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Influence of media on physiological arousal

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Iowa State University

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Influence of media on physiological arousal

by

Kelsey Ryder

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Human Development and Family Studies

Program of Study Committee:
Megan Murphy, Co-major Professor
Ron Werner-Wilson, Co-major Professor
Sedahlia Jasper Crase

Iowa State University
Ames, Iowa
2008

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Abstract

The influence of gender, violent media exposure, sexual media exposure, and sexual attitudes on physiological response to media was examined. A total of 34 participants (16 male and 18 female) were included in the final sample. Participants completed a measure of violent and sexual media exposure and the Beliefs About Preventing AIDS (BAPA) measure. Participants were shown movie clips with varying subject matter while their physiological arousal (heart rate and skin conductance) was recorded. Gender, media exposure, and sexual attitudes were not significant predictors of physiological response to violent and sexual media. Males and females did not differ on any variable except sexual attitudes, with males having significantly more permissive sexual attitudes than females. Contrary to previous research, these results indicate that prior media exposure and sexual attitudes have no relationship to physiological response to media.
Introduction

In the past decade, tragedies such as the school shootings in Littleton, Colorado and Jonesboro, Arkansas have refueled the debate about media’s influence on individuals. American movies and television are among the most violent and sexual in the world. On television, Americans view 27 acts of sexual behavior per hour and approximately 1,000 murders, assaults, and rapes per year (Strasburger, 1995). The influence of media containing violent and/or sexual themes on individuals has been researched using a variety of methodologies including randomized experiments, cross-sectional surveys, and longitudinal surveys (Anderson, Berkowitz, Donnerstein, Huesmann, Johnson, Linz, Malamuth, & Wartella, 2003). From the findings of this research, the question about the impact of media has shifted from “Does media have an effect on individuals?” to “How does media affect individuals?”

A myth about media is that it affects everyone the same way (Gentile, 2003). Clearly, not every individual that watches violent television (TV) commits violent acts or every individual that watches sexual movies is sexually active. Media may have a stronger influence over some individuals than others. However, little is known about how media impacts individuals. One way to explore how media impacts individuals is to examine their physiological arousal while viewing media. This link between visual stimuli and physiological arousal may provide information on media’s impact on individuals.

The purpose of the present study was to determine the physiological effects of viewing violent and sexual media on a sample of college students. Based on a review of the literature, it was hypothesized that physiological arousal (heart rate and skin conductance) while watching violent and sexual media would be influenced by the participant’s gender,
violent media exposure, sexual media exposure, and sexual attitudes. Differences in these variables may explain why media does not impact every individual in the same way. It was hypothesized that those who had been desensitized to media’s violent and sexual content would display fewer physiological signs of arousal. Specifically, it was hypothesized that males would exhibit less physiological arousal than females when viewing violent media due to greater desensitization to from prior exposure to violent media. It was also hypothesized that frequent violent media viewers, frequent sexual media viewers, and those with permissive sexual attitudes would be the least physiologically aroused while watching violent and sexual media because of their desensitization to this material.

The term permissive refers to sexual attitudes that endorse premarital sex, casual sex, recreational sex, or early initiation of sex (Chia, 2006; Peterson, Moore, & Furstenber, 1991; Somers & Tynan, 2006; Strouse & Buerkel-Rothfuss, 1993; Taylor, 2005; Ward, 2002; Ward & Rivadeneyra, 1999). For example, an individual having permissive sexual attitudes would likely agree with the statements “premarital sex is acceptable” and “sex on a first date is acceptable” (Chia, 2006). Thus, it was hypothesized that those with permissive sexual attitudes would be less physiologically aroused by violent and sexual media. The following review of relevant literature will provide background information and support for these hypotheses.

Literature Review

Heart Rate and Skin Conductance as Measures of Physiological Arousal

Heart rate and skin conductance has been used as measures of psychophysiology, or physiological arousal, for over 100 years. These measurements represent the relationship between psychological experiences, such as perception and emotional stress, and the
physiology of the body, such as sweating or increased heart rate (Hugdahl, 1995; Krantz, Forsman, & Lundberg, 2004). Furthermore, Krantz et al. (2004) found that after accounting for differences in body weight, baseline heart rates and levels of skin conductance do not differ between males and females. Thus, through examining changes in physiology, researchers have studied a variety of psychological events such as attention, perception, memory, stress, emotions, motivation, conditioning, personality, marital interactions, and family interactions (Andreassi, 1995; Hugdahl, 1995; Wagner & Calam, 1988). Heart rate and skin conductance have further been studied as measures of physiological arousal in response to media (Anderson & Bushman, 2001; Arriaga, Esteves, Carneiro, & Benedicta, 2006; Carnagey, Anderson, & Bushman, 2007; Krantz et al., 2004; Kreibig, Wilhelm, Roth, & Gross, 2007).

**Heart rate.** Heart rate is defined as the number of times the heart beats in a given amount of time (Andreassi, 1995). Heart rate has been shown to change in response to a variety of external stimuli or stressors such as physical exercise, psychological stress, cognitive exercises, attention, verbal learning, problem solving, meditation, and different emotional states (Andreassi, 1995; Hugdahl, 1995). For example, one study recorded the heart rate and skin conductance of individuals as they watched fear-inducing, sadness-inducing, and neutral film clips. On average, the individuals’ heart rate decreased while watching sadness-inducing movie clips and increased while watching fear-inducing clips (Krantz et al., 2004). Such studies indicate that viewing media can have a physiological impact on an individual as recorded by changes in heart rate.

**Skin conductance.** Electrical activity on the surface of our skin can be measured in terms of skin conductance or its reciprocal skin resistance (Andreassi, 1995). When
individuals sweat, their skin becomes wetter and thus a better conductor of electricity (Hugdahl, 1995). Sweating occurs not only in response to temperature but also in response to physiologically arousing situations. Therefore, when people sweat due to physiological arousal, their skin conductance increases and skin resistance decreases. Both skin conductance and skin resistance are appropriate measures of physiological arousal, but measures of skin conductance are preferred for statistical analysis because they follow a more logical pattern than skin resistance because as physiological arousal increases, skin conductance increases (Andreassi, 1995).

Skin conductance has been used as a measure of physiological arousal in previous studies of violent and sexual media. A study by Bernat, Patrick, Benning, and Tellegen (2006) demonstrated how skin conductance could be used to measure physiological arousal in response to sexual media. Participants viewed a variety of pictures featuring different thematic content such as erotic scenes, adventure scenes, and threatening scenes. Participants’ skin conductance increased the most when viewing erotic stimuli, and skin conductance continued to increase as the erotic pictures became more intense (Bernat et al., 2006).

