

# Discriminative Factor Analysis of Juvenile Delinquency in South Korea

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**Purpose.** The present study was intended to compare difference in research variables between delinquent adolescents and student adolescents, and to analyze discriminative factors of delinquent behaviors among Korean adolescents.

**Methods.** The research design of this study was a questionnaire survey. Questionnaires were administered to 2,167 adolescents (1,196 students and 971 delinquents), sampled from 8 middle and high school and 6 juvenile corrective institutions, using the proportional stratified random sampling method. Statistical methods employed were Chi-square, t-test, and logistic regression analysis.

**Results.** The discriminative factors of delinquent behaviors were smoking, alcohol use, other drug use, being sexually abused, viewing time of media violence and pornography. Among these discriminative factors, the factor most strongly associated with delinquency was smoking (odds ratio: 32.32). That is, smoking adolescent has a 32-fold higher possibility of becoming a delinquent adolescent than a non-smoking adolescent.

**Conclusions.** Our findings, that smoking was the strongest discriminative factor of delinquent behavior, suggest that educational strategies to prevent adolescent smoking may reduce the rate of juvenile delinquency. Antismoking educational efforts are therefore urgently needed in South Korea.

**Key Words :** Discriminative factors, Delinquent behavior, South Korea

## INTRODUCTION

Juvenile delinquency and criminal behavior in South Korea have changed over time (Kim & Kim, 2002; Kim & Kim, 2005). In more recent years, juvenile delinquents among Korean adolescents have become younger, more violent, and delinquent behavior among girls has increased (Ministry of Culture and Sports, 1996; Legal Research and Training Institute, 1994).

Many etiological factors can trigger juvenile delinquency and criminal acts (Kennedy, 1991; Kim & Kim, 2002), including personality factors, family dynamic environment, and sociocultural factors (Hastings & Hamberger, 1997; Miller, 1997; Whitebeck, Hoyt, &

Ackley, 1997). With emerging these etiological factors, numerous studies (Legal Research & Training Institute, 1994; Hastings & Hamberger, 1997; Klein, Forehand, Armistead, & Long, 1997) have attempted to identify predictive factors that discriminate delinquent from non-delinquent behavior.

There is evidence that compared with non-delinquent adolescents, delinquent adolescents are more likely to live in dysfunctional families, with increased rates of family violence and substance-abusing parents (McGaha & Leoni, 1995). The importance of the family dynamic environment in the development and maintenance of violent and delinquent behavior among adolescents is compounded by evidence that children's problem behavior within the family extends to delinquent behavior

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with peers in the school environment (Cohen & Rice, 1997). Furthermore, inclusion of the family as a risk factor for an adolescent becoming violent and aggressive is supported by research on delinquency and aggression, which has shown a strong predictive relationship between the family environment and delinquent behavior in adolescence (Klein et al., 1997; Cohen & Rice, 1997). Delinquent and aggressive behavior by children and adolescents could be predicted by dimensions of family functioning, including parental neglect, family conflict and disruption, and parental deviance (Deschenes & Esbensen, 1999).

The role of the parent-child relationship in the development of aggression and delinquency has been the subject of considerable research and theorizing. Parental relationships with aggressive and conduct-disordered children are characterized by greater hostility, indifference, and emotional constriction, as well as by less affection and support, than parental relationships with non-aggressive children (Dodge, Pettit, Bates, & Valente, 1995).

Furthermore, some previous studies indicated that several family risk factors and dysfunctional family dynamics were associated with family violence and child sexual abuse in families. We found that the families of adolescent victims of sexual abuse tended to have more dysfunctional characteristics than those of non-victimized adolescents, including higher level of inconsistent parental child-rearing patterns, rigid and autocratic parenting, dissatisfaction of family members toward their homes, unstable parental moods, parental rejection of children, conjugal disharmony, and alienation related to the mother working outside the home. This finding supports assertions about the complex nature of the relationship between family dynamics and sexual abuse.

