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Earlier Violent Television Exposure and Later Drug Dependence

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Abstract

This research examined the longitudinal pathways from earlier violent television exposure to later drug dependence. African American and Puerto Rican adolescents were interviewed during three points in time ($N = 463$). Violent television exposure in late adolescence predicted violent television exposure in young adulthood, which in turn was related to tobacco/marijuana use, nicotine dependence, and later drug dependence. Some policy and clinical implications suggest: a) regulating the times when violent television is broadcast; b) creating developmentally targeted prevention/treatment programs; and c) recognizing that watching violent television may serve as a cue regarding increased susceptibility to nicotine and drug dependence.

Keywords

Violent Television; Tobacco and Marijuana Use; Nicotine and Drug Dependence

INTRODUCTION

According to the United States (U.S.) Census Bureau (2006) (1), 98.2% of households had televisions in 2003. U.S. adults watched 1,745 hours of television per person in 2003, which is estimated to increase to 1,858 hours for 2006. According to the American Academy of Pediatrics (A.A.P.), children in the U.S. watch approximately four hours of television daily, despite the A.A.P.'s recommendation that children over two years of age should not exceed one to two hours of quality programs daily. By the age of 18, the average American witnesses 200,000 violent acts on television (2–5). Television often depicts risky behavior, such as violence and substance use, without acknowledging negative consequences of engaging in these behaviors (4, 5).

According to Jessor's Theory of Problem Behavior, social deviance refers to patterns of problem behaviors with significant correlations among problem behaviors (6–8). Watching violent television, if it is considered problem behavior, has a passive cast comparable to a more active problem behavior, such as the active use of nicotine and drugs. A second issue is the time-ordering of problem behaviors, since intercorrelations present little evidence of temporal ordering of these behaviors (6–8). Therefore, we explore a passive orientation as compared with more active problem behaviors. A framework that adopts this temporal model might lead the way to strategies which rely on the antecedents and consequences of problem behaviors.

Studies specifically focusing on television have primarily examined aggressive behavior (9–17). Only one study, which was cross-sectional in design, focused on the effects of violent

television on substance use/abuse. According to Krcmar and Greene (8), children who watch violent television are more likely to use/abuse substances. Among adolescents, there is a link between exposure to violent television and risk taking behavior (e.g., problem drinking, drug abuse, and delinquency) (8). Therefore, we hypothesized a direct relationship between watching violent television in late adolescence and tobacco/marijuana use in young adulthood.

Our study will expand this scant literature by using a longitudinal design, in order to examine these relationships over time (late adolescence through young adulthood). Also, the majority of Krcmar and Greene's sample was White, while this study's sample consists of African American and Puerto Rican adolescents and young adults. There is limited research on minorities in general, and specifically in comparing African American and Puerto Rican groups (18, 19). It is especially valuable to study the cultural and social importance of these groups, as individuals of African American descent are the second largest minority population and individuals of Hispanic descent are the third largest minority population in the U.S. (20–22). Therefore, this study will examine the effects of viewing violent television on drug dependence over a decade (with tobacco/marijuana use, violent television exposure, and nicotine dependence as mediators) in African American and Puerto Rican individuals.

Substance use is a prerequisite to nicotine and drug dependence (23). Earlier tobacco/marijuana use is related to later nicotine dependence (23–25). Nicotine dependence precedes drug dependence (26, 27). Therefore, we postulated that earlier exposure to violent television will be related to tobacco/marijuana use, which in turn will be related to later nicotine dependence, and ultimately, drug dependence.

Based on the literature (14, 28), we postulated that men are more likely than women to watch violent television in late adolescence and young adulthood. In addition, males are more likely than females to be nicotine and drug dependent (29, 30).

In summary, this is the first study to investigate the impact of violent television exposure in late adolescence on drug dependence in young adulthood. It is important to obtain measures of exposure to violent television and substance dependence in both late adolescence and young adulthood. As noted in Figure 1, in the first pathway, viewing violent television is somewhat stable over time (16) and is directly related to drug dependence (T4). In the second pathway, earlier violent television exposure (T2) is indirectly related to drug dependence (T4) via tobacco and marijuana use (T3) and nicotine dependence (T4).