Recently, skin conductance has been used as a measure of physiological arousal in a variety of studies of violent movies and violent video games (Arriaga et al., 2006; Carnagey et al., 2007; Kreibig et al., 2007). For example, Carnagey et al. (2007) studied the influence of playing violent video games on individuals’ reactions to real-life violence. After collecting baseline skin conductance and heart rate, participants played a randomly assigned video game (violent or non-violent) for 20 minutes. Physiological measures were taken again, and then participants viewed real-life violence in the form of news reports. Interestingly, those
participants who had played the violent video game had lower physiological arousal when viewing the real-life violence. This response was attributed to the process of desensitization (Carnagey et al., 2007). This study is one example of how skin conductance can be used to measure physiological arousal in response to visual media.

Desensitization from Exposure

As previously discussed, viewing violent or sexual media has been linked to an increase in physiological arousal as measured by heart rate and skin conductance (Andreassi, 1995; Hugdahl, 1995). However, research has suggested that repeated exposure to violent media is actually related to a diminished response or reaction to violence in media or in real life (Arriaga et al., 2006). Individuals who have been exposed to violence over and over actually become less physiologically aroused because they habituate to these stimuli. This phenomena is known as desensitization (Arriaga et al., 2006; Carnagey et al., 2007; DuRant, Champion, & Wolfson, 2006; Funk, Hagan, Schimming, Bullock, Buchman, & Myers, 2002).

Sexual content in the media may also shape individuals’ views of sexuality in real life. Viewing sexually-explicit content in media has been associated with elevated perceptions about the frequency of such sexual behavior in real-life (Buerkel-Rothfuss & Strouse, 1993). One study found that over time, as adolescents watch TV with sexual content, they became more accepting of the sexual stereotypes portrayed in the media (Walsh-Childers & Brown, 1993). These findings support the Cultivation Hypothesis which suggests that individuals’ perceptions of reality are influenced by the media (Buerkel-Rothfuss & Strouse, 1993). It appears that repeated exposure to both violent and sexual content may result in desensitization. Therefore, it seems that those who have the greatest exposure to
violent and sexual media may be the least physiologically aroused by it due to desensitization.

There appear to be significant differences between males and females in terms of the level and type of exposure to violent and sexual media (Arriaga et al., 2006; Carnagey et al., 2007; Funk et al., 2002). Males are often exposed to more violent media (especially violent video games) than females. Playing violent video games is considered more socially acceptable for males than females (Funk & Buchman, 1996). In fact, one study found that playing a violent video game had more of a physiological impact on females than males. This difference in physiological reaction was attributed to males being more desensitized to violence than females (Arriaga et al., 2006).

Males and females also seem to differ in their exposure to sexual content in the media. Some studies have found that females are exposed to more sexual content than males (Greenberg & Linsangan, 1993; Strouse & Buerkel-Rothfuss, 1993). This may be due to types of TV shows most commonly viewed by males and females. TV shows targeted toward men tend to focus on physical problems, whereas TV shows targeted towards women focus on interpersonal relationships (Walsh-Childers & Brown, 1993). However, one study found that males viewed a higher ratio of acts of sexual intercourse on TV than females and were more likely to view R-rated movies (which could contain sexually-explicit material) on TV than females (Greenberg & Linsangan, 1993). Since males and females may be exposed to differing levels and types of violent and sexual content (and therefore different levels of desensitization) they may have different physiological reactions to media.
Influence of Sexual Attitudes

Research has also found a link between sexual attitudes and behaviors and exposure to sexual content in the media. Sexually permissive attitudes and acceptance of sexual stereotypes have been associated with repeated viewing of sexually-explicit media content over time (Taylor, 2005; Walsh-Childers & Brown, 1993). Although such studies cannot reveal if exposure to sexual media leads to permissive sexual attitudes or if those individuals with permissive sexual attitudes seek out sexual media, these studies show a link between permissive sexual attitudes and repeated exposure to sexual media. Individuals with sexually permissive attitudes may view more sexual media content than their peers with more conservative sexual attitudes, leading them to possible desensitization to sexual content. Therefore, individuals with sexually permissive attitudes may show less physiological arousal to sexual media content.

Having sexually permissive attitudes and exposure to sexual media are also associated with engaging in sexual behaviors (Chia, 2006; Collins, Elliott, Berry, Kanouse, Kunkel, Hunter & Miu, 2004). One study found that identifying strongly with TV characters in sexual situations was related to holding recreational attitudes toward sex and greater personal sexual experience for adolescents (Ward & Rivadeneyra, 1999). Additionally, Collins et al. (2004) found that initiating sexual intercourse or progressing in sexual experience was strongly related to the amount of sexual TV watched. Participants with the highest levels of sexual media exposure were twice as likely to initiate sexual intercourse or progress in their level of sexual behavior in one year as participants with low levels of sexual media exposure (Collins et al., 2004). Finally, in a study comparing pregnant and non-pregnant adolescent females, pregnant females watched more TV overall and viewed more
soap operas than their non-pregnant peers (Soderman, Greenberg, & Linsangan, 1993). All of these studies indicate a link between sexual behavior and sexual media exposure. Similar to individuals with permissive sexual attitudes, individuals who engage in sexual behaviors may be exposed to more sexual media content and therefore more likely to be desensitized.

Individuals often choose media that reflects their personal experience (Steele, 1999). Individuals with more sexual experience or sexually permissive attitudes may seek out sexual media, whereas individuals with little personal sexual experience may be most vulnerable to media with sexually-explicit material (Wingood, DiClemente, Harrington, Davies, Hook III, & Oh, 2001). In a study of young girls and women, Brown, White, and Nikopoulou (1993) found that physical development and sexual experience were related to how the girls reacted to sexual media. Those who were the least physically mature and had the least sexual contact with a boy were uncomfortable with sexual content in media. However, as adolescent girls physically matured and began experimenting with their sexuality, they sought out sexual media (Brown et al., 1993).

Thus, there are several factors that could influence how individuals respond to violent and sexual media content. Desensitization due to frequent media exposure could influence how individuals respond to both violent and sexual media. Because of the apparent differences in exposure to media based on gender, males and females may respond differently to violent and sexual media. Finally, sexually permissive attitudes and sexual experience may also be associated with desensitization for both males and females. A link between these variables and an individual’s physiological reaction to media may help explain how media’s messages impact individuals.
Hypotheses

It was hypothesized that gender, media exposure, and sexual attitudes would influence physiological arousal (heart rate and skin conductance) while watching movie clips. Each of these variables was predicted to affect physiological arousal through the mechanism of desensitization. Due to the phenomena of desensitization, it was predicted that individuals with higher levels of violent and sexual media exposure and more permissive sexual attitudes would be less physiologically aroused (had lower heart rates and skin conductance) because they had habituated to such stimuli. Because the literature revealed that males and females may be exposed to different levels of violent and sexual media, the influence of gender on physiological arousal was less predictable.

Hypothesis 1: Gender. As previously discussed, male TV viewing and female TV viewing differ significantly in content (Walsh-Childers & Brown, 1993). Therefore, males and females may be desensitized to different types of media. Given the consistent finding that males are exposed to more violent media than females, it was hypothesized that males would exhibit less physiological arousal to violent media than females (Arriaga et al., 2006; Carnagey et al., 2007; Funk et al., 2002).

