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A COMPARATIVE EXAMINATION OF TWO MODES OF INTOXICATION—AN EXPLORATORY STUDY OF GLUE SNIFFING*

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The deliberate inhalation of the fumes of a variety of commercial products containing highly volatile organic solvents in an attempt to produce a pleasurable state of intoxication has caused considerable concern and interest on the part of law enforcement, probation, and parole personnel, particularly those concerned with youth in the juvenile age category. Although there has been continuing research and reporting on the mental and physical pathology related to this practice in its most common form, glue sniffing, there has been but little attention given to identifying the juvenile populations and their unique characteristics within which this practice is common. This research is an exploratory study in the identification of segments of the youthful populations wherein glue sniffing tends to be endemic.

This paper will make selected comparisons between a population of 47 glue sniffers and a random sample of 50 juvenile drinkers. All of the cases were brought to the attention of the Youth Division of the Chicago Police Department between May 1, 1962, and October 31, 1962. Although it cannot be assumed that the juveniles apprehended by the police and included within this study constitute a representative sample of all youthful persons who have inhaled the fumes of glue or ingested alcohol, it can correctly be assumed that regardless of the nature of the factors of bias and selectivity which have been operative, they have affected the two groups similarly. Hence, the comparability of the two groups constitutes a valid procedure. The results of this research must, however, be recognized as reflecting the attributes of a select group, the apprehended, hapless juvenile offender, rather than the generality of youths who have used the fumes

* This article is a revision of a paper originally submitted to Dr. John Lee of the Northwestern University School of Education in January, 1963. A summary of this research was presented by the author at the Annual Institute of the Illinois Academy of Criminology held at the Northwestern University School of Law, April 26-27, 1963.

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of organic solvents or alcoholic beverages as an intoxicant.

Juvenile drinkers were used as a control group in this research because the drinking of alcoholic beverages among youth is so pervasive in contemporary American society that it can be considered a normative mode of achieving intoxication. Departures from this normative behavior will serve to delineate the deviant aspects of glue sniffing.

This research is premised on the null hypothesis that there are no statistically significant group differences between juvenile glue sniffers and juvenile drinkers as measured by selected personal and social background factors. For purposes of differentiating the sniffers from the drinkers, the Chi Square technique was used throughout this study except in the analysis of the age factor. The .05 level was accepted as indicative of a statistically significant difference in those instances where the Chi Square test was applied.

THE FINDINGS

At the start, it is significant to note that sniffing and drinking tend to be mutually exclusive modes of becoming intoxicated. Of the 47 sniffers included in this study, only 3 of them had a previous police record for an offense involving drinking. Of the 50 drinkers, only 2 had a previous offense record for sniffing. This apparent difference in the modes of achieving intoxication cannot be wholly explained by the economic and legal factors suggested in the following statement made by a glue sniffer: "If I could get liquor, I would. But it's too expensive and we can't get it anyway."¹ To accept the specious reasoning suggested in this statement would be contrary to the observations of law enforcement officers who deal with juvenile liquor violations. Despite legal prohibitions on the sale of liquor to minors and the active enforcement of these laws, youths can and do obtain alcoholic beverages without too much difficulty. Perhaps greater insight into the distinct orienta-

¹ Time, Feb. 16, 1962, p. 55.

tions can be gained from the statement of another glue sniffer who was asked to compare the feelings derived from the ingestion of alcohol with the feelings experienced from the sniffing of glue. This was her reply:

"Glue is better. You don't have to go through all the trouble, you know, of drinkin' it and it tastes horrible. I don't know, glue just gives you really, a really, a very wonderful feeling."