METHODS

Sample

This study is based on data collected in a four-wave longitudinal study of African American and Puerto Rican adolescents and young adults. Time 1 (T1) data was collected in 1990; time 2 (T2) in 1994–1996; time 3 (T3) in 2000–2001; and time 4 (T4) in 2001–2003.

The study consisted of participants whose mean age was 14 (S.D. = 1.3) at T1. The sample came primarily from the East Harlem area of New York City, where the participants attended 10 of the 18 schools in East Harlem, in addition to one high school, which was located just outside of East Harlem. In 10 of the 11 schools, over 90% (N = 1,332) of the African American and Puerto Rican students agreed to participate. Comparative analyses did not reveal any significant differences in demographic factors among the students at the different schools.

At T2, the follow-up of the earlier study consisted of 1,190 participants with a mean age of 19 (S.D. = 1.5). The T2 response rate was 89.3% of those who participated at T1. At T3, a random sample of participants was selected due to reduced funding. This newly constituted sample at T3 included 650 participants whose mean age was 24 (S.D. = 1.3). At T2 and T3, the participants were interviewed individually by NORC and the University of Michigan, respectively. Most of the interviews lasted 1½ hours. The interviewers and participants were matched in terms of ethnicity and gender.

At T4, we selected a random sample of T2 and T3 participants (Mean age = 26.1; S.D. = 1.5; N = 463). One percent of the participants at T3 could not be located, .025% were in jail, 2% refused to participate, and .015% were deceased. We compared the participants at T1-T3 who participated at T4 with those who participated at T1-T3 but did *not* participate at T4. There were no appreciable differences between these two groups on drug use or the psychosocial variables.

The T4 sample included 235 African American and 228 Puerto Rican participants; 240 females and 223 males. Eighty-one percent of the participants had at least one parent who had a high school diploma or beyond. Sixteen percent of the participants did not have a high school diploma and 35% earned below the average income (\$12,500/year). The Institutional Review Boards (I.R.B.) of the Mount Sinai School of Medicine and New York University School of Medicine approved the study. A National Institute of Health Certificate of Confidentiality exists for these data. The Full Information Maximum Likelihood method was used for the missing data (31).

Measures

Violent Television Watching—The measure of violent television watching consisted of two items at T2 and two items at T3 (Cronbach alpha at T2 = .80; at T3 = .84). Participants were asked if the television programs that the respondent prefers and actually watches have (1) “A lot of violence”, (2) “Some violence”, (3) “A little violence”, or (4) “Hardly any or no violence” (32).

Tobacco/Marijuana Use—The tobacco use measure asked about the number of cigarettes the respondent currently smoked at T3. Answer options were: “None” (1), “A few cigarettes or less a week” (2), “1–5 cigarettes a day” (3), “About half a pack a day” (4), “About one pack a day” (5), and “More than one pack a day” (6) (33).

The marijuana use measure asked about the frequency of the respondent’s marijuana use in the past year at T3. Answer options were: “Never” (1), “A few times a year or less” (2), “About once a month” (3), “Several times a month” (4), and “Once a week or more” (5) (33).

Nicotine and Drug Dependence—Measures of nicotine and drug dependence at T4, using an adaptation of the University of Michigan Composite International Diagnostic Interview (UMCIDI), are in accord with the DSM IV criteria. Nicotine dependence was measured by the presence of three or more of the following for tobacco use during the 12-month period prior to the interview: 1) had such a strong desire or urge to use tobacco and could not refrain from using it; 2) developed a physical tolerance for tobacco so that the respondent was able to smoke more without negative effects; 3) tobacco was taken in larger quantities or over a longer duration than initially intended; 4) experienced a duration of a month or more when the respondent interrupted activities like sports, work, or associating with friends and family to smoke; 5) experienced a duration of several days or more when the respondent chain-smoked; 6) experienced difficulty stopping or cutting down on

smoking; and 7) continuous use despite the presence of emotional or psychological problems resulting from tobacco use (34, 35).