There is a wide range of outcomes associated with childhood sexual victimization. That is, no single symptom characterizes the majority of sexually abused children. The sequelae associated with child sexual abuse include the entire array of mental health, emotional, familial, and social problems, including depression, sexual dysfunction, sexual acting out behaviors, anxiety, dissociation, posttraumatic stress disorder (PTSD), and relationship difficulties (Swenson & Hanson, 1998). There appear to be developmental differences in children's response to sexual abuse.

For example, preschoolers are more likely to show anxiety symptoms, nightmares, PTSD, internalizing and externalizing behaviors, and sexual acting out; whereas

school-age children are more likely to experience fears, aggression, and school problems. Adolescents are more likely to be prone to depression, withdrawal, suicidal or self-injurious behaviors, somatic complaints, illegal acts, substance abuse, and running away. Furthermore, some juveniles who become adult sexual offenders or violent youths were victims of unreported child sexual abuse (Scott, 1999). These findings indicate that there are many factors that contribute to the development of violent and aggressive behavior among adolescents, and that there are intricate interactions among these contributing factors.

In addition, correlations have been observed between substance abuse, such as alcohol drinking and smoking, and delinquent and criminal behavior among adolescents (Kim & Kim, 2005). In South Korea, substance abuse, including alcohol drinking and smoking, is more prevalent in delinquent adolescents population than in student adolescents population, suggesting correlations between these factors and delinquent behavior. Moreover, young people who misused alcohol were reported to have significantly higher rates of both violent and property offenses (Fergusson, Linskey, & Horwood, 1996).

The association between alcohol and drug use and aggression is well documented. Numerous correlational and laboratory studies (Webb, Bray, Getz, & Adams, 2002) support the notion that individuals are more violent and aggressive while under the influence of alcohol or drug.

Although violent and aggressive behavior and alcohol and drug use are related, the extent of a direct causal relationship is not yet known. It is our contention, however, that alcohol and drug use causes violent and aggressive behavior due primarily to the psychopharmacological effects of the drug. This psychopharmacological model proposes that the effects of intoxication (including disinhibition, cognitive-perceptual distortions, attention deficits, bad judgement, neurochemical changes, etc) cause aggressive behavior (Fagan, 1990).

It also assumes that situational factors accompanying occasions of intoxication, such as interpersonal interactions, may contribute to aggression. Chronic intoxication may also contribute to subsequent aggression due to factors such as withdrawal, sleep deprivation, nutritional deficits, impairment of neuropsychological functioning, or enhancement of psychopathological personality disorders (White, 1997).

A prospective, longitudinal study (White, Brick, & Hansell, 1993) showed that early aggressive behavior leads to increases in alcohol use and alcohol-related aggression, but the levels of alcohol use were not significantly related to later aggressive behavior. Thus, these findings suggest that alcohol-related aggression is engaged in by aggressive individuals who drink alcohol. Many Korean adolescents, primarily, in urban areas, have reported that their engaging in problem behaviors and criminal acts, as well as in drug abuse, including alcohol drinking, smoking and glue inhalation, was influenced by media violence in Korea. Media violence has been found to greatly influence delinquent behavior in Korea (Kim & Kim, 2002), especially children and adolescents of today are reared with mass media, including television, DVDs, video, and movies. More importantly, their attitude, behavior and life style, in some way, was affected by violence through mass media.

At present, in Korea, a considerable proportion of children and adolescents engage in delinquent behaviors and criminal acts, which have increasingly become their way of life and a major social problem.

Therefore, this paper was intended (a) to compare difference in research variables between delinquent adolescents and student adolescents and (b) to analyses discriminative factors of delinquent behavior among Korean adolescents.

## METHODS

The present study drew from data compiled during a nationwide survey designed to identify factors contributing to delinquent and criminal behavior among Korean adolescents from 2001 to 2002.