The Age Factor

The juvenile authorities in the City of Denver, Colorado, recorded 164 cases of glue sniffing involving 130 individuals in the period 1960-1961 inclusive. The age range for these offenders was 7 to 17 years with a mean age of 13 years.² The 47 glue sniffers recorded in Chicago, participating in 69 offenses, ranged from 9 years, 11 months to 16 years, 10 months as measured to the time of first police contact for glue sniffing between May 1 and October 31, 1962. The mean age for the sniffers was 13 years, 6 months. The mean age for the drinkers as measured under the same conditions was 15 years, 6 months. The probability that the difference between the means of the sniffers and drinkers could have occurred on the basis of chance alone was well beyond the .01 level of confidence ($t = 6.23$). It is thus indicated by this statistic that the glue sniffers, as a group, are younger than the drinkers.

Further information can be gained from an analysis of the age difference between the two groups at the time of their first recorded contact with the police, regardless of the nature of the offense. The mean age for the sniffers was 12 years, 3 months, while the mean age for the drinkers was 13 years, 11 months. Again, the probability that the difference between the means could have occurred on the basis of chance was well beyond the .01 level of confidence ($t = 4.45$). If we accept the premise that drinking is normative, this data then reflects the first evidence of deviance on the part of the sniffers, to wit, that they first became involved with the police about 1½ years earlier than the drinkers.

The Sex Factor

In a recent study of addiction to the fumes of one of the more common solvents, gasoline, Easson observed that all of the gasoline addicts

² Glaser & Massengale, *Glue Sniffing in Children*, 181 J.A.M.A. 300 (1962).

TABLE I

	Male	Female
Sniffers	40	7
Drinkers	35	15

χ^2 (1 df) = 3.16; $p < .05$.

TABLE II

	White	Negro
Sniffers	47	0
Drinkers	29	21

χ^2 (1 df) = 25.21; $p > .05$.

who came to his attention were males.³ Of the 130 youths who came to the attention of the Denver juvenile authorities for glue sniffing, all but 6 were boys.⁴ Although there is a tendency for females to be under-represented among the group of glue sniffers in the Chicago data, the male-female differential did not exceed the Chi Square value of 3.84 necessary for a statistically significant relationship at the .05 level of confidence. It is of interest to note that females committed 6352 of 32260 juvenile offenses recorded in the City of Chicago during 1962, about 20 per cent of the total.

White-Negro Offenders

In recent years, the Negro is typically over-represented among narcotic drug offenders. From this fact, we might formulate certain expectancies with regard to race for our glue sniffers and drinkers. The Chicago data violates these expectancies; the exclusion of Negroes from the group of sniffers is an intriguing finding. Is this the result of a differential in police concern over youthful intoxicated behavior in White and Negro areas? Do Negro juveniles have easier access to beer, liquor, and wine than Whites? Is sniffing an activity which affords the Negro little or no esteem from his peers, and hence its practice is not consensually supported? These and many other questions emerge as worthy of consideration in future research.

Spanish-American Ethnicity

The Denver authorities reported that 80 per cent of the 130 glue sniffers recorded by them were of

³ Easson, *Gasoline Addiction in Children*, 29 PEDIATRICS 253 (1962).

⁴ Glaser & Massengale, *supra* note 2.

TABLE III

	Spanish-American	"Other"
Sniffers	13	34
Drinkers	1	49

χ^2 (1 df) = 12.92; $p > .05$.

TABLE IV

	Broken Home	Intact Home
Sniffers	13	34
Drinkers	19	31

χ^2 (1 df) = 1.17; $p < .05$.

Spanish-American origin.⁵ Analysis of the Chicago data by the dichotomy of persons of Spanish-American ethnicity and "Others" produced a highly significant statistical relationship.

The Broken Home

Perhaps the most common etiological factor associated with delinquent conduct is the broken home. In the case of drug use, this factor has been emphasized in the search for cause. Consequently, an attempt was made to assess the differential frequency of the broken home among the sniffers and the drinkers. The difference was not statistically significant. However, a relationship might have been evidenced if a more refined criterion for the broken home were utilized. The records from which our data were taken indicate only those homes which are broken by physical separation, divorce, or death. Unfortunately for the purposes of this research, there was no way to determine from the available police records if the homes involved were "broken" in a psychological sense.