Drug dependence (sedatives, tranquilizers, amphetamines, analgesics, inhalants, marijuana, cocaine/crack, LSD, or heroin) was assigned if the participant reported: 1) use of any illicit drug during the 12-month period prior to the interview; and 2) three or more of the following, a) use of the substance interfered with work at school, a job, or at home; b) presence of emotional or psychological problems from drug use; c) experienced such a strong desire or urge to use the substance that the respondent could not refrain from using it; d) experienced a duration of a month or more when the respondent spent a great deal of time using the substance or recovering from its effects; e) the substance was often taken in larger quantities or over a longer duration than was intended; f) the respondent was under the effects of the substance where one could get hurt; and g) the participant had to use more of the substance than usual to maintain the same effect (34–36)

Separately for tobacco and illicit drugs, respondents who did not use and those who did use, but reported two or fewer signs of dependence, were assigned scores of zero. Those who used and reported the presence of at least three signs of dependence were assigned scores of 1 (34, 35). The percentages of participants who met the criteria for diagnoses of nicotine and drug dependence were 31.5% (146/463) and 9.3% (43/463), respectively. The measures were found to predict drug use, smoking behavior, and psychopathology (34, 35, 37).

Data Analysis—A confirmatory factor analysis was performed to assess the validity of the latent constructs. LISREL analysis was conducted to examine the hypothesized structural equation model (SEM) illustrated in Figure 1.

The results of the confirmatory analysis were as follows: 1) both preference for and watching violent television loaded on the latent constructs of watching violent television at T2 ($\beta = 1.00$; $\beta = 0.97$, $t = 8.97$) and T3 ($\beta = 1.00$; $\beta = 1.39$, $t = 22.32$), respectively; and 2) number of cigarettes smoked and frequency of marijuana use in the past year loaded on tobacco/marijuana use at T3 ($\beta = 1.00$; $\beta = 0.40$, $t = 9.51$). All of the factor loadings were significant at $p < 0.001$. Next, the hypothesized SEM was tested to determine the significance of the pathways.

We also examined the relationship of the participant's gender with the latent constructs. Males were significantly more likely than females to watch violent television at T3 and to have nicotine and/or drug dependence at T4 and therefore gender is depicted in the model (Figure 2).

RESULTS

The pathway loadings of the SEM were obtained by the LISREL 8.2 program and are shown in Figure 2. The modification indices supported the proposed structure. The obtained model had a goodness-of-fit index (GFI) of 0.94, a comparative fit index (CFI) of 0.91, and a standardized root mean square residual (RMR) of 0.077. Hence, the SEM adequately represented the relationship among the latent constructs.

The obtained model revealed the following statistically significant pathways ($p < 0.05$; one tail test):

1. Violent television watching at T2 had positive paths to a) violent television watching at T3 ($\beta=0.25$, $t=4.37$) and to b) tobacco/marijuana use at T3 ($\beta=0.14$, $t=2.64$);

2. Violent television watching at T3 had a positive path to drug dependence at T4 ($\beta=0.09$, $t=2.07$);
3. Tobacco/marijuana use at T3 had a positive path to nicotine dependence at T4 ($\beta=0.64$, $t=17.82$);
4. Nicotine dependence at T4 had a positive path to drug dependence at T4 ($\beta=0.29$, $t=5.15$);
5. Males were more likely than females to a) watch violent television at T3 ($\beta=0.17$, $t=3.44$) and to b) have a diagnosis of nicotine ($\beta=0.08$, $t=2.09$) and drug dependence ($\beta=0.15$, $t=3.22$) at T4.

Thus, except for one path (from violent television watching at T3 to nicotine dependence at T4), our hypothesized model was supported.

