Predicting Exposure to and Uses of Television Violence

by Marina Krcmar and Kathryn Greene

The uses-and-gratifications tradition posits that individual needs for stimulation and for information vary systematically. These needs may affect what media sources and other stimuli are accessed by individuals. In this study we sampled adolescents and college students to examine (a) the relation between sensation seeking and exposure to violent and nonviolent television, and (b) the subsequent role that violent television may play among high sensation-seeking adolescents in their exposure to risky behaviors. Two sensation-seeking dimensions, disinhibition (positively) and experience seeking (negatively), related to adolescents' exposure to violent television. In addition, among sensation seekers, those who exhibit risk-taking behavior were not similar to those who watched violent television, making it unlikely that the two sets of behaviors can compensate for one another. We discuss implications and directions for future research.

There is no longer doubt that television violence is causally related to negative behaviors such as increases in aggression (Paik & Comstock, 1994). Less is known, however, about the factors that contribute to viewers' interest in violent television and the needs that violent television may fulfill for its audiences. These issues clearly fall under the domain of the uses-and-gratifications model that attempts to investigate not what media do to people but what people do with media. The now classic uses-and-gratifications précis seeks to understand

> the social and psychological origins of needs which generate expectations of the mass media and other sources which lead to differential patterns of media exposure (or engagement in other activities) resulting in needs gratifications and other consequences, perhaps mostly unintended ones. (Katz, Blumler, & Gurevitch, 1974, p. 20)

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In this study we sought to understand (a) the impact of sensation seeking on adolescent exposure to violent television, and (b) the role that violent television may fill in the need gratification of adolescents. Although we examined the personality correlates of interest in violent television, and not the uses and gratifications of exposure to violent content per se, we reasoned that an analysis of personality factors would provide initial information about the types of individuals who choose to watch violent television. In doing so, we could lay initial groundwork for further exploration of the ways in which these individuals use violent television. In addition, we examined adolescent sensation-seeking and its effect on exposure to violent television because adolescents, as compared to the general population, exhibit both more sensation seeking (Zuckerman, 1994) and more interest in highly stimulating media content (e.g., Arnett, 1991a; Stephenson et al., 1998).

Uses and Gratifications of Television Viewing

Uses and gratifications has typically attempted to understand individual patterns of media use, assuming that questions about why individuals expose themselves to particular media are as important as questions about the effects of various media. Although early research in the uses-and-gratifications tradition was criticized for being atheoretical in its tendency to describe various audience subgroups (Katz et al., 1974), more recent research has allowed for rapid theoretical growth. Current models, for example, stress that both personality factors and social structure may influence individuals' needs. These needs may then influence the gratifications individuals seek (from mass media and other sources), which, in turn, may influence typical patterns of media use and particular instances of media exposure. Newer models within the uses-and-gratifications tradition, then, emphasize that the route leading to media exposure is a multistage process. However, two main problems still exist in the empirical research that tests the model.

First, with a handful of notable exceptions (e.g., Conway & Rubin, 1991; Donohew, Palmgreen, & Rayburn, 1987; Finn, 1992, 1997; Weaver, 1991), uses-and-gratifications studies have examined the differential patterns of media exposure (e.g., Rubin, 1981), but have not thoroughly examined the psychological correlates of media exposure. This leaves the role of personality in determining content and genre preferences largely unexplored. Although earlier uses-and-gratifications work assumed that audiences may have ready access to their motives for choosing various content and can articulate those motives (e.g., Perloff, Quarles, & Drutz, 1983), it is likely that an understanding of the motives of exposure to a particular media content (e.g., violent television) might also be gained through more indirect investigative techniques. Specifically, assessing the personality correlates of exposure to media content allows the researcher to speculate about viewer motives without directly triggering participants' demand characteristics. In using indirect techniques, we might ultimately develop uses-and-gratifications models that describe the role of personality in generating motives for media use and the role that those motives may play in mediating the gratifications obtained from media exposure.

Second, the uses-and-gratifications traditional précis is unclear about the role of other sources in fulfilling the needs of viewers. It is possible that media may be compensatory, filling a need in individuals that may not be met by other sources. In this way, use of media may affect the use of other sources, perhaps decreasing interest in those other sources. It is equally possible, however, that audiences may use media to fulfill certain needs (i.e., gratifications sought), but when those gratifications are not obtained, individuals still look to other sources to fulfill those needs. In this way, using other sources is not affected by media use. In sum, with some notable exceptions (e.g., Finn, 1997) current uses-and-gratifications models do not consistently specify the impact of media use on individuals' use of other sources of need gratification.

When the two issues described above are applied to questions about adolescents' exposure to violent television, the questions take on theoretical and practical importance. From a theoretical standpoint, it is important to understand the relation between adolescent sensation-seeking, exposure to media violence, and subsequent risk-taking behavior. By understanding these relationships, we can begin to bridge the existing gap between the uses-and-gratifications paradigm and more traditional media-effects research. From a practical standpoint, it is important to understand the role that media violence may play for high sensation seekers. If media violence is, in fact, compensatory for high sensation seekers, we may see a relationship between sensation seeking and exposure to media violence that is quite different from the relationship between sensation seeking and real risk-taking. Answers to these questions will provide some information about the role that violent television may play for some adolescent audiences.

In the following sections, we will first address the role of personality factors in determining exposure to violent and other types of media content. Next, we will discuss the potential for media, specifically media violence, to play a compensatory role in fulfilling the needs of high sensation-seeking adolescents. Finally, we will look at adolescent risk-taking and discuss how exposure to media violence may affect real risk-taking behavior.