### *Subjects*

The sample consisted of 2,357 adolescents including 1,254 student adolescents in 8 middle and high schools, and 1,121 delinquent adolescents confined in 8 juvenile corrective institutions, using proportional stratified random sampling method. In this sampling method, stratification was based on two variables: the participant's place of residence (urban or rural area) and the type of institution (middle and high school, juvenile corrective institution).

The percentages of each stratifying variables are 58% in urban inhabitants and 42% in rural inhabitants, 53.2% of student adolescents and 46.8% of delinquent

adolescents confined in juvenile corrective institutions and classification judging institutions. The sample can be characterized as follows: male = 70%, female = 30%, age range = 12 - 21 years, ethnicity = 100% Korean.

The student adolescents were predominantly from middle socioeconomic class families, and 62% were male. After removal of incomplete data, 1,196 subjects were included. Thus, 95.4% of the potential sample was put into the analysis for this study.

The delinquent adolescents were confined in juvenile corrective institutions and classification judging institutions for various delinquent behavior and crimes, including drug abuse, physical assault, violent acts, damage to property, robbery and so on. The delinquent adolescents were also predominantly from middle socioeconomic class families, and 78% were male. These subjects completed questionnaires designed for this study as a routine part of their psychiatric referrals within their respective juvenile corrective institution in Korea. Average length of stay at the time of examination was 6 months. After removal of questionnaires with incomplete data, 971 subjects were included with the response rate of 87.5%.

### *Procedures*

Data were collected over a three month period, from 1st July to 30th, August of the 2001, using a cross-sectional design, via anonymous, self-reporting questionnaires administered by a principal investigator, three trained research assistants, and seven research monitors. Data gathering sessions were scheduled at times that were convenient for the subject confined in juvenile corrective institution and school. The purpose of this study was disclosed to participants and their parents by mail, and they were informed that the survey would require between 1 and 2 hours of their time.

All participants were asked to read a standard research consent form prior to participating, and they were ensured that all information provided would be kept confidential and would not be shared with other persons. Ethical approval was received from the directors of the juvenile corrective institutions and the principals of the middle and high schools that participated in the study.

Research monitors, most with professional level education and who were specifically trained in the goals and methods of the study, informed the participants carefully about the study and gave participants an opportunity to refuse or to discontinue participation at any time. Research monitor training was manualized to provide

consistency. Research staff was available to answer the questions of individual participants. Participants were not allowed to write their names on the questionnaires and were cautioned not to look at the responses of their peers. These conditions are known to promote valid responses by adolescents to this kind of questionnaires (Bachman, Johnston, & O'Malley, 1996). Small gift incentives were provided to the respondents if they completed questionnaire designed for this study.

Statistical methods used for this study were Chi-square, t-test and logistic regression analysis, using SAS software program. To examine mean differences among the study variables (family violence, being sexually abused, smoking, alcohol and substance use etc) between non-delinquents and delinquent adolescents, we used the Chi-square and t-tests. Logistic regression analysis was used to determine the discriminative factors of delinquent behavior among Korean adolescents.

### Research Variables and Measurements

The main research variables and its instruments were as follows;

**Smoking:** This variable was measured using 39 items (Kim & Kim, 2000), in which subjects were asked to indicate Yes or No to questions such as "I don't feel any discomfort while not smoking." and "I can easily concentrate on my work only while I'm smoking." and so on.

**Alcohol drinking:** This variable was measured using 29 items (Kim & Kim, 2000), in which subjects were asked to indicate Yes or No to questions such as, "I have tried to give up my habit of drinking." "I have been blamed by others for my heavy drinking." and "I left myself open to criticism because of heavy alcohol drinking." and so on.

**Substance abuse:** This variable was assessed by 15 items (Kim & Kim, 2000). Eleven items measured frequency of use of marihuana, hallucinogens, stimulants, sedatives and sleeping pills, and 4 items measured exposure to addictive drugs in the previous 3 years, motives for taking drugs of abuse, health problems related to drug abuse, and tolerance. Respondents were asked to rate one's own substance abuse and relevant problems on 5-likert scales.