Recidivism

The factors which cause some delinquent acts to go unreported while other acts are processed officially by the police are complex and beyond the scope of this paper. However, it does seem clear that nearly all delinquents are recidivists in the sense that few are brought to the attention of the police the first time they commit a socially offensive act. An investigation into the background

⁵ *Ibid.*

of almost all known delinquents would reveal abundant accounts of delinquent incidents ignored, overlooked, or tolerated by parents, neighbors, school officials, and others of authority which occurred before the delinquent act which brought these youths to the official attention of the police. Thus, even though the meaning of recidivism is not as distinct as is generally thought, it may nevertheless be insightful to examine recidivism in terms of its common legal definition as it applies to the sniffers and drinkers in this study.

No statistically significant relationship was found to exist. However, a refinement in this kind of analysis was undertaken. Although there was no evident difference between sniffers and drinkers when analyzed according to first or repeated offender categories, it can be hypothesized that there may be a discernable difference between the two groups when analyzed according to a first or repeated offense for intoxication induced either by glue fumes or alcohol. It was found that the factor of recidivism when related specifically to offenses of intoxication does differentiate between sniffers and drinkers in a statistically significant way. The sniffers are therefore distinguished from drinkers by the extent of their previous police contact for intoxication. Implied in this finding is the generalization that the degree of commitment of glue sniffers to glue sniffing exceeds the degree of commitment of drinkers to alcohol.

Group Offenses

In terms of the stereotypical images generally held of drinking and drinkers, the social nature of the act and the sociability of the individual is emphasized. In contrast, drug users are generally conceived of as alienated from "respectable" society and to a large degree, peripheral even to the delinquent sub-culture with which they are identified. Therefore, it was assumed that the analysis of sniffers and drinkers by the analytical

TABLE V

	First Offender	Recidivist
Sniffers	10	37
Drinkers	12	38

χ^2 (1 df) = .10; $p < .05$.

TABLE VI

	First Offense for Intoxication	Repeated Offenses for Intoxication
Sniffers With Previous Record	11	26
Drinkers With Previous Record	32	6

$$X^2 (1 \text{ df}) = 22.72; p > .05.$$

TABLE VII

	Group Offense	Solitary Offense
Sniffers	41	6
Drinkers	38	12

$$X^2 (1 \text{ df}) = 2.02; p < .05.$$

categories of group and solitary offenses as indicated on police records would differentiate the groups. Such, however, was not the case. The lack of a significant difference may be explained, in part, by the difficulty of determining whether or not the offense, as distinguished from the apprehension, was in fact a group or solitary action. The police records more correctly show whether or not the juvenile was apprehended alone or with a group.

Maladjustment in School

Another aspect of the extreme orientations characterized by the alienation and maladaptive behavior of the drug user and the normality and social responsiveness of the drinker may be evidenced in the extent of school attendance and age-grade level of the sniffers and the drinkers. The assumption of differences between these two groups is premised on the concept of general maladjustment in the form of school drop-out or retardation in grade level. Accordingly, it was found that 10 of the 50 drinkers were not attending school, while only one of the 47 sniffers was not in regular attendance at school. Additionally, the degree of grade retardation was greater among glue sniffers than among drinkers. These apparently strong relationships, that of high drop-out for drinkers and high grade retardation for sniffers, must be interpreted with caution. As will be recalled, the drinkers were an older population than the sniffers. The unsuccessful students among the drinkers could legally drop out from school, while

the younger, academically unsuccessful sniffers were required by law to stay in school. The sniffers' lack of scholarly success and social adjustment therefore shows up as retardation in grade level rather than by drop-out.

Differences in Offense Types

Further analysis of the possible differences between the sniffers and the drinkers was undertaken with regard to the kinds of offenses each was prone to commit. For purposes of this analysis, the total offense records of each group were examined and divided into the artificial dichotomy of "conduct" and "property" offenses. The conduct category included such offenses as curfew violations, disorderly conduct, fighting, incorrigibility, loitering, runaway, sex delinquency, truancy, trespassing, and vandalism in addition to either drinking or sniffing. The property classification included all acts which had as their intended outcome the acquisition of money or other thing of value belonging to another. A meaning of impulse control, purposiveness, and rationality is implied in this class of behavior. This analysis revealed no statistically significant difference between sniffers and drinkers when considered according to the kind of previous offense each tended to commit. The extent to which intoxication, induced by either alcohol or glue fumes, contributed to a diminution of impulse control and the consequent commission of a "conduct" offense did not discriminate between the two groups.