Personality Correlates of Television Exposure

Research into the relationship between personality characteristics and media exposure typically falls into one of three categories: studies relating personality characteristics to exposure to types of media (e.g., Finn, 1997); studies relating personality characteristics to viewing motives (e.g., Conway & Rubin, 1991); and studies relating personality factors to exposure to various media content (e.g., Weaver, 1991). In general, these studies measure personality characteristics that may be relevant to media exposure, such as openness to experience or sensation seeking, and they also measure exposure to media. For example, Finn (1997) attempted to link the five fundamental personality traits (i.e., extroversion, neuroticism, openness to experience, agreeableness, and conscientiousness) to exposure to various types of mass media. This ambitious undertaking demonstrated that openness to new experiences was positively related to movie attendance and pleasure reading. To a lesser extent, extroversion negatively predicted exposure to various media. Finn concluded that those who were more open to experience overall

were also more interested in media that were novel. Similarly, Weaver (1991) found that those who rated high on an index of psychotocism (characterized as impulsive and nonconforming individuals) were attracted to graphically violent horror films, whereas those who were more neurotic showed a preference for news and information programs. Both Finn's and Weaver's research suggests that, at the very least, personality can predict differential patterns of media exposure. More specifically, it appears that people look to the mass media to fulfill their need for stimulation.

Perhaps the variable most relevant to scholars interested in attraction to media stimulation is sensation seeking. Sensation seeking, both theoretically and empirically, is related to individuals' need for stimulation. Each of the four subscales (i.e., thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility) tests an individual's tendency to approach, rather than to avoid, novel stimuli. Although the measure is strictly self-report, the theoretical basis is biological with higher sensation seekers having higher optimum levels of physiological arousal. Sensation seeking has, in fact, been found to correlate consistently with actual physiological arousal measures (Zuckerman, 1994). It is reasonable to suggest, therefore, that high sensation seekers may attempt to fulfill their need for stimulation by using several mediated and nonmediated sources.

Donohew and colleagues were among the first to test the utility of sensation seeking in predicting message effects. High sensation seekers (HSS) had lower arousal levels and required stronger, exciting, and novel messages for attracting and holding attention, whereas low sensation seekers (LSS) had higher arousal levels and avoided exciting stimuli (Donohew, Finn, & Christ, 1988; Donohew, Palmgreen, & Duncan, 1980). Based on these findings, Donohew and colleagues concluded that messages that elicit sensory, affective, and arousal responses (i.e., have higher sensation value) are more effective for and attractive to high sensation seekers and also hold their attention more (Pugzles-Lorch et al., 1994; Stephenson et al., 1998).

Attraction to other forms of media is also related to sensation seeking. For example, Arnett (1991a) found that high sensation-seeking teens, and especially high sensation-seeking males, were more attracted to heavy metal music than low sensation-seeking adolescents. Arnett attributed this to the fact that heavy metal is characterized by "heavily distorted electric guitars, pounding rhythms and raucous vocals all typically played at extremely loud volume" (p. 573). Due to these extremes in rhythm and vocals, high sensation seekers enjoy this high sensation value music. Similarly, watching violent programs has been found to be related to arousal levels. For example, Zillmann (1971) found that watching programs with violent content tended to increase arousal levels in viewers, as measured by galvanic skin response and heart rate. Sensation seeking also predicted motives for media exposure. Conway and Rubin (1991) found that sensation seeking was positively related to the uses-and-gratifications constructs of passing time and escapism as motives for television viewing, but this held true only for the disinhibition dimension of the sensation-seeking scale.

The studies reviewed thus far found that sensation seeking, as a physiological construct, has an overall relationship with one's tendency to seek out arousing

stimuli (e.g., Donohew et al., 1988). However, the four subscales may differentially predict various behaviors. For example, Greene, Krcmar, Rubin, Walters, and Hale (1997) found that the disinhibition subscale of sensation seeking predicted adolescents' reports of their delinquent behavior, but the other three subscales (experience seeking, boredom susceptibility, and thrill and adventure seeking) were not related to delinquency. Zuckerman (1994) found that the disinhibition subscale was most predictive of alcohol use in males, but that the other three subscales were not as strongly related. It is possible, therefore, that interest in television violence, in the present study, might be differentially predicted by the four subscales. However, to date, published research has not examined the role of the sensation-seeking subscales in predicting exposure to television violence. Therefore, in the present study we took an exploratory approach to the relationship between each of the sensation-seeking subscales and interest in violent television content.

Overall, however, the theoretical framework of the sensation-seeking construct suggests, as does the empirical evidence reviewed above, that sensation seeking will be related positively to exposure to violent content. In addition, because sensation tends to increase during the adolescent years (Zuckerman, 1994), it was necessary to control for age when examining the relationship between sensation seeking and exposure to violent content. Therefore,

> H1: Controlling for overall television viewing and age, males and females who score higher on the sensation-seeking scale will report more viewing of violent programs.

Need Fulfillment and Violent Television

Although progress has been made in specifying the relation between gratifications sought (GS) from the mass media and gratifications obtained (GO) from them (e.g., Palmgreen & Rayburn, 1985), it remains unclear what role media may play in fulfilling the needs of viewers. Can media, in this case violent television, compensate for stimulation from other sources? For example, those who lack extensive social interaction are more likely to watch television (Austin, 1985) and are more likely to develop parasocial interactions with characters on television (Perse & Rubin, 1990). Similarly, those who seek companionship are likely to watch daytime soap operas (Rubin & Rubin, 1982); those who want to be informed watch news (Rubin, 1983); those who want to pass time tend to watch situation comedies (Rubin, 1983). Thus, media may be used to fulfill needs that audiences have. However, those needs are not always fulfilled. The most striking example of this phenomenon is the tendency for television to be used by the chronically lonely in attempts to alleviate loneliness. Researchers typically have found, however, that loneliness is exacerbated, not helped, by television (Finn & Gorr, 1988; Perse & Rubin, 1990; Rubin, Perse, & Powell, 1985).