**Sexual abuse:** Experience of sexual abuse was measured using 1 item (Kim & Kim, 2000), in which respondents were asked "Were you exposed to sexual abuse in your childhood?"

**Family violence:** Family violence was measured using 9 items (Kim & Kim., 2000), each using 6-point Likert scales. These items included, "Sometimes our parents treated us cruelly." "Physical fighting is a problem-solving method in our family." and "Sometimes our parents treated each other badly."

**Exposure to media violence and pornography:** The extent of exposure to media violence and pornography was measured using 4 items (Kim & Kim, 2000). These items included "Did you watch war films and media violence during the past week?" "Did you watch pornography during the past week?" "How many times have you watched murder scenes in movies, TV, video, DVDs, newspaper and magazines up to now?" and so on.

## RESULTS

### 1. Sexual abuse and family violence in delinquent and student adolescents

We found that delinquent adolescents had a higher frequency of sexual victimization in their families ( $2.08 \pm 1.38$  vs.  $1.19 \pm 0.67$ ,  $p = 0.000$ ) and a higher frequency of family violence ( $14.78 \pm 4.78$  vs.  $9.08 \pm 3.50$ ,  $p = 0.000$ ) than student adolescents (Table 1).

### 2. Smoking, alcohol drinking and substance abuse in delinquent and student adolescents and by sex

We found that the male adolescents had a significantly higher frequency of alcohol drinking (71.1% vs. 34.2%,  $\chi^2 = 256.32$  df = 1  $p = 0.001$ ), significantly higher exposure to illicit drugs and substance use (44.7% vs. 37.4%,  $\chi^2 = 9.75$ , df = 1,  $p = 0.001$ ), and significantly higher

**Table 1.** Mean Difference Analysis of Sexual Abuse and Family Violence by Group

Group	n	Mean $\pm$ SD	t	p
Sexual abuse				
Delinquents	893	2.08 $\pm$ 1.38	17.8	0.000
Students	1,127	1.19 $\pm$ 0.67		
Family violence				
Delinquents	905	14.78 $\pm$ 4.75	14.2	0.000
Students	1,081	9.08 $\pm$ 3.50		

smoking rates (65.7% vs. 20.8%,  $\chi^2 = 338.54$ ,  $df = 1$ ,  $p = 0.001$ ) than females (Table 2).

When we compared delinquent and student adolescents, we found that the former had a significantly higher frequency of alcohol drinking (96.3% vs. 30.2%,  $\chi^2 = 976.91$ ,  $df = 1$ ,  $p = 0.001$ ), a significantly higher frequency of drug abuse (65.7% vs. 23.3%,  $\chi^2 = 396.52$ ,  $df = 1$ ,  $p = 0.001$ ), and a significantly higher frequency of smoking (96.3% vs. 15.3%,  $\chi^2 = 1,338.36$ ,  $df = 1$ ,  $p = 0.001$ ) than student adolescents (Table 3).

### 3. Logistic regression analysis

To determine the discriminative factors of delinquent behavior among Korean adolescents, we performed a logistic regression analysis using the hypothetical logistic model in Box 1.

Table 4 shows the results of this logistic regression analysis. We found that the factor most strongly associated with delinquency was smoking (odds ratio: 32.32).

That is, a smoking adolescent has a 32-fold higher possibility of becoming a delinquent adolescent than a non-smoking adolescent.

Other factors strongly associated with delinquency included alcohol drinking (odds ratio: 10.38), drug and substance use (odds ratio: 2.95), viewing time of media violence (odds ratio: 1.78), being sexually abused (odds ratio: 1.68), viewing time of pornography (odds ratio: 1.25). In contrast, family violence (odds ratio: 1.04), viewing time of murder scene (odds ratio: 0.98) had relatively little relation to delinquency.

The parameter estimates for the logistic regression model are also shown in Table 4.