Differences in Judgment of the Seriousness of Cases

How a juvenile case is processed by the police is the result of an overall objective judgment on the part of the police juvenile specialist as to the seriousness of the violation both from the standpoint of the community and the offender. In the City of Chicago, as required by police department

TABLE VIII

Grade Placement	Sniffers Who Attend School (N = 46)	Drinkers Who Attend School (N = 40)
Accelerated 1 year	1	2
Consistent age-grade level	9	12
Retarded 1 year	15	16
Retarded 2 years	17	7
Retarded 3 years	2	3
Retarded 4 or more years	2	0

TABLE IX

	Conduct Offenses	Property Offenses
Sniffers	135	40
Drinkers	128	42

χ^2 (1 df) = .16; $0 < .05$.

TABLE X

	Adjustment	Referral to Court
Sniffers	28	19
Drinkers	36	14

χ^2 (1 df) = 1.66; $p < .05$.

regulations, all cases of juvenile offenders thought by Youth Officers to be relatively minor or at least amenable to treatment in the home community are handled as "district adjustments." Other cases judged to be more serious are brought to the attention of the Family Court. Accepting these conditions, a common sense hypothesis could be advanced that because of the widely accepted normality of drinking, drinkers would tend to be processed as "district adjustments" to a greater degree than glue sniffers. At the five per cent level of confidence, there was no statistically significant difference established between sniffers and drinkers in regard to the overall objective judgment of Youth Officers as to the seriousness of the case.

Spatial Distribution of Cases

We have assumed that drinking is a normative activity on the part of youth in many segments of the population. The acceptance or rejection of drinking behavior is a consequence of a totality of influences, namely those of society, the community, the family, parental and sibling example, the model of behavior exhibited by "significant others," and the attitudes and actions of one's peers. Thus, behavior is not the product of random choices by individuals. Rather, cleavages in the social norms unique to various population segments and social groups tend to structure conduct. From an ecological point of view, it would contribute to our understanding of the problem if our cases were analyzed according to the geographical location of the home residence of the juvenile. The concept was accepted that a delinquency producing area (where one lives) is of far greater significance for

this analysis than a delinquency attracting area (wherein one commits a delinquent act).

Concentration of cases in certain areas of the City of Chicago would indicate those sections wherein drinking was accepted as the norm of conduct. In the case of the drinkers, there was no clear evidence of concentration in any one census tract. The 50 cases were randomly found in 48 of the 935 tracts of the city. This finding validates one of the major assumptions within this study, to wit, that drinking is, in a sense, a normative and pervasive behavior on the part of youth in the City of Chicago. By using a similar analysis for the sniffers, the 47 cases were located by home residence in 17 of the 935 census tracts in the city. Clusters of sniffers were common. Further evidence of this high concentration can be seen in the fact that one census tract contained 23.5 per cent of the total glue sniffers in our group of 47.

Ethnic Composition of Tracts

Certain theories of delinquency are premised on the idea that ethnic and racial heterogeneity within a community is associated with or is the cause of social disorganization and the breakdown of accepted norms of conduct. This breakdown is commonly associated with anti-social, delinquent, and unlawful behavior. It is of value to ask if the members of the all White glue sniffing population resided in mixed areas. All of the census tracts within which the sniffers resided were almost exclusively populated by Whites. No tract had a greater proportion of Negroes than the total per cent of Negroes represented in the population of the City of Chicago in the 1960 Decennial Census. The percentage of White residents in each of the tracts wherein the sniffers resided ranged from 82.94 to 100.00 per cent. The median value was 98.19 per cent. Therefore, population heterogeneity, if limited to White and Negro mixing, is apparently unrelated to sniffing. One should recall, however, that ethnic heterogeneity as measured by the admixture of persons of Spanish-American origin to the native White population may be highly related to the problem. Further population analysis should be undertaken in this respect.