What, though, occurs with media violence? We have argued that sensation seeking is likely to affect exposure to media violence, with high sensation seekers searching out the stimulation inherent in media violence. Sensation seeking, however, has also been identified as a contributor to exposure to and performance of risky behaviors (Ball, 1995; Sheer & Cline, 1994; Zuckerman, 1994). For example,

it has been associated with cocaine use (e.g., Ball 1995), risky sexual behaviors among college students (Arnett, 1991b), risky driving behaviors (Zuckerman & Neeb, 1980), exposure to heavy metal music (Arnett, 1991a), and alcohol use among adolescents (Newcomb & McGee, 1989). Specifically, Donohew, Palmgreen, and Pugzles-Lorch (1994) found that high sensation-seeking adolescents were 2 to 7 times more likely to report alcohol use compared with low sensation seekers. Gillis, Meyer-Baulburg, and Exner (1992) found sensation seeking explained 7% of the variance in risky sexual behavior. Therefore, we predicted the following:

> H2: Sensation seeking will have a positive effect on adolescent reports of risk-taking behavior.

The studies above, as well as the theoretical construct of sensation seeking, suggest adolescents perform risky behaviors to fulfill a need for stimulation. Because high sensation seekers need more stimulation, they engage in more risky, or otherwise stimulating activities. What do these findings suggest within the uses-and-gratifications framework? If media can be compensatory, as the original Katz et al. (1974) traditional précis suggested, the relation among sensation seeking, exposure to violent television, and real risk-taking would indicate that sensation seeking similarly predicts exposure to violent television and to risk-taking behavior. In short, the pattern of relationships would show that one behavior (exposure to television violence) could compensate for another (risk-taking behavior). In this case, sensation could be achieved through mediated stimulation (violent television) or through risk-taking behavior. Therefore,

> RQ1: What is the pattern of relations among sensation seeking, exposure to violent television, and risk-taking behavior, and does the pattern support the notion that television is compensatory in this case?

Method

Participants

To enable cross-sectional comparisons across adolescence we sampled junior high school and high school students (n = 381) and college students (n = 343). The junior high and high school students ranged in age from 11 to 18 (M = 15.1, SD = 1.7), college students from 18 to 25 (M = 20.7, SD = 1.6). The sample included 414 women (57%) and 303 men (42%; 7, or 1%, did not report gender). Participants were 89% Caucasian, 8% African American, 2% Hispanic, and less than 1% each of Asian participants and participants who self-identified as "other." Participants reported slightly higher education for their fathers than mothers.[1]

[1] Specifically, participants reported the following for mother's level of education: 30% completed high school or less, 26% completed some college, and 42% completed a college degree or more. For father's level of education, participants reported the following: 24% high school or less, 19% completed some college, and 53% completed college degree or more.

College students were recruited from introductory communication courses at two southeastern U.S. universities. Because no differences emerged between the two samples, we collapsed the samples for subsequent analyses. College students completed the survey outside of class time and received credit for their participation. Junior high and high school students were recruited by students trained in research methods courses who used convenience sampling to select adolescents for participation. We instructed undergraduate students enrolled in the research methods course to survey eight adolescents each. We instructed them to collect data from an equal number of males and females, and that participants had to be between the ages of 11 and 17. Furthermore, we encouraged (although not required) them to collect data from adolescents of several different ages. Each student was required to attend a 2-hour training session where procedures were described, and they practiced approach and consent procedures. After identifying likely participants, undergraduate students obtained the adolescents' and their parents' consent to participate and administered the survey in the homes of the participants. The questionnaire took approximately 45 minutes to complete and was anonymous. (Participants sealed it in an envelope separate from the consent form to increase their confidence in its anonymity.) After completing the questionnaire, participants were debriefed and thanked for their participation. Random callbacks (20% of contacts) by a research assistant occurred 2 weeks later to ensure that junior high and high school students had filled out the survey.

Procedures

This study contained two parts: (a) a survey to assess exposure to television programs, personality factors, and risk-taking behavior; and (b) a content analysis to assess levels of violence in various television programs. Although the questionnaire contained several measures, only those used here will be discussed. The survey was part of a larger project examining adolescent risk-taking and health messages.[2] Participants first filled out measures of sensation seeking. Participants then returned Part 1 to the researcher (or sealed it in an envelope). Part 2 consisted of measures of television viewing and risk-taking behavior.

Measurement Instruments

Variables measured included the following: sensation seeking, television viewing, risk-taking behaviors, and demographics.

Sensation seeking. Sensation seeking was measured by form V of Zuckerman's (1994) Sensation Seeking Scale (SSS). Zuckerman has reported extensive psychometric information about the measure, and it has been widely used in studies of risk-taking behavior. The measure consists of 40 forced-choice items. Composite scales were created by summing scores, with higher scores indicating greater need for stimulation or greater "sensation seeking." The scale is made up of four subscales: experience seeking (ES), thrill and adventure seeking (TAS), disinhibition (DIS), and boredom susceptibility (BS). Reliabilities for the four subscales were moderate to low (KR 20s: ES = .62, TAS = .82, DIS = .83, BS = .61). The items

[2] Copies of the instrument and information about related articles are available from the author.

were summed to form four composite scales with higher scores indicating more sensation seeking. The means for the sample for the four subscales were as follows: ES = 4.71, SD = 2.24; TAS = 6.87, SD = 2.81; DIS = 4.28, SD = 2.95; BS = 3.07, SD = 2.03.

Television viewing. Participants were first presented with a list of five program genres. These included sitcoms, realistic news-type programs such as *COPS,* sports such as football and hockey, sports such as golf and tennis, and national news. Participants were asked to rate how often they watched each kind of program on a 5-point scale ranging from *never* (1) to *always* (5). Second, participants were presented with a list of all the 1-hour fictional programs available during that viewing season (e.g., *Melrose Place, ER*). They were asked to rate, on the same scale, how frequently they watched each program. Among the five categories of programs, "contact sports such as football and hockey" and "realistic crime programs such as *COPS*" were considered to be aggressive programs. Sports such as hockey and football were designated as aggressive because they are contact sports and because audiences of football and hockey could be juxtaposed with audiences of tennis and golf, which are typically noncontact sports. Realistic crime shows were designated as violent because Oliver (1994) found that 58% of the segments in episodes of realistic crime shows contained physical violence. Each episode contained three or four segments, making it statistically likely that most realistic crime shows contain some violence (M. B. Oliver, personal communication, September 1997).