This model indicated that 6 discriminative factors were statistically significant (smoking, alcohol drinking, drug use, sexual abuse, viewing time of media violence:  $p = .000$ , viewing time of pornography:  $p < 0.034$ )

Using the formula shown in Box 2, we attempted to fit our logistic model to our populations of delinquent and

**Table 2.** Chi Square Test for Smoking, Drinking and Drug by Sex

	Male	Female	Total	df	$\chi^2$	p
Cigarette						
Smoking	941(65.7)	123(20.8)	1,064(52.5)	1	338.54	0.001
Non-smoking	492(34.3)	469(79.2)	961(47.5)			
Alcohol						
Drinking	1,066(71.1)	220(34.2)	1,286(60.0)	1	256.32	0.001
Non-drinking	433(28.9)	424(65.8)	857(40.0)			
Drug						
Use	670(44.7)	241(37.4)	911(42.5)	1	9.75	0.001
Non-use	829(55.3)	403(62.4)	1,232(57.5)			

**Table 3.** Chi Square Test for Smoking, Drinking and Drug by Group

	Delinquents	Students	Total	df	$\chi^2$	p
Cigarette						
Smoking	898 (96.3)	172 (15.3)	1,070 (52.0)	1	1,338.36	0.001
Non-smoking	35 (3.8)	952 (84.7)	987 (48.0)			
Alcohol						
Drinking	935 (96.3)	364 (30.2)	1,299 (59.7)	1	976.91	0.001
Non-drinking	36 (3.7)	842 (69.8)	878 (40.3)			
Drug						
Use	638 (65.7)	281 (23.3)	919 (42.2)	1	396.52	0.001
Non-use	333 (34.3)	925 (76.7)	1,258 (57.8)			

**Box 1.** Hypothetical logistic model for delinquents/students

$$\text{Log} \frac{P(\text{delinquent})}{P(\text{student})} = \beta_0 + \beta_1 * \text{Smoke} + \beta_2 * \text{Drink} + \beta_3 * \text{Drug} + \beta_4 * \text{Sexual abuse} \\ + \beta_5 * \text{Family violence} + \beta_6 * \text{Porno} + \beta_7 * \text{Murder} + \beta_8 * \text{Violence}$$

Porno : Viewing time of pornography    Murder : Viewing time of murder scenes on TV etc

Violence : Viewing time of violence scenes on TV etc



student adolescents. The model predicted that, of the 799 delinquent adolescents surveyed, 732 would be delinquents and 47 would be students, whereas, of the 897 student adolescents tested, 800 would be students, and 97 would be delinquents (Table 5). The total error rate was 0.086, indicating that this model can discriminate between delinquent adolescents and student adolescents.

## DISCUSSION

One value of viewing delinquency as a multidimensional phenomenon is that many of etiological factors of delinquent behavior can be seen as complementary rather than competing. We hypothesized that cognitive, developmental, and environmental factors, as well as personality traits, would provide a more meaningful understanding of the processes associated with delinquent behavior and may predict delinquent and criminal behavior among adolescents. Much (Kim & Kim, 2002; Kim & Kim, 2005) has been written about the etiological or predictable factors of delinquent behaviors. These factors have included family dynamics, such as parenting attitudes, parent's occupation, religion, family's satisfaction with their family environment, and family violence; school and social environment, including peer pressure, the university entrance examination system, and the influence of mass media; personality factors, including inner conflict, locus of control, personal attitude toward deviance, depressive trend, need for satisfaction, frustration, and complaints of psychosomatic symptoms. These etiological factors are very broad and comprehensive,

however, making them difficult to use in recognizing and guiding delinquent adolescents on the family and community levels.

To develop simpler, more readily applicable factors, we have investigated the discriminative factors of delinquent behavior among Korean adolescents. In this study, we found that delinquent adolescents had significantly higher rates of alcohol drinking, smoking, drug use, being sexually abused and family violence than student adolescents in Korea.