Hypothesis 2: Media exposure. It was predicted that individuals with high levels of violent media exposure would be less physiologically aroused by a violent movie clip and individuals with high levels of sexual media exposure would be less physiologically aroused by a sexual movie clip due to desensitization from exposure to these specific media types. Previous research has indicated that individuals with higher levels of media exposure exhibit less physiological arousal than individuals with lower levels of media exposure due to
desensitization (Arriaga et al., 2006; Carnagey et al., 2007; DuRant et al., 2006; Funk et al., 2002).

*Hypothesis 3: Sexual attitudes.* Because permissive sexual attitudes have been linked to higher levels of media exposure, it was hypothesized that individuals with permissive sexual attitudes would be less physiologically aroused than individuals with less permissive sexual attitudes (Taylor, 2005; Walsh-Childers & Brown, 1993). Specifically, those with permissive sexual attitudes were predicted to show less physiological arousal to a sexual movie clip because individuals with sexual experience and permissive attitudes may seek out sexual media to affirm their experiences (Steele, 1999). Within this hypothesis, it was also predicted that those with permissive sexual attitudes would also have higher levels of sexual media exposure.
Methods and Materials

This study was a secondary analysis of data collected by Werner-Wilson and Fitzharris (2001b). In the original study, the researchers collected more data than were used for this secondary study. Therefore, only information relevant to this study will be described in detail.

Sample

Participants were students from Iowa State University who received monetary compensation ($20.00) for their participation. Students were recruited during one semester from two sections of an undergraduate course on human sexuality. The first section was large with approximately 200 students. The second section was smaller with approximately 45 students. Participants did not report which section of the human sexuality course they were in for this study. A total of 44 students participated, but five participants were excluded from the final analyses because they did not report their gender. The final sample included 39 participants, 18 male and 21 female.

Procedures

Small groups of three to six participants completed the study at one time. Each group of participants was taken to a small, air conditioned lecture room (room 0333 Palmer Building, capacity ≈ 20) on the ground floor of an academic building on the Iowa State University campus. Participants sat side-by-side in a single row facing a video screen. It was not known whether participants knew one another prior to the study. However, considering that participants were recruited from two sections of one undergraduate course, it is possible that participants knew one another or were even friends.
Before being connected to any equipment or filling out any questionnaires, participants read and signed an informed consent document explaining the purpose of the research, methods to be used, potential risks and benefits, confidentiality, and voluntary participation. Participants were then connected to the physiological equipment via electrodes placed on the back of their hands to measure heart rate and skin conductance. These electrodes remained in place throughout the entire session. Then, participants completed several questionnaires including demographic information, media exposure, beliefs about HIV/AIDS, and sexual attitudes and sexual behaviors. Baseline physiological measurements were collected while the participants completed the questionnaires. For further information about the physiological equipment and the process of collecting heart rate and skin conductance measures please refer to Werner-Wilson and Fitzharris (2001a) in Appendix A.

Then, five movie clips were viewed one at a time for 10 minutes each. The clips were not randomized. Every participant saw the five movie clips in the same order. Each clip featured one general theme. For the purposes of this study, only two movie clips were used in the final analyses. Clip 1 (violent) from the movie “The Patriot” (chapters 6 and 7, until minute 41:00) featured explicit violence. This clip featured a gun fight, hand-to-hand combat, and one character killing another with a hatchet. In the original study, clip 1 (violent) was the second clip viewed out of the five original clips. Clip 2 (sexual) from the movie “Eyes Wide Shut” (chapters 17-20) featured explicit nudity/sexuality. This clip featured fully nude people engaging in explicit acts of sexual intercourse. In the original study, clip 2 (sexual) was the fourth clip viewed out of the five original clips. The original investigators developed the themes of explicit violence and explicit sexuality by viewing the movie clips and selecting a subjective label to describe the content of the clips (Werner-Wilson & Fitzharris, 2001b).
After viewing each clip, participants completed a questionnaire about the movie’s content. The time taken to complete the video content questionnaire served as a pause in which the participants’ physiological measures could return to baseline measurements before viewing the next clip. After viewing all clips and completing the corresponding questionnaire about content, the participants were thanked, paid, and dismissed. Each participant group took approximately two hours to complete the study, and the experimenter remained in the room throughout the study.

**Instruments**

*Demographic information.* Participants were asked to report their gender. Other demographic information was not collected. All original instruments can be found in Appendix B.

*Media exposure.* In the original study, participants were asked to indicate how often they viewed 10 specific types of media. For each media type, participants rated the frequency of viewing alone, with a friend, and with a boyfriend/girlfriend with 0 = never, 1 = once or twice per year, 2 = once or twice per month, 3 = once or twice per week, and 4 = nearly every day. These questions were based on a measure by Buerkel-Rothfuss, Strouse, Pettrey, and Shazer (1993, p. 107) in *Media, Sex, and the Adolescent* (edited by Greenberg, Brown & Buerkel-Rothfuss, 1993). However, in this study only six of the original 10 items were used.

These six items were used in this study to measure exposure to violent and sexual media. Exposure to violent media was calculated by averaging reported frequencies of viewing a “slasher” film at a theater (item 5) and viewing a “slasher” film on cable or video (item 6) across the three categories of alone, with a friend, and with a boyfriend/girlfriend. Exposure to sexual media was calculated by averaging reported frequencies of viewing
sexually-explicit (e.g., nudity) material at a theater (item 3), sexually-explicit material on
cable or video (item 4), books or magazines that include sexually-explicit material (item 9),
and sexually-explicit material on the Internet (item 10) across the three categories of alone,
with a friend, and with a boyfriend/girlfriend. Because prior research used the full
questionnaire (all 10 original items), psychometric information for the questionnaire reported
in those studies would not represent accurate reliability and validity for the 6 items used in
this study.

**Sexual attitudes.** The Beliefs About Preventing AIDS (BAPA) is a 36-item Likert-
type questionnaire used as a broad measure of sexual attitudes. The BAPA was developed by
subscales were measured: perceived threat of HIV/AIDS, peer support for safer sex acts, self-
efficacy, self-control in high-risk sexual situations, and expectation to prevent pregnancy.
Participants responded to statements about these topics (e.g., “If I ask to use condoms, it
might make my partner not want to have sex with me”) with 1 = agree strongly, 2 = agree
somewhat, 3 = disagree somewhat, or 4 = disagree strongly. Subscales were scored by
summing the subscale items, and several items were reverse scored. Higher scores represent
more permissive attitudes in each subscale. For example, participants with permissive sexual
attitudes would feel more comfortable buying and carrying condoms. Previous research has
shown the BAPA to have internal consistency alpha levels for these subscales ranging from
.61-.90. Prior research also found test-retest reliability coefficients for the BAPA to be
moderately high (Koopman et al., 1990).
Movie content. After each movie clip, participants completed a questionnaire about the movie’s content. Although this questionnaire served as a pause between movie clips, the movie content questionnaire was not used in this study.