Content analysis. We conducted the content analysis during the fall 1995 and spring 1996. Each of 26 one-hour dramas, which aired during prime time on ABC, CBS, NBC, and FOX, were considered for inclusion in the sample. During October 1995, each program was videotaped one time. Approximately five programs were randomly selected to be recorded during the first week of October, five more were chosen to be recorded during the second week in October, and so on until all programs had been recorded once. If for some reason the chosen program had been preempted (e.g., for a football game), that program was automatically chosen to be recorded the following week. Using this procedure, one program was recorded during the first week in November. The same procedure was duplicated beginning in March. Again, an episode from each program was randomly selected and recorded. Because of cancellations, only 24 one-hour dramas were recorded during the spring.[3] The content analysis sample, then, included two randomly selected episodes from each of the hour-long dramas aired during the 1995–1996 season.

Two graduate students coded the recorded sample. During the hour-long program, the program was first divided into scenes. There was 100% agreement be-

[3] Once all programs were recorded, a graduate student coded the programs using an instrument developed for this study. To attain reliability coefficients, an additional coder viewed and coded 25% of the programs. Only the amount of time devoted to violence was used in the analysis: for *JAG* =.79, *Walker Texas Ranger* =.85, *Space: Above and Beyond* = .91, and *NYPD Blue* = .86. After reliabilities were ascertained, if a program had been coded twice, one of the two scores was randomly selected for inclusion in the analysis.

tween the two coders about the number of scenes in each program. Second, the coder timed the length of the scene and recorded that time in seconds. Third, the coder timed the amount of time devoted to violence within each scene. Violence was defined as "any physical action performed by a perpetrator, with or without a weapon, in which injury is intentionally directed at the perpetrator or at others in the scene." Timing began at the onset of the action and concluded when the violent act itself was over. Therefore, if an act of aggression was performed by person A, who then left the scene, the timing was concluded, even if the victim was still shown in the scene.

Measurement variables. To test the hypotheses, we created a new variable by combining the variables from the content analysis with those from the questionnaire.[4] For each participant, an overall all violence viewing score was created. First, the top four violent shows were selected. The top four programs were selected because (a) the total seconds of violence in each of the four programs fell more than 2 *SD*s above the *M,* and (b) only those four programs met that criteria. Those included *JAG* (282 seconds/hour), *Walker Texas Ranger* (280 seconds/hour), *NYPD Blue* (146 seconds/hour), and *Space: Above and Beyond* (152 seconds/hour). Second, for each participant, the amount of time devoted to violence for each of the four shows was multiplied by the frequency with which the participant watched that show. Participants then had a score for exposure to violence for each program. So, if they watched a very violent show infrequently they might get a similar score to someone watching a moderately violent show frequently. Lastly, the violence variable for the participants was created by summing the multiplicative scores of the top four violent programs. Ultimately, participants had an overall *exposure to violence* score, based on the amount of time they watched violent shows multiplied by the amount of time those shows depicted violence (M = 468.23, SD = 55.54). We employed the multiplicative strategy to use our identification of the most violent programs and then to use that information to determine which individuals were exposed most frequently to those violent programs. We reasoned that this number would provide the best estimate of exposure to television violence.

In addition to the all violence viewing variable, reported viewing of sports such as football and hockey (M = 3.02, SD = 1.22) and reported viewing of realistic crime shows such as *COPS* (M = 2.71, SD = 1.07) were tested using single-item measures. We measured exposure to less violent shows through self-reports of viewing situation comedies (M = 3.65, SD = 0.88) and sports such as golf and tennis (M = 2.21, SD = 1.16).

Lastly, in terms of television viewing, we wanted to devise a score to measure *total viewing* that would provide the least possible statistical confound with the other television-viewing measures. Therefore, an overall television-viewing measure was computed by summing a respondent's reported viewing frequency of each of the programs listed in the questionnaire with the exception of the four

[4] Combining data from the content analysis with data from the questionnaire to arrive at an *exposure to violence* score is a method that was developed and previously employed by Godbold and Krcmar (1997). The authors would like to thank Godbold for this data analytic contribution.

violent programs used in the *all violence* score. Although it is possible that viewing of the remaining nonviolent shows may not have adequately represented total viewing time, it is worth noting that the correlation between viewing violent and nonviolent programs was moderate but significant (r = .33, p < .01), and this would minimize the potential for statistical multicollinearity.

Risk-taking behavior. We examined five kinds of risk-taking behaviors, including drug use, risky driving, delinquency, alcohol consumption, and drinking and driving. We measured each of the risk-taking behaviors using 3 to 7 Likert-type items, for a total of 21 items. The response range was from *never* (1) to *always* (5). All items loaded onto a single factor, labeled *risk taking*. Item reliability was good (> .80) and the scale reliability was acceptable (Cronbach's alpha = .82). In this sample, alcohol use was the most frequently reported risky behavior (M = 2.30, SD = 1.12), followed by reckless driving (M = 2.22, SD = 1.02), drinking and driving (M = 2.02, SD = 1.25), delinquency (M = 1.75, SD = 0.61), and drug use (M = 1.33, SD = 0.55).

Analyses. To test the overall relation between adolescent sensation-seeking, exposure to violent and other television content, and reports of risk-taking behavior, we conducted several analyses. First, we computed zero-order correlations. Second, we computed canonical correlations for the four sensation-seeking subscales and the television-viewing variables. Third, we computed hierarchical multiple regressions for each of five television-viewing dependent variables: the all violence variable, contact sports, realistic crime shows, comedy, and noncontact sports. These were computed separately for males and females so that any possible distinctive patterns of results might be examined.[5] We analyzed noncontact sports and comedy shows to provide a potential contrast for the three violent program genres. In these regression equations, we entered overall television-viewing and age on the first step and sensation seeking on the second step. Lastly, we computed a canonical correlation to test the relation among sensation seeking, exposure to television violence, and risk-taking behavior.