Factors discriminative of delinquent behavior were smoking, alcohol drinking, drug use, viewing time of media violence and being sexually abused in that order. Especially, the authors found that the most strong and prevailing factors are smoking and alcohol drinking among these discriminative factors in Korea.

Many previous studies (Sigda & Martin, 1996; Morita et al., 1996) have also reported positive associations between juvenile delinquent and criminal acts and smoking and abuse of alcohol and other drugs. Smoking and alcohol drinking among adolescents may be preceded by

**Table 5.** Classification Table for Delinquents and Students by Logistic Model (%)

	From delinquents/ students	Classified		Total
		Delinquents	Students	
Actual	Delinquents	732 (94.0)	47 (6.0)	779 (100.0)
	Students	97 (10.8)	800 (89.2)	897 (100.0)
	Total	829 (49.5)	847 (50.5)	1,676 (100.0)
	Error rate	0.108	0.060	0.086
	Total hit ratio (%)	91.4		

**Table 4.** Parameter Estimates for Logistic Regression Model

Variables	df	Parameter estimate	Standard error	Chi-square	p	Odds ratio
Intercept	1	- 7.40	0.483	235.06	0.000	
Drinking (Y/N)	1	2.34	0.299	61.30	0.000	10.38
Drug use (Y/N)	1	1.08	0.195	30.71	0.000	2.95
Smoking (Y/N)	1	3.48	0.250	193.19	0.000	32.32
Sexual abuse	1	0.52	0.107	23.54	0.000	1.68
Murder	1	- 0.02	0.014	1.34	0.248	0.98
Violence	1	0.58	0.072	63.49	0.000	1.78
Pornography	1	0.22	0.103	4.49	0.034	1.25
Family violence	1	0.04	0.026	2.49	0.114	1.04

### Box 2. Fitting logistic model for delinquents/students

$$\text{Log} \frac{P(\text{delinquent})}{P(\text{student})} = -7.40 + 3.48 * \text{Smoke} + 2.34 * \text{Drink} + 1.08 * \text{Drug} + 0.52 * \text{Sexual abuse} + 0.22 * \text{Porno} + 0.58 * \text{Violence}$$

inhalation of glue and butane gas, and abuse of other drugs such as marijuana and cocaine may follow. Adolescents in a state of intoxication may more easily commit violent and criminal acts. In addition, many surveys have shown that delinquent adolescents are more likely to smoke and use alcohol and other drugs than are student adolescents, as well as to participate in violent and criminal acts under the drunken state (Windle, 1994).

Several factors are important in considering what behavior is actually delinquent. In Korea, there are age-related norms for appropriate behavior, with delinquent behavior typically defined relative to those norms. Thus, a behavior regarded as typical in someone at one age may be regarded as inappropriate and problematic for a person of another age. Generally, these age-related norms focus on maturational changes in behavior. It is also important to note that there are age-related changes in norms for an acceptable behavior, apart from maturational changes. For example, smoking and alcohol drinking are not considered as problem behaviors among adults unless they are excessive, whereas any alcohol drinking and smoking among adolescents are considered as a problem or delinquent behavior.

Moreover, alcohol drinking and smoking among younger adolescents functions as cradles for acquiring other delinquent and violent acts in Korea.

The etiology of the smoking, use of alcohol and other drugs among adolescents can be divided into two groups: acute, episodic use and chronic, long-term use. In the present study, we may think that acute, episodic use of alcohol and other drugs, and smoking among adolescents were related to sudden stress in their homes and schools, including the death of a significant person, familial conflict, and poor academic performance, whereas chronic, long-term use was related to personality factors and inner conflicts. Especially, smoking and alcohol drinking among adolescents may also be related to a variety of other problem behaviors or antisocial behaviors with deviant peer groups.