Physiological measures. Using the I-330 DSP 12 Physiological Monitoring and Biofeedback System by J & J Engineering, participants’ heart rate and skin conductance were recorded every 10 seconds throughout the study as measures of physiological arousal in response to the movie clips. Measures of heart rate and skin conductance over the period of one movie clip were averaged to create an average heart rate and average skin conductance per video clip. Higher heart rates and higher levels of skin conductance indicated higher levels of physiological arousal.
Results

Preliminary Analyses

Due to technical difficulties, some participants did not have most of their physiological data recoded. Any participants missing over 50% of their physiological data or 50% of their survey data were eliminated from further analyses. Thus, five participants were eliminated from further analyses because they were missing over 50% of their physiological data. All remaining participants had at least 66% of their physiological data recorded and at least 85% of their survey data completed. The final sample included 34 participants, 16 male and 18 female.

The remaining missing physiological and questionnaire data were replaced by substituting series means for missing data. A one-way ANOVA by gender revealed that males and females did not differ on any of the missing data. Thus, an overall mean score for each item was used to fill in the missing information. Nine of the 34 participants were missing at least one item response on a questionnaire or at least one measure of physiological arousal. Less than 1% of the item responses to the violent media exposure measure were missing. From the 204 possible item responses for the violent media exposure measure (6 responses per participant * 34 participants = 204), two responses were missing. Less than 2% of the item responses to the sexual media exposure measure were missing. From the 408 possible item responses for the sexual media exposure measure (12 responses per participant * 34 participants = 408), six responses were missing. Less than 1% of the item responses to the BAPA were missing. From the 1,224 possible item responses for the BAPA (36 responses per participant * 34 participants = 1,224), 10 responses were missing.
Additionally, six of the 34 participants (less than 18%) were missing baseline measures of heart rate and skin conductance.

The physiological equipment used in the previous study by Werner-Wilson and Fitzharris (2001b) recorded skin measurements in terms of skin resistance instead of skin conductance. Skin resistance and skin conductance are reciprocals of each other. Thus, skin resistance was transformed into skin conductance by using the reciprocal of skin resistance (skin conductance = 1/skin resistance). It was these measures of skin conductance that were used in these analyses.

During analysis, heart rate and skin conductance were used as two continuous dependent variables. Independent variables were gender (categorical variable), violent media exposure (continuous variable), sexual media exposure (continuous variable), and sexual attitudes (continuous variable).

All variables were examined for deviation from normality. George and Mallery (2007) stated that to assume a normal distribution for statistical analyses, measures of skewness and kurtosis must fall within an acceptable range. They state measures of skewness and kurtosis between ±2.0 are considered acceptable and between ±1.0 are considered excellent (George & Mallery, 2007). As seen in Table 1, most variables had measures of skewness and kurtosis within the excellent range and all variables were within the acceptable range. Thus, they are considered normally distributed. Normality was confirmed visually using histograms and P-plots.

**Reliability Analyses**

Field (2005) stated that Cronbach’s α should be a value of .7-.8 to assume a measure is acceptably reliable. The measures of violent media exposure and sexual media exposure
Table 1. Measures of Deviation from Normality

<table>
<thead>
<tr>
<th></th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
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<tbody>
<tr>
<td><strong>Physiological variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart rate baseline</td>
<td>-.056</td>
<td>-.473</td>
</tr>
<tr>
<td>Heart rate clip 1 (violent)</td>
<td>-.290</td>
<td>-.116</td>
</tr>
<tr>
<td>Heart rate clip 2 (sexual)</td>
<td>-.188</td>
<td>.362</td>
</tr>
<tr>
<td>Skin conductance baseline</td>
<td>.241</td>
<td>-.451</td>
</tr>
<tr>
<td>Skin conductance clip 1 (violent)</td>
<td>.038</td>
<td>-.942</td>
</tr>
<tr>
<td>Skin conductance clip 2 (sexual)</td>
<td>-.209</td>
<td>-.574</td>
</tr>
<tr>
<td><strong>Questionnaire variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Violent media exposure</td>
<td>.275</td>
<td>-.556</td>
</tr>
<tr>
<td>Sexual media exposure</td>
<td>-.145</td>
<td>-.937</td>
</tr>
<tr>
<td>Sexual attitudes</td>
<td>-.109</td>
<td>.130</td>
</tr>
</tbody>
</table>

were reliable with $\alpha = .81$ and $\alpha = .70$, respectively. The BAPA (sexual attitudes measure) was less reliable with $\alpha = .64$. However, Field (2005) stated that values below .7 can be acceptable for measures of psychological constructs because there can be great diversity in such constructs.

Descriptive Statistics

Table 2 presents ranges, means, and standard deviations for all variables. In total, 34 participants were included in analyses, 16 male and 18 female. Table 3 presents ranges, means, and standard deviations for all variables by gender.

Correlations

Correlations were calculated among all variables to identify any significant relationships among the physiological variables and questionnaire variables. Hypothesis 3 (sexual attitudes) predicted that more permissive sexual attitudes would be associated with higher exposure to sexual media. Aside from significant correlations among the physiological measures, the only significant correlation was between violent media exposure and heart rate at baseline, $r = -.51$, $p < .01$. This result indicates that as participants’ reported level of
Table 2. Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>Mean</th>
<th>SD</th>
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<tbody>
<tr>
<td><strong>Physiological variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart rate baseline</td>
<td>(58.11, 91.62)</td>
<td>76.36</td>
<td>8.50</td>
</tr>
<tr>
<td>Heart rate clip 1(V)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>(48.29, 92.16)</td>
<td>74.57</td>
<td>10.17</td>
</tr>
<tr>
<td>Heart rate clip 2(S)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>(46.04, 92.12)</td>
<td>71.49</td>
<td>9.61</td>
</tr>
<tr>
<td>Skin conductance baseline&lt;sup&gt;*&lt;/sup&gt;</td>
<td>(1.17, 6.97)</td>
<td>3.74</td>
<td>1.47</td>
</tr>
<tr>
<td>Skin conductance clip 1(V)&lt;sup&gt;*&lt;/sup&gt;</td>
<td>(1.30, 6.90)</td>
<td>4.16</td>
<td>1.47</td>
</tr>
<tr>
<td>Skin conductance clip 2(S)&lt;sup&gt;*&lt;/sup&gt;</td>
<td>(1.37, 6.86)</td>
<td>4.18</td>
<td>1.44</td>
</tr>
<tr>
<td><strong>Questionnaire variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Violent media exposure</td>
<td>(0, 2)</td>
<td>.83</td>
<td>.52</td>
</tr>
<tr>
<td>Sexual media exposure</td>
<td>(0, 1.33)</td>
<td>.73</td>
<td>.36</td>
</tr>
<tr>
<td>Sexual attitudes</td>
<td>(107, 138)</td>
<td>123.27</td>
<td>6.89</td>
</tr>
</tbody>
</table>

n = 34. <sup>a</sup>SD = standard deviation. <sup>b</sup>V = violent clip. <sup>c</sup>S = sexual clip. *Means and standard deviations for these variables must be multiplied by 0.001 to reach the actual values.

violent media exposure increased, their heart rate before watching the video clips decreased.