Results

The zero-order correlations suggested that there was a significant positive relation between several of the sensation-seeking subscales and viewing contact sports, noncontact sports, and realistic crime shows. There were no relationships between sensation seeking and viewing comedy. However, there was a significant negative relationship between several sensation-seeking subscales and the vio-

[5] We performed initial t-tests by gender for the sensation-seeking variables, the risky behavior items, and the television-viewing variables. The results (consistent with previous research) were sufficient to justify models separate by gender. For the following variables, males scored higher with p < .001: sensation-seeking DIS, BS, and TAS; drug use; delinquency; alcohol use; risky driving; DUI; and contact and noncontact sports. For sensation-seeking ES and real crime shows males scored higher, but with p < .02. The only variable on which females scored higher was comedy shows, with p < .05. There were no gender differences on the violence-viewing variable (p = .07).

Table 1. Zero-order Correlation Matrix: Television Viewing, Risk-Taking, and Sensation Seeking (*N* = 625)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. All Violence	.21**	.25**	.13**	.06	-.08	-.04	-.04	-.14**	-.16**	-.09	-.23**	-.15*	-.08	-.13**
2. Contact Sp		.27**	.46*	.14**	.03	.15**	.14**	.22**	.17**	.13*	-.08	.16**	.03	.02
3. Real Crime			.24**	.18**	.17**	.07	.16**	.16**	.12*	-.01	-.08	.13**	.00	.14**
4. Noncontact				.10*	.04	.06	.07	.04	.11*	.16**	-.02	.14**	.01	.27**
5. Comedy					.01	.09	.12	.02	.07	.02	-.01	.08	-.02	.05
6. Drug Use						.38**	.58**	.52**	.45**	.24**	.42**	.49**	.34**	.25**
7. Risk Drive							.49**	.56**	.50**	.30**	.32**	.48**	.24**	.49**
8. Delinq								.48**	.43**	.27**	.32**	.57**	.38**	.13*
9. Alcohol									.69**	.34**	.36**	.69**	.35**	.54**
10. Drink & Dr										.17**	.30**	.48**	.25*	.42**
11. Thrill & Ad											.42**	.35**	.23**	.10*
12. Exper Seek												.45**	.27**	.24**
13. Disinhibition													.51**	.26**
14. Bored Suscept														.02
15. Age														

Note. * $p < .01$, ** $p < .001$.

Table 2. Canonical Correlation: Television Exposure and Sensation Seeking (*N* = 625)

	Root 1	
	Canonical Weight	Structure Coefficient
Set 1: Television Exposure		
Violence	.39	.12
Contact Sports	-.57	-.78*
Real Crime	-.36	-.54*
Noncontact	-.38	-.69*
Comedy	-.14	-.30*
Set 2: Sensation Seeking		
Thrill and Adventure	-.46	-.52*
Experience Seeking	.57	-.01
Disinhibition	-.92	-.78*
Boredom Susceptibility	.33	-.16

Note. *$p < .001$

lence variable (see Table 1). In addition, there was a significant positive relationship between each sensation-seeking subscale and drug use, risky driving, delinquency, alcohol use, and drinking and driving. The zero-order correlations, then, show a pattern of results consistent with H1 and H2, which predicted that sensation seeking would be positively related to exposure to violent programs and to risk-taking behavior, respectively. However, a negative, and not a positive, relationship emerged between the sensation-seeking subscales and the all violence variable.

We also computed a canonical correlation to provide a comprehensive and more sensitive test of the relationship between sensation seeking and exposure to various television genres as suggested in H1. The analysis yielded four roots, but only one exhibited a coefficient high enough ($R_c > .30$) to be interpreted. This root accounted for 59% of the common variance between sensation seeking and television viewing ($R_c = .33$, lambda = .82, $F(4, 620) = 6.39$, $p < .001$). Table 2 provides the canonical weights (similar to beta weights in a regression equation) and structure coefficients (the correlation between each variable and the overall canonical variate) for the root. By interpreting these, we can provide evidence that sensation seeking was related to viewers' television choices.

By examining the structure coefficients, we see the pattern of relationships among the variables in Root 1. Disinhibition (-.78) and thrill and adventure seeking (-.52) were the strongest predictors among the sensation-seeking subscales and were related to contact sports (.78) and, to a lesser degree, to realistic crime shows (-.54) and to noncontact sports (-.69) in Set 1. Interestingly, the violence variable was also related, but here, the direction of the relationship was reversed. Whereas contact sports, real crime, and noncontact sports viewing increased with increases in thrill and adventure and disinhibition, viewing of all violence actually decreased. In sum, the canonical coefficients in Set 1 and Set 2 suggest that the more disinhibited a person was, and the more thrill and adventure seeking they

Table 3. Summary of Hierarchical Regression Analysis for Variables Predicting Exposure to Television Content for Males and Females (*N* = 625)

	All Violence		Contact Sports		Real Crime		Noncontact		Comedy	
	Beta		*Beta*		*Beta*		*Beta*		*Beta*	
	M	F	M	F	M	F	M	F	M	F
Step 1										
Age	.00	.00	.08	-.06	.19**	.06	.33**	.23**	.05	.03
Total View	.71**	.44**	.14*	.14*	.24**	.27**	.22**	.23**	.08	.32**
Step 2										
Age	.00	.00	.08	.08	.21	.06	.36**	.25**	.06	.03
Total View	.71	.45	.15	.16	.25**	.21**	.25**	.25**	.09	.35**
Thrill & Adv	.04	.03	.06	.08	-.03	.03	.31**	.08	.05	.03
Exp Seek	-.09*	-.11*	-.29**	-.06	-.19**	-.13*	-.26**	-.08	-.04	.06
Disinhib	-.11*	-.15*	.20*	.06	.18**	.06	.03	-.06	.08	.04
Boredom Sus	-.10*	-.01	-.08	-.14*	-.02	-.05	-.05	-.02	-.08	.00

Note. Betas are standardized weights at Step 2. * $p < .05$, ** $p < .01$.

exhibited, the more likely they were to watch contact sports, noncontact sports, and realistic crime shows. To a lesser degree, these individuals also watched *less* violent drama.