Stability of Tracts

Another premise within the social disorganization theories of crime and delinquency is that a breakdown in the definition of consensually accepted norms of conduct occurs in neighborhoods

of high transiency. The resulting culture conflict and diversity of norms tends to reduce adult control over children's conduct and, at the same time, widen the range of behavioral possibilities. Therefore, the experimentation with and the use of the more exotic intoxicants will tend to take place with greater frequency in areas of high population instability. The median per cent of persons living in the same residence for the five years prior to the census was 94.88 per cent for the 48 tracts wherein the drinking sample resided. The median per cent for the 17 sniffer's tracts was 95.02 per cent. Consequently, it can be said that the stability of census tracts within which the two groups resided was almost equivalent. As reflected in this data, population instability, per se, does not appear to be related to the etiology of glue sniffing.

SUMMARY OF THE FINDINGS

This paper presented an examination of a relatively new practice among teen-agers, popularly known as glue sniffing. A random sample of 50 juvenile drinkers and a population of 47 sniffers were compared on the basis of selected personal and social factors. That there would be no statistically significant differences between the two groups was accepted as the null hypothesis.

The two modes of achieving intoxication tended to be mutually exclusive. In contrast to juveniles who drink alcoholic beverages, the sniffers were found to comprise a younger population. They were also found to have had their first contact with the police earlier than drinkers. Glue sniffing was engaged in exclusively by the White population with a large proportion of youths of Spanish-American origin. There is a tendency for girls to be under-represented among the glue sniffers, although this relationship was not statistically evidenced. The sniffer is no more likely to come from a physically broken home than the drinker, nor is he any more likely to be a recidivist in the strict legal sense. The sniffer displayed no greater propensity to engage in his act of intoxication alone than did the drinker. He was undifferentiated from the drinker in his tendency to be brought to the attention of the police for a conduct offense, although both groups were more prone to misbehave than to commit a crime for personal gain. The sniffer was far more likely to have a previous record for sniffing than the drinker was to have a previous record for drinking. Youth Officers showed no tendency to

evaluate one type of behavior as more serious than the other.

Although the drinker was likely to resolve his problems in school adjustment by dropping out, the sniffer made manifest his problems by retardation in grade level. Most probably, the influence of the age factor accounts for this difference. The sniffers tended to be concentrated in certain small sections of the city which were almost exclusively White in population composition. The sniffers lived in communities which were not unusually unstable.

RECOMMENDATIONS

The high concentration of glue sniffing cases in certain census tracts would appear to make the problem of control and prevention of this kind of intoxication more possible than would be the case if the practice were epidemic. Because the behavior typically involves youths in early adolescence, the possibility for remediation is better than would be the case with older youths. Also, since the sniffers tended to be enrolled in school, both teachers and school counselors should participate in the early identification of those youths who engage in this mode of intoxication.

Police juvenile specialists should be aware of the need for treatment in cases of youths who come to their attention for a repeated offense of glue sniffing. Although no attempt was made to assess the actual extent of involvement of sniffers in their practice, it can logically be expected that some youths were or could become habituated to this kind of intoxication. Appropriate medical and psychiatric treatment would then be necessary. Generally, however, increased parental awareness and control combined with a community based educational program focused on the dangers inherent in the practice should be sufficient to control and diminish the practice. Such an educational program should be carefully planned, should include parents as well as youths, should be devoid of misinformation and overstatement, and should be participated in by medical authorities. Warnings as to the health dangers involved should be voiced by doctors, not laymen. It should also be recognized that in newspaper and magazine articles, it is impossible to talk about youthful glue sniffers without talking to them. While one is warning some youths, he may be instructing others. The coordination of publicity and community-parental control is essential.