Table 4 presents the correlation matrix.

Table 3. Descriptive Statistics by Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>Mean</th>
<th>SD&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M&lt;sup&gt;b&lt;/sup&gt;</td>
<td>F&lt;sup&gt;c&lt;/sup&gt;</td>
<td>M</td>
</tr>
<tr>
<td>Heart rate baseline</td>
<td>(58.11, 89.06)</td>
<td>(65.15, 91.62)</td>
<td>73.95</td>
</tr>
<tr>
<td>Heart rate clip 1(V)</td>
<td>(48.29, 89.87)</td>
<td>(61.22, 92.16)</td>
<td>71.67</td>
</tr>
<tr>
<td>Heart rate clip 2(S)</td>
<td>(46.04, 92.12)</td>
<td>(58.74, 87.06)</td>
<td>70.21</td>
</tr>
<tr>
<td>Skin conductance baseline&lt;sup&gt;*&lt;/sup&gt;</td>
<td>(1.42, 6.97)</td>
<td>(1.17, 6.15)</td>
<td>3.78</td>
</tr>
<tr>
<td>Skin conductance clip 1(V)&lt;sup&gt;*&lt;/sup&gt;</td>
<td>(2.10, 6.90)</td>
<td>(1.30, 6.37)</td>
<td>4.26</td>
</tr>
<tr>
<td>Skin conductance clip 2(S)&lt;sup&gt;*&lt;/sup&gt;</td>
<td>(2.01, 6.86)</td>
<td>(1.37, 6.23)</td>
<td>4.33</td>
</tr>
<tr>
<td>Violent media exposure</td>
<td>(0, 2)</td>
<td>(0, 1.67)</td>
<td>.91</td>
</tr>
<tr>
<td>Sexual media exposure</td>
<td>(0, 1.33)</td>
<td>(0.80, 1.25)</td>
<td>.77</td>
</tr>
<tr>
<td>Sexual attitudes</td>
<td>(114, 138)</td>
<td>(107, 131)</td>
<td>126.13</td>
</tr>
</tbody>
</table>

<sup>a</sup>SD = standard deviation. <sup>b</sup>M = male; n = 16. <sup>c</sup>F = female; n = 18. *Means and standard deviations for these variables must be multiplied by 0.001 to reach the actual values.
Table 4. Correlations Among All Study Variables

<table>
<thead>
<tr>
<th></th>
<th>HRbl</th>
<th>HR1</th>
<th>HR2</th>
<th>SCbl</th>
<th>SC1</th>
<th>SC2</th>
<th>VME</th>
<th>SME</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRbl</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR1</td>
<td>.87**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR2</td>
<td>.81**</td>
<td>.94**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCbl</td>
<td>.33</td>
<td>.29</td>
<td>.30</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC1</td>
<td>.35*</td>
<td>.31</td>
<td>.35*</td>
<td>.86**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC2</td>
<td>.32</td>
<td>.28</td>
<td>.31</td>
<td>.77**</td>
<td>.97**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VME</td>
<td>-.51**</td>
<td>-.34</td>
<td>-.21</td>
<td>-.16</td>
<td>-.21</td>
<td>-.24</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SME</td>
<td>-.13</td>
<td>-.17</td>
<td>-.08</td>
<td>.02</td>
<td>.06</td>
<td>.06</td>
<td>.15</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td>.15</td>
<td>.03</td>
<td>.03</td>
<td>.21</td>
<td>.25</td>
<td>.27</td>
<td>-.17</td>
<td>-.06</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed). HRbl = Heart rate at baseline. HR1 = Heart rate at clip 1 (violent). HR2 = Heart rate at clip 2 (sexual). SCbl = Skin conductance at baseline. SC1 = Skin conductance at clip 1 (violent). SC2 = Skin conductance at clip 2 (sexual). VME = Violent media exposure. SME = Sexual media exposure. SA = Sexual attitudes.

Analysis of Variance

An analysis of variance (ANOVA) was conducted to compare males’ and females’ measures of heart rate and skin conductance at baseline, clip 1 (violent), and clip 2 (sexual); levels of violent and sexual media exposure; and sexual attitudes. The ANOVA was conducted to test hypothesis 1 (gender) which stated males will exhibit less physiological arousal to violence than females. Table 5 presents the results of the ANOVA. The only statistically significant difference between males and females was on the measure of sexual attitudes with males having more permissive sexual attitudes than females, $F(1, 32) = 5.97, p = .02$.

Paired Sample T-tests

T-tests were conducted to compare measures of physiological arousal (heart rate and skin conductance) at baseline, clip 1 (violent), and clip 2 (sexual) to determine whether there were any significant differences in heart rate and skin conductance between the different
Table 5. One-Way ANOVA by Gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>df</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiological variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR baseline</td>
<td>1, 32</td>
<td>2.55</td>
<td>.12</td>
</tr>
<tr>
<td>HR clip 1 (V)</td>
<td>1, 32</td>
<td>2.57</td>
<td>.12</td>
</tr>
<tr>
<td>HR clip 2 (S)</td>
<td>1, 32</td>
<td>.52</td>
<td>.48</td>
</tr>
<tr>
<td>SC baseline</td>
<td>1, 32</td>
<td>.01</td>
<td>.91</td>
</tr>
<tr>
<td>SC clip 1 (V)</td>
<td>1, 32</td>
<td>.17</td>
<td>.69</td>
</tr>
<tr>
<td>SC clip 2 (S)</td>
<td>1, 32</td>
<td>.32</td>
<td>.59</td>
</tr>
<tr>
<td>Questionnaire variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Violent media exposure</td>
<td>1, 32</td>
<td>.68</td>
<td>.42</td>
</tr>
<tr>
<td>Sexual media exposure</td>
<td>1, 32</td>
<td>.28</td>
<td>.60</td>
</tr>
<tr>
<td>Sexual attitudes</td>
<td>1, 32</td>
<td>5.97</td>
<td>.02*</td>
</tr>
</tbody>
</table>

* $p < .05$.

clips. Comparisons were made between baseline and clip 1 (violent); baseline and clip 2 (sexual); and clip 1 (violent) and clip 2 (sexual) for both heart rate and skin conductance (six comparisons in all). Table 6 presents the results of these paired t-tests. All t-tests were significant except one--there was a significant decrease in heart rate from baseline to clip 1 (violent) ($t = 2.06, p < .05$), clip 1 (violent) to clip 2 (sexual) ($t = 5.18, p < .01$), and from baseline to clip 2 (sexual) ($t = 5.04, p < .01$). There was also a significant increase in skin conductance from baseline to clip 1 (violent) ($t = -3.07, p < .01$), and from baseline to clip 2 (sexual) ($t = -2.60, p = .01$). However, there was no significant change in skin conductance from clip 1 (violent) to clip 2 (sexual) ($t = -.50, p = .62$).