To test if sensation seeking operated somewhat differently for males and females, and because the sample size was large enough to allow us to test males and females separately, we ran each of the regressions twice, first for females and second for males. For each of the tests, age and overall television-viewing was entered first as a set. The four sensation-seeking subscales were entered as a set on the second step.

Regression Equations for Males

In the first equation, we used the all violence variable as the dependent variable. Age and overall viewing were significantly related to exposure to all violent dramas for the male sample, $R^2 = .53$, $F(2, 239) = 132.00$, $p < .001$. (The final standardized betas for each of the individual variables can be found in Table 3.) On the second step, the variable of interest, sensation seeking, was entered. Sensation seeking was a significant predictor of exposure to all violent drama, $\Delta R^2 = .04$, $F(6, 235) = 5.76$, $p < .001$. Specifically, boredom susceptibility, experience seeking, and disinhibition were significantly negatively related to males' exposure to all violent drama.

In the second regression equation, exposure to contact sports was the dependent measure. This variable was somewhat predicted by age and overall viewing for males, $R^2 = .02$, $F(2, 239) = 2.67$, $p = .06$. Sensation seeking was entered on the second step and was also found significant, $\Delta R^2 = .07$, $F(6, 235) = 4.73$, $p < .001$. Specifically, experience seeking was negatively related and disinhibition positively related to exposure to contact sports for males.

Exposure to violence was also tested via self-reported exposure to realistic crime shows. With exposure to these programs as the dependent measure, overall viewing and age were significantly related to exposure to realistic crime shows for the male subsample, $R^2 = .08$, $F(2, 238) = 10.87$, $p < .001$. Sensation seeking was also related, $\Delta R^2 = .04$, $F(6, 234) = 2.57$, $p < .05$. Disinhibition was significantly and positively related, and experience seeking was negatively related to realistic crime shows for males.

In contrast, comedy viewing and noncontact sports viewing were used as the dependent variable in two regression equations. For males, overall viewing and age were not related to comedy viewing ($R^2 = .01$, $F[2, 235] = 1.71$, $p > .10$, neither was sensation seeking, $\Delta R^2 = .01$, $F(6, 231) = 1.19$, $p > .10$. For viewing of noncontact sports, overall viewing and age were significantly related, $R^2 = .09$, $F(2, 239) = 11.57$, $p < .001$. Sensation seeking was also related to viewing noncontact sports, $\Delta R^2 = .10$, $F(6, 235) = 7.06$, $p < .001$. Specifically, experience seeking was negatively related to the viewing of noncontact sports for males.

Regression Equations for Females

Next, we analyzed the data for female participants. Regression equations were computed for the violence variable, for exposure to contact sports, and realistic crime shows. As a contrast, regression equations were also computed for exposure to noncontact sports and comedy. For the all violence variable, total viewing time and age were significantly related to the dependent measure, $R^2 = .28$, $F(2, 324) = 61.50$, $p < .001$. On the next step, sensation seeking was related to the dependent measure, $\Delta R^2 = .04$, $F(6, 320) = 4.41$, $p < .001$. Specifically, experience seeking and disinhibition were negatively related to exposure to all violent drama for females (beta weights appear in Table 3).

Exposure to contact sports was also predicted by total viewing time and age, for females, $R^2 = .02$, $F(2, 324) = 4.48$, $p < .05$. Sensation seeking was related to the dependent variable on the next step ($\Delta R^2 = .03$, $F[6, 320] = 2.77$, $p < .05$), with boredom susceptibility negatively related to exposure to contact sports for females. In the next equation, total viewing time and age were related to exposure to realistic crime shows, $R^2 = .08$, $F(2, 319) = 14.78$, $p < .001$. On the second step, sensation seeking was related to exposure to realistic crime shows, $\Delta R^2 = .03$, $F(6, 315) = 2.47$, $p < .05$. Specifically, experience seeking was negatively related to exposure to realistic crime shows for females.

In contrast, exposure to noncontact sports was related to total viewing time and age for females ($R^2 = .10$, $F[2, 323] = 17.2$, $p < .001$), but sensation seeking was unrelated to exposure to noncontact sports for females, ΔR^2 change = .01, $F(6, 319) = 1.45$, $p > .10$. Lastly, exposure to comedy was predicted by overall viewing time and age ($R^2 = .08$, $F[2, 323] = 13.98$, $p < .001$), but not by sensation seeking for females, ΔR^2 change = .01, $F(6, 319) = .90$, $p > .10$.

Final Canonical Correlation

After testing the relationship between sensation seeking and exposure to various violent and nonviolent television content, a final canonical correlation was computed to test the relationship between sensation seeking, television exposure, and

Table 4. Canonical Correlation: Sensation Seeking, Violent Television Exposure, and Risk-Taking Behavior (*N* = 625)

	Root 1		Root 2	
	Canonical Weight	Structure Coefficient	Canonical Weight	Structure Coefficient
Set 1				
Thrill & Advent	-.05	-.42*	-.45	-.10
Experience	-.15	-.57*	.55**	.68*
Disinhibition	-.88	-.98*	-.68	-.22*
Boredom Susc	-.03	-.55	.47	.28*
Set 2				
Contact	-.21	-.10	-.57	-.48*
Real Crime	-.18	-.03	-.49	-.32*
All Viol	.18	.04	-.32	-.13
Drinking	-.93	-.75*	-.12	-.59*
Drink & Dr	-.63	-.13*	.14	.27*
Delinquency	-.75	-.37*	.10	.01
Risky Drive	-.67	-.12*	.00	.10
Drug Use	-.63	-.03	.53	.77*

Note. * $p < .01$.

risk taking. Again, four roots emerged, although only two exhibited coefficients high enough ($R_c > .30$) to be interpreted. The first root ($R_c = .74$, lambda = .36, $F[32, 592] = 21.14$), $p < .001$) accounted for 82% of the common variance between sensation seeking, television viewing, and risk-taking behavior. The second root ($R_c = .37$, lambda = .79, ($F(32, 592) = 6.64$), $p < .001$) accounted for an additional 12% of the common variance between sensation seeking, exposure to violent television, and risk-taking behavior.

