.730		
FC6		.685		
SF2			.832	
SF1			.822	
SF3			.805	
SF4			.768	
ATD3				.797
ATD2				.777
ATD4				.757
ATD1				.645

Source: Research result

After analysing the explore factor by SPSS, all items are grouped into 4 factors. Personal characteristics are measured by 7 items (PC1, PC2, PC3, PC5, PC6, PC7, PC8); the representative value of these items created by SPSS will be used to measure Personal characteristics and is recoded PC. Accessibility to synthetic drugs is measured by 4 items (ATD1, ATD2, ATD3, ATD4); the representative value of these items created by SPSS will be used to measure Access to synthetic drugs and is recoded ATD. Family circumstances are measured by 5 items (FC1, FC3, FC4, FC5, FC6), and the representative value of these items created by SPSS will be used to measure Family circumstances and is recoded FC. Social factors are measured by 4 items (SF1, SF2, SF3, SF4); the representative value of these items created by SPSS will be used to measure Social factors and is recoded SF.

C. The effectiveness of factors on synthetic drug use
Effectiveness of factors on synthetic drug-using decision

With df = 4, the result of regression analysis showed that the value in the ANOVA test of F = 15.951and Sig statistically significant = 0.000 less than the α critical index (0.05), so we reject the hypothesis that the study elements are heterogeneous and conclude that there is a statistical difference between the independent variables and the dependent variable.

The results of the regression are provided in Table 7. Multiple regression analysis by the Entering method was used to test the role of independent variables in predicting synthetic drug use.

Table 7. Effectiveness of factors on synthetic drug-using decision

Model		Unstandardized Coefficients	Standardized Coefficients	T	Sig.
		B	Beta		
1	(Const)	3.944		67.887	.000
	PC	.186	.234	3.182	.002
	FC	.226	.285	3.876	.000
	SF	.333	.419	5.701	.000
	ATD	.145	.183	2.481	.014

Source: Research result

As in Table 7, all elements have a Beta valuable > 0; each of these factors has values of statistical significance. Sig less than the α - critical value (0.05) shows that all the factors are statistically significant. Which, Social factors (SF) are the most effective in the synthetic drug-using decision of young people.

D. Effectiveness of factors on synthetic drug-using behaviours

With df = 4, the result of regression analysis showed that the value in the ANOVA test of F = 13.965and Sig statistically significant = 0.000 less than the α critical index (0.05), so we reject the hypothesis that the study elements are heterogeneous and conclude that there is a statistical difference between the independent variables and the dependent variable.

The results of the regression are provided in Table 8. Multiple regression analysis by the Entering method was used to test the role of independent variables in predicting synthetic drug-using behaviours.

Table 8. Effectiveness of factors on synthetic drug-using behaviours

Model		Unstandardized Coefficients	Standardized Coefficients	T	Sig.
		B	Beta		
1	(Const)	3.976		70.479	.000
	PC	.231	.306	4.076	.000
	FC	.151	.200	2.664	.009
	SF	.213	.283	3.760	.000
	ATD	.240	.319	4.244	.000

Source: Research result

As in Table 8, all elements have a Beta valuable > 0; each of these factors has values of statistical significance. Sig less than the α - critical value (0.01) shows that all the factors are statistically significant. Which, Accessibility to synthetic drugs(ATD) are the most effective in synthetic drug-using behaviours of young people.

V. CONCLUSION

This study has contributed to identifying factors influencing synthetic drug use in Youth on both using decisions and using behaviours. The results of the regression analysis process show that all 4 initially proposed factors of the research framework (Personnel characteristics, family circumstances, social factors, and accessibility to synthetic drugs)are a significant relationship with both using decisions and using behaviours of young people in Thainguyen city.

Which, Social factors (SF) and Family circumstances (FC) are more effective in the synthetic drug-using decision of young people than other factors, while Accessibility to synthetic drugs(ATD) and Personnel characteristics are more effective in synthetic drug-using behaviours of young people than other factors.

This study's results have the same results as many other studies reviewed in literature reviews and give more proof for Thainguyen managers to propose a solution to decrease the synthetic drug use in youth in the city.

VI. ACKNOWLEDGEMENTS

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