Regression Models

Four regression models were designed to predict either heart rate or skin conductance at clip 1 (violent) or clip 2 (sexual) from gender, violent media exposure, sexual media exposure, and sexual attitudes (2 physiological measures * 2 video clips = 4). Gender was coded as a dummy variable. These regression models were used to test hypothesis 2 (media...
Table 6. Paired Sample T-tests for Heart Rate and Skin Conductance

<table>
<thead>
<tr>
<th>Compared Variables</th>
<th>Compared Means</th>
<th>df</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heart Rate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline - Clip 1(V)</td>
<td>76.36</td>
<td>74.57</td>
<td>33</td>
<td>2.06</td>
</tr>
<tr>
<td>Baseline - Clip 2(S)</td>
<td>76.36</td>
<td>71.49</td>
<td>33</td>
<td>5.04</td>
</tr>
<tr>
<td>Clip 1(V) - Clip 2(S)</td>
<td>74.57</td>
<td>71.49</td>
<td>33</td>
<td>5.18</td>
</tr>
<tr>
<td><strong>Skin Conductance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline - Clip 1(V)+</td>
<td>3.74</td>
<td>4.16</td>
<td>33</td>
<td>-3.07</td>
</tr>
<tr>
<td>Baseline - Clip 2(S)+</td>
<td>3.74</td>
<td>4.18</td>
<td>33</td>
<td>-2.60</td>
</tr>
<tr>
<td>Clip 1(V) - Clip 2(S)+</td>
<td>4.16</td>
<td>4.18</td>
<td>33</td>
<td>-.50</td>
</tr>
</tbody>
</table>

* p ≤ .05. ** p ≤ .01. +These variable means must be multiplied by 0.001 to reach the actual variable values.

exposure) and hypothesis 3 (sexual attitudes). Hypothesis 2 stated that those with greater exposure to violent and sexual media would exhibit less physiological arousal to violent and sexual media. Hypothesis 3 stated that those with more permissive sexual attitudes would exhibit less physiological arousal to sexual media. None of the models significantly predicted either heart rate or skin conductance at clip 1 (violent) or clip 2 (sexual). Additionally, in none of the models did any of the predictor variables significantly predict the outcome variable. Table 7 and 8 present the results of the regression models.

Table 7. Overall Statistics for Regression Models

<table>
<thead>
<tr>
<th>Outcome Variable</th>
<th>r</th>
<th>r²</th>
<th>df</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate Clip 1(V)</td>
<td>.42</td>
<td>.18</td>
<td>4, 29</td>
<td>1.58</td>
<td>.21</td>
</tr>
<tr>
<td>Heart rate Clip 2(S)</td>
<td>.24</td>
<td>.06</td>
<td>4, 29</td>
<td>.44</td>
<td>.78</td>
</tr>
<tr>
<td>Skin conductance Clip 1(V)</td>
<td>.32</td>
<td>.10</td>
<td>4, 29</td>
<td>.80</td>
<td>.53</td>
</tr>
<tr>
<td>Skin conductance Clip 2(S)</td>
<td>.36</td>
<td>.13</td>
<td>4, 29</td>
<td>1.05</td>
<td>.40</td>
</tr>
<tr>
<td>Outcome Variable</td>
<td>Predictor Variable</td>
<td>$\beta$</td>
<td>$t$</td>
<td>$p$</td>
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</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------</td>
<td>---------</td>
<td>------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>Heart rate Clip 1(V)</td>
<td>Gender</td>
<td>.25</td>
<td>1.34</td>
<td>.19</td>
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</tr>
<tr>
<td></td>
<td>VME</td>
<td>-.27</td>
<td>-1.54</td>
<td>.14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SME</td>
<td>-.10</td>
<td>-.56</td>
<td>.58</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SA</td>
<td>.07</td>
<td>.39</td>
<td>.70</td>
<td></td>
</tr>
<tr>
<td>Heart rate Clip 2(S)</td>
<td>Gender</td>
<td>.12</td>
<td>.57</td>
<td>.58</td>
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<td>VME</td>
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</tr>
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<td>-.21</td>
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</tr>
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<td></td>
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<td>.05</td>
<td>.22</td>
<td>.83</td>
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<tr>
<td>Skin conductance Clip 1(V)</td>
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<td>-.01</td>
<td>.99</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VME</td>
<td>-.19</td>
<td>-1.01</td>
<td>.32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SME</td>
<td>.10</td>
<td>.56</td>
<td>.58</td>
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</tr>
<tr>
<td></td>
<td>SA</td>
<td>.22</td>
<td>1.11</td>
<td>.28</td>
<td></td>
</tr>
<tr>
<td>Skin conductance Clip 2(S)</td>
<td>Gender</td>
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<td>-.15</td>
<td>.88</td>
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</tr>
<tr>
<td></td>
<td>VME</td>
<td>-.22</td>
<td>-1.23</td>
<td>.23</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SME</td>
<td>.11</td>
<td>.60</td>
<td>.55</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SA</td>
<td>.23</td>
<td>1.17</td>
<td>.25</td>
<td></td>
</tr>
</tbody>
</table>
Discussion

As these results indicate, none of the hypotheses were supported by the results of this study. Although there were significant changes in physiological response from the baseline measures to clips 1 (violent) and 2 (sexual), there were unexpected changes. Average heart rate actually decreased significantly from baseline to clip 1 (violent) and to clip 2 (sexual). It was predicted that heart rate would increase with exposure to the violent and sexual media, given the participant was not desensitized to such media. Numerous studies have shown that heart rate fluctuates with exposure to a wide variety of stimuli including media (Andreassi, 1995; Hugdahl, 1995; Krantz et al., 2004). This decrease in heart rate over the course of the study may have occurred because participants were nervous at the beginning of the study and gradually calmed down after being connected to the physiological equipment for a while. Thus, the change in heart rate may have had nothing to do with the stimuli they were exposed to, but rather becoming familiar with the procedure of the study.

It was also predicted that skin conductance would increase from baseline to clip 1 (violent) and clip 2 (sexual). As discussed previously, prior research has shown that skin conductance changes with exposure to media (Arriaga et al., 2006; Bernat et al., 2006; Carnagey et al., 2007; Kreibig et al., 2007). Skin conductance during clip 1 (violent) and clip 2 (sexual) were both significantly higher than at baseline, but there was no difference in skin conductance between clip 1 (violent) and clip 2 (sexual). Therefore, the changes that occurred in skin conductance were expected, but the changes in heart rate were the opposite of what was expected.

Unexpected results were also found concerning gender. In hypothesis 1 (gender), it was proposed that males would be less physiologically aroused by violent media. There was
no difference between males and females in their heart rate or skin conductance while watching the violent movie clip. Gender was also not a significant predictor of either heart rate or skin conductance in the regression models for the violent movie clip. In fact, males and females did not differ on any variable except sexual attitudes. Males and females were no different in their exposure to violent and sexual media or their responses to the violent and sexual movie clips. These results are quite surprising considering the myriad of studies that conclude males are more desensitized to violent media than females due to greater exposure to violent media content (Arriaga et al., 2006; Carnagey et al., 2007; Funk et al., 2002).