Examination of the structure coefficients in Root 1 demonstrated that, again, disinhibition (-.98) emerged as the dominant trait in Set 1, although experience seeking (-.57) and, to a lesser extent, thrill and adventure seeking (-.42) were also related the behaviors in Set 2. The pattern of results suggested that all the subscales of sensation seeking, but especially disinhibition, were related to drinking (-.75), delinquency (-.37), and, to a lesser extent, risky driving (-.12) and drinking and driving (-.13). This root might best be described as behavioral disinhibition. Because several of the items in the disinhibition subscale referred to drinking behavior, it was not surprising that disinhibition was the dominant trait in this root. This finding will be described further in the discussion section (see Table 4).

Examination of Root 2 demonstrates that a second and distinct sensation-seeking/behavior pattern emerged; this pattern included exposure to television violence. In Root 2, the canonical coefficients suggested that experience seeking (.68), disinhibition (-.22), and boredom susceptibility (.28) emerged as the dominant subscales of sensation seeking. They were related to viewing of contact sports (-.48), viewing of realistic crime shows (-.32), drug use (.77), drinking (-.59), and drinking and driving (.27). An analysis of the canonical coefficients

and their signs suggested that experience seeking and boredom susceptibility were inversely related to contact sports and real crime exposure and to drinking, but positively related to drug use and drinking and driving. Furthermore, disinhibition was positively related to watching contact sports and real crime, but inversely related to drug use and drinking and driving. This root can best be described as high risk seeking because these experience-seeking individuals engaged in sensory stimulation that is experimental and risky. Others in this root, those high in disinhibition, decidedly avoided experimental behavior and preferred more conventional risk.

Discussion

In the first canonical correlation, which includes sensation seeking and television exposure, the pattern of results suggests that, for adolescents, disinhibition and, to a lesser extent, thrill and adventure seeking were related to exposure to contact and noncontact sports, as well as exposure to real crime shows. The regression equations, because they allow us to control for overall exposure to television, also offer some insight into the link between sensation seeking and television exposure. Specifically, for adolescent males, and to a lesser extent females, higher disinhibition leads to greater exposure to contact sports and real crime. On the other hand, higher levels of experience seeking, and to a lesser extent, thrill and adventure seeking, result in *less* exposure to violent drama, to contact sports, and to realistic crime shows.

In addition to exploring the link between sensation seeking and television exposure, we also examined the interrelations among sensation seeking, exposure to violent television, and risk taking among adolescents. The final canonical correlation revealed that, in fact, television violence does not generally appear to compensate for exposure to real risk-taking. There existed two very distinct patterns of results. One root indicated that all four of the sensation-seeking subscales, but especially disinhibition, were related to real risk behaviors, and not to exposure to television violence. These real risks included drinking, delinquency, and, to some extent, drinking and driving and risky driving. This root was labeled "behavioral disinhibition." Individuals who follow this pattern do exhibit higher levels of sensation seeking, but appear to seek out the type of stimulation that comes from actual risk-taking. These risky behaviors are somewhat common among adolescents and college students, but are not related to extreme or experimental experiences.

The second root revealed a pattern of sensation seeking where experience seeking and, to a lesser extent, boredom susceptibility were positively related to very serious risk-taking, including drug use and drinking and driving, whereas those same variables were negatively related to contact sports, real crime shows, and drinking. What this root suggests is that high experience seekers seek out stimulation, and rather extreme stimulation, in real, and not mediated, form. In addition, this root suggested that those who are disinhibited seek out mediated and more conventional risk. For this reason, this root was labeled "high risk seeking."

Implications

Both the theoretical underpinnings of the uses-and-gratifications model (Katz et al., 1974) and previous research in this paradigm (e.g., Finn, 1997) have suggested that personality variables may provide some insight into patterns of media exposure. However, little research has examined variations in exposure to media content. For example, Finn (1997) found that personality traits could predict the medium to which individuals were attracted. The next important step, then, is to begin looking at relationships among personality traits and interest in content areas. Such research can have both theoretical and practical implications.

There are several implications for the present study. First, this study provides some insight into the components of violent television that adolescent males in particular may find attractive. Second, this study offers insight into the theoretical construct of sensation seeking. Third, this study has implications for uses and gratifications. Specifically, the data lend further support to the notion that media, although providing the promise of need fulfillment, may not always satisfy audiences social and psychological needs.

Attraction of television violence. Although researchers, parents, and policy makers are quick to point to the negative effects of violent television, violent television programs continue to be popular. We might then ask what factors are related to interest in television violence and what about television violence is attractive? In the present study, disinihibition, which measures exposure to and acceptance of stimulation that is either illegal (e.g., "I like to try new and exciting things even if they are frightening or illegal") or at least not socially sanctioned, was positively related to exposure to some violent television, especially for males. Specifically, realistic crime shows and contact sports were watched more by disinhibited males; whereas DIS viewers avoided violent drama. Experience seeking, on the other hand, which measures interest in novel and exciting stimuli, was negatively related to exposure to violent drama, contact sports, real crime, and noncontact sports.

What does this pattern of results tell us about the attraction of television violence? Contrary to the predictions made in this study, it does not appear that all sensation seekers are watching more violent television, nor is it solely the violence that attracts viewers. If violence were the main attractive element, we would expect viewers of violent drama and viewers of *COPS*, for example, to be similar. This was not the case. Rather, it appears that television does not provide enough or perhaps the right kind of stimulation for viewers who are seeking novel stimuli (BS) and new experiences (ES), but it can provide stimulation for those who are disinhibited.Because DIS individuals watch contact sports, real crime, and noncontact sports, but not violent drama, it seems that they are seeking out arousal that is produced by visually stimulating and unpredictable media content. This explanation is consistent with Zillmann's (1982, 1988) findings that arousal is the primary mechanism underlying viewers' choices. In fact, it is perhaps more accurate to refer to DIS individuals' attraction to television as an attraction to arousal-inducing action and visual stimulation, and not just an attraction to violence. Violent drama, despite its incorporation of violent elements, is perhaps not arousing enough in its dramatic portrayals, even for DIS individuals. However, the

arousing content (i.e., real crime, sports) used in this study does not seem to satisfy other high sensation seekers. For other high sensation seekers in search of novelty (ES) and physically challenging experiences (TAS), television, even visually stimulating television, does not provide appropriate arousal.