In Table 1, the standardized total effects show that the effect of each of the latent constructs on either nicotine or drug dependence was statistically significant. Nicotine dependence had the greatest total effect on drug dependence, followed by tobacco/marijuana use at T3.

DISCUSSION

This is the first prospective study to examine the pathways from earlier violent television exposure to later drug dependence in a causal framework, using SEM. The research also makes a contribution as it examines these pathways to drug dependence in urban African American and Puerto Rican young adults.

Our results suggest that violent television exposure in late adolescence is related to three key mediators (i.e., violent television exposure, tobacco/marijuana use, and nicotine dependence), which in turn is related to drug dependence. Two pathways to drug dependence over time emerge from this model; 1) earlier violent television exposure is related to tobacco/marijuana use, which in turn is related to nicotine dependence, and ultimately drug dependence and 2) earlier and later violent television exposure are related to later drug dependence.

Contrary to our hypothesis, there was no relationship between watching violent television at T3 and nicotine dependence at T4. It could be that violent television may have an impact on nicotine dependence at an earlier stage in development but not at a later stage of development.

Our findings are consistent with the literature; (a) watching violent television and tobacco/marijuana use (8), (b) tobacco/marijuana use and nicotine dependence (24, 25), (c) nicotine dependence and drug dependence (27), (d) the stability of watching violent television over time (16), and (e) the relationship between watching violent television and later drug dependence (8). Previous studies noted above have examined these relationships separately, whereas in this study, these relationships have been integrated into a causal model.

Based on the model derived from Problem Behavior Theory (6, 7), analyses tested the conceptual model assessing the shared meaning and modeling of risk-behaviors. This research provides support for Problem Behavior Theory, in that modeling of risk-taking behaviors (watching violent television programs) is related to later risk-taking behaviors (nicotine and drug dependence). Watching violent television programs, a more passive form of problem behavior activity, may serve to encourage more active forms of later risk-taking behaviors (i.e., marijuana/tobacco use, nicotine and drug dependence). This study extends the theory by looking at the temporal order of these passive and active forms of problem

behaviors in late adolescence and in young adulthood. In addition, this study applies this theory to minority youth and young adults.

To our knowledge, this is the first study to show that earlier violent television exposure is related to later tobacco/marijuana use, which is related to nicotine dependence and later drug dependence in an exclusively African American and Puerto Rican sample. Personality and peer groups, as well as the higher percentage of substance use/abuse portrayed on violent television, might be factors in the relationship between earlier violent television exposure and later drug dependence. Clusters of risk-taking behaviors that have shared meaning can account for this relationship (6–8). In addition to the psychosocial influences, the relationship between nicotine and drug dependence may be attributed to a biological link, such as common genetic diathesis for both types of dependence (36, 38). Substance use may be a prerequisite to nicotine and drug dependence. As nicotine is highly addictive, tobacco use most often evolves into nicotine dependence (23).

This study adds to the literature by showing that there is a relationship between earlier and later television violence, which in turn is related to later drug dependence. There is some stability in watching violent television; nevertheless, there is also considerable change between the mean ages of 19 and 24 ($\beta = .23$). People who are more aggressive may be more likely to watch television earlier on and continue to watch violent television later on in life (23). Also, the extent to which watching violent television is stable may be related to reinforcement and modeling of risk-taking behaviors (8, 9, 23).

Consistent with the literature and Problem Behavior Theory, males were more likely than females to watch violent television at T3 and become nicotine and drug dependent (6, 7, 36, 38, 41). It may be more socially acceptable for men to become nicotine and drug dependent than women. This may especially be true during the childbearing age for fear of the adverse effects of nicotine and drug dependence on the fetus (e.g., neurodevelopmental disorders) (39). Negative attitudes towards smoking during pregnancy has increased, resulting in a decrease in smoking in females, especially among women in their reproductive years (39, 40). In contrast to gender, there were no ethnic or socioeconomic differences. Thus, our model has considerable generality, as it applies to individuals from different socioeconomic backgrounds, as well as to African American and Puerto Rican young adults.