Additionally, no supporting evidence was found for hypothesis 2 (media exposure). Hypothesis 2 stated that individuals with higher levels of exposure to violent and sexual media would show less physiological arousal to violent and sexual media, respectively. Previous research has demonstrated that repeated exposure to media results in decreased physiological responses to that media (Arriaga et al., 2006; Carnagey et al., 2007; DuRant et al., 2006; Funk et al., 2002). Therefore, individuals who reported high levels of exposure to violent and sexual media were expected to show less physiological response to the violent and sexual movie clips. However, media exposure was not significantly correlated with heart rate or skin conductance while watching the movie clips, nor was media exposure a significant predictor of physiological arousal for either movie clip. Interestingly, high exposure to violent media was associated with lower heart rate at baseline. Media exposure was predicted to affect heart rate and skin conductance while viewing the movie clips, not during baseline measurements. Currently, there is no explanation in the literature for this finding.
Finally, hypothesis 3 (sexual attitudes) stated that individuals with more permissive sexual attitudes would show less physiological arousal to media, specifically sexual media. It was also predicted that those with more permissive sexual attitudes would have higher levels of sexual media exposure. Neither of these predictions was supported. Sexual attitudes were not significantly correlated with sexual media exposure, and sexual attitudes were not significantly correlated with any measure of heart rate or skin conductance. Sexual attitudes were also not significant predictors of physiological response in any of the regression models.

The only significant relationship concerning sexual attitudes was with gender. Males had significantly more permissive sexual attitudes than females. This is not surprising. Several studies have shown that males endorse more permissive sexual attitudes than females and that society accepts males having sexual intercourse more than females having intercourse (Peterson et al., 1991; Strouse & Buerkel-Rothfuss, 1993). However, these different sexual attitudes did not translate into different levels of sexual media exposure or different physiological responses. This contradicts previous research that has linked permissive sexual attitudes to higher levels of sexual media exposure and less physiological response to sexual media due to desensitization (Buerkel-Rothfuss & Strouse, 1993; Steele, 1999; Taylor, 2005; Walsh-Childers & Brown, 1993).

Overall, gender, media exposure, and sexual attitudes did not appear to impact physiological responses to violent and sexual media. Because prior research has shown that these three variables should influence heart rate and skin conductance while viewing such media, these results suggest this study may have had methodological issues and other limitations.
Limitations

There were several methodological issues which may have contributed to not finding significant results. This study included only a small sample of participants who volunteered to participate. Only 44 out of the approximately 245 recruited participants chose to be included in the study. It is possible that the content of the study (e.g., media viewing habits and sexual attitudes) contributed to the low response rate (18%) because potential participants were reluctant to report such habits and attitudes. Also, the sample of participants used in this study may represent only a very small section of the wider population because they were recruited from a university human sexuality course, which is different from samples in other studies associated with media influences on physiology.

No demographic information aside from gender was collected, so it is not known whether these participants represent the general population in terms of age, race, socioeconomic status, or education. Considering participants were selected from a university course, it can reasonably be assumed that they would not represent a broader population outside of a college setting. Additionally, several participants (18%) were missing physiological data. Missing data were substituted by an overall mean for the participants. This may have limited the variability of the outcome variables and thus contributed to finding no significant relationships found.

Although they had acceptable levels of reliability, the measures used in this study may not have been valid enough to accurately measure violent media exposure, sexual media exposure, and sexual attitudes. Levels of violent media exposure were determined only by participants’ reported frequencies of viewing slasher films. However, many other genres of media contain violent content such as video games, computer games, war movies, action
movies, westerns, and even cartoons. Therefore, participants may have had much higher levels of violent media exposure than were measured by this instrument. Similarly, sexual media exposure was assessed only by four questions about exposure to sexually-explicit material (e.g., nudity) at a theater, on video or cable, in books or magazines, and on the internet. Participants may have been exposed to sexual media that did not contain what they considered to be “sexually-explicit” content because it did not contain nudity but did contain sexual dialogue or suggestive material. A more comprehensive measure of violent and sexual media exposure may have changed the results of this study.

Additionally, the method for analyzing the violent and sexual media exposure measures may have misrepresented participants’ media viewing habits. Participants’ responses were averaged across the categories of “alone,” “with a friend,” and “with a boyfriend/girlfriend.” However, if participants did not have boyfriends or girlfriends, they would have responded with a score of zero for each item which would have greatly decreased their average media exposure scores. Also, it is likely that most viewing of sexually explicit media is done alone. Thus, participants were unlikely to report viewing sexually explicit media “with a friend” or “with a boyfriend/girlfriend” which, again, would have decreased their average media exposure scores. Perhaps, using composite scores rather than averages for the violent media exposure measure and sexual media exposure measure would have yielded more descriptive results. Furthermore, if only participants’ responses to media exposure while “alone” were used in analyses, it may have been more representative of their media exposure than averaging responses across the three categories. Changing the method for analyzing violent and sexual media exposure could yield different results for this study.
In addition, the measure of sexual attitudes may have been too broad. This instrument was designed to measure beliefs about preventing AIDS. The five subscales of the BAPA measured perceived threat, self-control, self-efficacy, peer supports for safe acts, and expectation to prevent pregnancy. These subscales may have interacted in a way that skewed the overall scores. For example, participants may have sexually permissive attitudes because they believe premarital sex is acceptable but still have a high expectation for themselves to prevent pregnancy. This may be a reason why the BAPA had a reliability of only $\alpha = .64$. Perhaps excluding some items from the BAPA or choosing a more focused measure of sexual attitudes would more accurately assess this variable.

One important question that was not asked of the participants was whether or not they had ever seen the movie clips they were shown during the experiment. If they had already seen the movie, they would know what to expect. Thus, they may have had less of a physiological response to the clip than others who had not seen the movie, regardless of violent or sexual media exposure or sexual attitudes. They may have been desensitized already because they had previously viewed the movie and not through exposure to other media.

The measures of physiological response may also not have been accurate. Baseline measurements were taken prior to viewing the movie clips. However, as previously mentioned, participants may have been nervous at the start of the experiment and had unusually high heart rate and skin conductance levels. The decrease in heart rate that was found from clip to clip may have resulted from participants becoming familiar with the experiment and calming down. Also, time was given between movie clips for heart rate and skin conductance to return to baseline measures. However, return to baseline measures was
not confirmed. Five minutes may not have been enough time between clips for everyone. Furthermore, there is no way to isolate physiological responses to the movie clips from responses to other stimuli in the environment. The temperature of the room, the presence of the experimenter, the attachment of the electrodes and physiological equipment, and other extraneous factors could have altered the heart rates and skin conductance levels of the participants. Any of these factors could result in inaccurate measures of physiological response. Overall, the sample and the reliability and validity of the measures used in this study may have been limitations.