In fact, it is possible that sensation seekers, as a group, do not find television to be an exciting medium and are therefore among those who do not watch television, violent or otherwise. This explanation may also help in our understanding of the findings relating to sensation seeking and television exposure. Recall that in the final canonical correlation, the first root found that, by and large, those engaging in real risk behavior were high sensation seekers, and they were not watching violent television. Only the second root began to uncover the relationship between the subscales and exposure to violent television. Therefore, we might argue that most high sensation seekers, with the exception of the DIS group, do not watch television because television does not offer the kind of stimulation they require. This idea was originally suggested by Zuckerman (1988), and the present study partially supports that notion. On the other hand, those high sensation seekers who do watch television tend to be those in the disinhibition group, that is, they are inhibited in terms of the DIS factor, but turn to television as a source of stimulation.

Sensation seeking. The present study provides some insight into the attraction of television violence for adolescent males. The data also offer some insight, however, into the construct of sensation seeking itself and into the possible relationship between sensation seeking and interest in television in general. Several studies have found that the subscales do not similarly predict a given dependent measure. For example, Greene and colleagues (1997) found the disinhibition subscale of sensation seeking predicted adolescents' reports of their delinquent behavior but the other three subscales (ES, BS, and TAS) were not related to delinquency. Zuckerman (1994) also found the disinhibition subscale was most predictive of alcohol use in males, but that the other three subscales were not as strongly related. Similarly, the present study found that the disinhibition subscale was positively related to exposure to some violent television. However, thrill and adventure seeking and experience seeking were negatively related to exposure to television violence. Therefore, it appears that the disinhibition subscale may be qualitatively different from thrill and adventure seeking, boredom susceptibility, and experience seeking. From the data in this study and from previous research, it appears that disinhibition measures exposure to behaviors that are not socially sanctioned. Although it may be true that these behaviors provide physical stimulation, it may be the social meaning carried by these behaviors and not the physiological nature of the behavior that is attractive.

Consider, for example, that disinhibition is a better predictor of alcohol use in adolescents than it is of smoking (Greene et al., 1997). Both are physical stimulants, but the former carries greater social sanctions. The remaining three subscales are also related to exposure to stimulating and arousing stimuli, but these stimuli range from exposure to heavy metal music (Arnett, 1991a) to noncontact sports. Clearly, these behaviors are not illegal, but may provide physiological arousal. Therefore, it seems more accurate to say that the subscales of sensation seeking

measure the types of stimulation that individuals will use to achieve their optimal arousal levels, but that the four subscales do not necessarily co-occur in individuals nor do the subscales show similar predictive patterns. In fact, TAS may refer to arousal triggered through physical activity, ES through novel stimuli (which television does not provide), boredom susceptibility through lack of repetition (which, again, is decidedly not associated with television viewing), and disinhibition through socially unsanctioned behavior (such as adolescent drinking and exposure to real crime shows). Perhaps the most crucial point here is that because adolescents, and people in general, can achieve optimal arousal levels in a variety of ways, it may be inaccurate to refer theoretically to high sensation seekers as a single group and subsequently sum the four measures, as is usually done. Rather, the distinctions concerning locus of arousing stimuli should be made theoretically and retained statistically because the dimensions are distinct and refer to sensation seeking of different, and perhaps unrelated, types.

It is relevant along this line of reasoning, too, that all four dimensions of sensation seeking *together* are not related to a single personality construct as measured by the major constructs identified in the literature (i.e., neuroticism, extroversion, openness to experience). Rather, DIS is related to extroversion, and ES is related to openness to experience (Revelle, 1995). These findings again suggest that, because the dimensions of SSS are related to different aspects of personality, the four dimensions should not be summed.

Need compensation in uses and gratifications. In addition to examining the role of sensation seeking in exposure to violent television, the present study sought to test how other stimuli, such as risk-taking behavior, may affect the relationship between sensation seeking and exposure to violent television. Whereas theories of uses and gratifications suggest that media *may* be compensatory, meeting needs that otherwise might be filled by nonmediated sources, this study provided further evidence that television may not necessarily compensate for real experiences. In this study, violent television did not compensate for real risk-taking behavior among high sensation seekers because the needs that violent television fill are apparently not the same needs as those fulfilled by real risk-taking. Whereas the DIS group engaged in drinking, risky driving, and exposure to visually unpredictable and arousing material, high TAS, ES, and BS individuals avoided television, violent or otherwise, perhaps finding it not arousing enough. Therefore, the DIS group engaged in both mediated and nonmediated risk. That group avoided television altogether, making it unlikely that either was engaging in television viewing as compensation for real risk.

Consistent with studies that have found that television does not help lonely people (Perse & Rubin, 1990), the compensatory abilities of media may not be extremely powerful, at least in the case of media violence and real risk-taking behavior. If media violence does not compensate for real risk-taking, it may be important to examine further which media content, if any, can compensate for real experiences. Therefore, the Katz et al. (1974) précis that states that "needs . . . generate expectations of the mass media and other sources which lead to differential patterns of media exposure (or engagement in other activities) resulting in needs

gratifications and other consequences, perhaps mostly unintended ones" (Katz et al., 1974, p. 20) may need further exploration. Specifically, the mention of "engagement in other activities" may be relevant when discussing, for example, the power of television to compensate for some low risk activities, but not, for example, the power of mediated violence to compensate for and be similar to the unmediated experience of the same activity. It is important, therefore, to examine more precisely the role of television and other media in compensating for nonmediated experiences.

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