It is of interest that violent television exposure seems to have long-term effects on drug dependence. Additionally, we found that nicotine dependence appears to be highly related to drug dependence. One might hypothesize that a reduction in nicotine dependence is associated with a decrease in drug dependence.

The present study has several limitations. Because the study was conducted with an African American and Puerto Rican cohort, the findings need to be replicated with diverse ethnic populations to establish the generality of the causal model. This study cannot be generalized beyond New York City. In a related vein, it may be that an underlying latent variable is responsible for the associations in this model. We can time order our data; nevertheless we are unable to make inferences regarding causality. In part, an inference between nicotine and drug dependence may not be causal as they were assessed at the same time. Additionally, the beta coefficient corresponding to the various pathways may shift from one SES to another. However, we do believe that the significance of pathways will be obtained with different SES groups. Moreover, there may be an underlying latent variable that accounts for the obtained relationships over time. Future research needs to address this issue. We have measures of nicotine and drug dependence at T4, but not at T3. Therefore, at T3 we used other substance abuse measures (i.e., tobacco/marijuana use). Violent television exposure was not measured at T1; therefore, we could not examine the stability of violent television

exposure starting in early adolescence. In addition, we did not control for early violent behavior, which might affect both exposure to television violence and substance dependence. Despite these limitations, the results of this investigation provide important new evidence regarding psychosocial pathways from earlier viewing of violent television to later drug dependence.

Policy and Clinical Implications

This research has policy and clinical implications. The results illuminate several risk factors (i.e., tobacco and marijuana use, violent television exposure, and nicotine dependence) which mediate between earlier violent television exposure and later drug dependence. There may be long-term consequences to early and continuous exposure to violent television programs. This study adds drug dependence to the list of adverse outcomes associated with exposure to violent television programs (i.e., aggression).

From a policy perspective, the findings support the importance of either curtailing or regulating the times at which violent television programs can occur. Publicizing the adverse effects of watching violent television programs may help prevent or reduce later nicotine or drug dependence. Another option is to develop programs to counteract the adverse effects of exposure to television violence. From a clinical perspective, even though this may be difficult practically, watching violent television could serve as a cue to the clinician regarding the increased susceptibility of the youngster to nicotine and drug dependence.

This study highlights the adverse effects of violent television exposure on nicotine and drug dependence. Future research should take into account the reciprocal relationship between exposure to violent television programs and substance dependence. Also, personality attributes should be studied to see what role they play in this process. In addition, future research might study other media modalities (e.g., violent video games, internet sites) and their relationships with nicotine and drug dependence.

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Figure 1. The Hypothesized Pathways of the Model

Notes:

T2= Time 2; mean age = 19.1

T3= Time 3; mean age = 24.4

T4= Time 4; mean age = 26

Figure 2. The Empirical Pathways of the Model (GFI = 0.94)

Notes:

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

T2= Time 2; mean age = 19.1

T3= Time 3; mean age = 24.4

T4= Time 4; mean age = 26.1

Number in parenthesis refers to the t value

There was a non-significant pathway between tobacco/marijuana use at T3 and drug dependence at T4 ($\beta = 0.77$, $t = 10.22$, $p < .001$)

Table 1

Standardized Total Effects of Problem Behaviors and Nicotine and Drug Dependence and Their t-Test Statistics

	T4 Nicotine Dependence	T4 Drug Dependence
T2 Violent TV Watching	0.09 (t=2.61)	0.05 (t=2.93)
T3 Violent TV Watching	x	0.09 (t=2.07)
T3 Tobacco & Marijuana Use	0.64 (t=17.82)	0.19 (t=4.95)
T4 Nicotine Dependence x	x	0.29 (t=5.15)

Notes:

X indicates no entry

T2= Time 2; mean age = 19.1

T3= Time 3; mean age = 24.4

T4= Time 4; mean age = 26.1