Other studies (Windle, 1994) have reported a significant positive relationship between adolescent alcohol drinking and the frequency of deviance for various individual problem behaviors such as truancy, marijuana use, and running away from home. Irrespective of age group, almost nearly one-third of all homicide perpetrators reported being affected by alcohol prior to the offense. In every age group, alcohol was the substance

showing the highest rate of regular daily use and the highest rate of ingestion in the week preceding the homicide (Fendrich, Mackesy-Amity, Goldstein, Spunt, & Brownstein, 1995). This finding thus suggests that substance abuse, almost always alcohol, escalated impulsive, spontaneous violent outbursts.

A study on substance use and abuse among deviant and non-deviant adolescents in Israel (Barnea, Teichman, & Rahav, 1993) also showed that psychoactive substance use was concentrated among groups of deviant adolescents.

In this finding, delinquent adolescents were found to use all types of substances, licit as well as illicit, at rates considerably exceeding those found among high school students. For many Korean adolescents, there are also indications that initiation of delinquency occurs at about the same time as smoking and alcohol drinking, suggesting the need for comprehensive intervention programs. Importantly, the high rates of sexual activity and pregnancy in teenagers who are drunk or intoxicated with drugs, suggest the need for greater attention to this combination of behaviors.

The authors suggested that a substantial component of the association between smoking, alcohol use and juvenile delinquency may be due to shared risk factors common to both outcomes. These risk factors may include social background of the family, parenting attitudes, individual characteristics and adolescent peer affiliations. However, a component of the association between smoking, alcohol use and delinquent behavior may be due to direct cause and effect, in that adolescent smoking and alcohol use are associated with increased risks to become a delinquent adolescent.

We also found that the viewing time of media violence and pornography among adolescents were relatively powerful discriminative factors for delinquent behavior in Korea. Recent developments in the entertainment industry and technology of new media, including increased exposure to media violence and pornography, have enhanced problem behaviors and violent acts among adolescents (Johnson, 1996; Kim & Kim, 2002). Generally, adolescents exposed to media violence behave more aggressively than unexposed adolescents.

We also found that being sexually abused was a major discriminative factor in the consolidated juvenile delinquent behavior. Adolescents who were sexually victimized in childhood had higher frequencies of delinquency and criminal acts than adolescents who were not victim-

ized. Moreover, 45% of incarcerated offenders reported having been sexually and/or physically abused as children (Famularo, Kinscherff, Fenton, & Bolduc, 1990), and individuals who experienced childhood physical and/or sexual abuse had higher rates of illicit drug use than individuals who did not (Dembo et al., 1988).

In contrast, we found that family violence and viewing time of murder scenes in the media had relatively little effect on delinquent behavior, perhaps because these variables are relatively less frequent in Korea than other variables, compared with western countries.

Our finding, that smoking, alcohol drinking, use of drugs, viewing time of media violence and pornography, and being sexually abused are discriminative factors of delinquent behavior among Korean adolescents, indicate the importance of developing education programs to prevent these behaviors. Moreover, the close association between adolescent smoking and delinquent behavior indicates the need for developing antismoking educational programs within the broader context of Korean adolescent health care.

Certain obvious limitations can be seen with the data of this study.

First, the age of the subjects varied from 12 to 21 years. Therefore, a considerable developmental difference between early, middle and late adolescence should be acknowledged. Second, data were collected questionnaire based on a subject's memory and recall, which may be faulty, suggesting the need for a study design utilizing multiple objective methods as well as multiple sources of information. Third, the development of juvenile delinquent behavior is related to a parent's child-rearing practices, the adolescent's development and personality aspects, familial and social support, and the cognitive competence of the child or adolescent. From this perspective, future research is needed to address these issues.

## CONCLUSION

In sum, delinquent adolescents had a higher frequency of smoking and alcohol drinking, higher exposure to illicit drug, higher frequency of family violence and childhood sexual victimization than did student adolescents.

Also, the factor most associated with delinquency was smoking. That is, it suggested that a smoking adolescent has higher possibility of becoming a delinquent adolescent than a non-smoking adolescent in Korea. Therefore,

the author recommended that preventive strategies for antismoking educational efforts are urgently needed in Korea.

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