Conclusions and Future Research

Exposure to violent and sexual media and sexual attitudes appeared to have no effect on one’s physiological responses to media in this study. Although no significant results were found from this study, prior research has shown convincing results that link media exposure, sexual attitudes, and responses to media. Although much of this research has been based on correlations, there is a growing interest in physiological responses to media and the phenomena of desensitization from overexposure. Future research in this area requires very controlled experimental environments and highly reliable and valid instrumentation. It will also be very important to study how media affects individuals differently based on sex, race, socioeconomic status, household characteristics, education, and level of exposure. If those who are the most vulnerable to violent and sexual media content are, indeed, those who seek out such media, then understanding the physiological mechanisms behind these behaviors will be important.
Works Cited


Appendix A: Instructions for Physiological Equipment

Instructions for Physiological Equipment

**Load Software**

1) Boot System to MS-DOS
   a) While pressing the power button, press and hold the “Ctrl” key.
   b) From the “Microsoft Windows 98 Startup Menu,” press “5. Command prompt only” and <enter> key.

   or

1) From within Windows 98, press Start button in lower left corner
   a) Click “Shut Down”
   b) Click radio button next to “Restart in MS-DOS mode”
   c) Click “OK”

2) Load Software
   a) Type: “cd \pds”
   b) Type: “use2800”

3) Load the Program to Record 3 Heart Rates
   a) Click on “Program” (top left corner of menu bar)
   b) Scroll down and click on “Load Program”
   c) Click on “DSP3HRS.PGM”
   d) Click “OK”

**Connect Electrodes**

4) Heart Rate
   a) (-) goes on right hand
   b) (+) goes on left hand
   c) Grounder goes on either

5) Skin Resistance
   a) Velcro strip can go on either hand
   b) On the pad of the index or middle finger
   c) Clean pad with soap and water

6) Review signals to be recorded to ensure that the appropriate inputs are selected:
   a) First Column: Input A1, Input C2
   b) Second Column: N/A
   c) Third Column: Input B1, E2

**Measurement**

7) Select “Patient”
   a) Click “Select” Button
   b) Highlight appropriate session (e.g., “Session 1, Group a”) and click “OK”

8) Record and Save Data
   a) Click “Continue” Button in bottom left corner of screen
b) Click the red flashing “Record” button at the top left screen
c) After video clip, click red “End” button.
d) A WARNING box will pop up. Click “End and Save” button
e) A PROCEDURE FINISHED box will pop up. Click “OK” button
f) Click the blue “Snap” button
g) Click the blue “Hist Scr ->” button
h) Continue to click “Snap” and “Hist Scr ->” until three screens are saved.
i) After a snapshot has been taken of all data screens, click the red “Save Window” button. A popup window will appear that lists details about the session: click “Save” button.
j) Click red “Return to Main” button
k) If necessary, click red “Setup” button that returns to the “Choose Options for this Session Screen.” Click Continue.
Appendix B: Instruments

**Beliefs About Preventing AIDS (BAPA)**


Read each statement carefully. Then show your agreement or disagreement using the following scale:

"1" if you agree strongly
"2" if you agree somewhat
"3" if you disagree somewhat
"4" if you disagree strongly

_____ 1. I would feel uncomfortable buying condoms.
_____ 2. I would be too embarrassed to carry a condom around with me, even if I kept it hidden.
_____ 3. It doesn't bother me if others make fun of me because I believe in having safe sex.
_____ 4. If my partner won't use (or let me use) a condom, I won't have sex.
_____ 5. My friends have changed the way they have sex because of the AIDS epidemic.
_____ 6. I will have safe sex even if people make fun of me for it.
_____ 7. AIDS is a health scare that I take very seriously.
_____ 8. There is a good chance I will get AIDS during the next five years.
_____ 9. If I ask to use condoms, it might make my partner not want to have sex with me.
_____ 10. A person who gets AIDS has a good chance of being cured.
_____ 11. I plan on being very careful about who I have sex with.
_____ 13. I have no control over my sexual urges.
_____ 14. My friends feel that it is too much trouble to use condoms.
_____ 15. I have a high chance of getting AIDS because of my past history.
_____ 16. My partner will know I really care about him/her if I ask to use condoms.
_____ 17. I don't know how to use a condom.
_____ 18. AIDS is the scariest disease I know.
_____ 19. If I was going to have sex with someone and they made fun of me for wanting to have safe sex, I would probably give in.
_____ 20. There is still time for me to protect myself against AIDS.
_____ 21. Trying to have safe sex gets in the way of having fun.
_____ 22. I feel almost sure that I will get AIDS.
_____ 23. I know how to have safe sex.
_____ 24. Using condoms would be a sexual "turn off" for me.
_____ 25. I am not doing anything now that is sexually unsafe.

---

1 Note: The present material is based on information published in Davis et al. (1998, pp. 321-324).
26. In the future I will always be able to practice safe sex.
27. Before I decide to have intercourse, I will make sure we have a condom.
28. Once I get sexually excited, I lose all control over what happens.
29. Most of my friends think that practicing safe sex can lower the spread of AIDS.
30. If I ask to use a condom, it will look like I don't trust my partner.
31. Carrying condoms with me every day is a habit I can keep.
32. I am too young to take care of a baby right now.
33. Not getting pregnant (or not getting a girl pregnant) is very important to me.
34. I will not bother with birth control when I have intercourse with a member of the opposite sex.
35. In the future, whenever I have sexual intercourse with a member of the opposite sex, I plan to make sure we are using birth control.
36. If I wanted to have sex with a member of the opposite sex, and did not have protection, I would go ahead and have intercourse anyway.
Questions about Media Viewing

Please identify how often you view media alone, with a friend, or with a boyfriend/girlfriend. Answer each item as carefully and as accurately as you can by placing a number in each column based on the following scale:

<table>
<thead>
<tr>
<th>Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Never</td>
</tr>
<tr>
<td>1</td>
<td>Once or twice per year</td>
</tr>
<tr>
<td>2</td>
<td>Once or twice per month</td>
</tr>
<tr>
<td>3</td>
<td>Once or twice per week</td>
</tr>
<tr>
<td>4</td>
<td>Nearly every day</td>
</tr>
</tbody>
</table>

How often have you viewed …

<table>
<thead>
<tr>
<th></th>
<th>Alone</th>
<th>With a friend</th>
<th>With boyfriend/girlfriend?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>an R-rated movie at a theater?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>an R-rated movie on cable or video?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>sexually-explicit (e.g., nudity) material at a theater?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>sexually-explicit (e.g., nudity) material on cable or video?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>a “slasher” film at a theater?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>a “slasher” film on cable or video?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>an X (NC-17)-rated movie at a theater?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>an X (NC-17)-rated movie on cable or video?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>books or magazines that include sexually-explicit (e.g., nudity) material?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>sexually-explicit (e.g., nudity) material on the internet?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Appendix C: IRB Exemption Letter

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

DATE: September 6, 2007
TO: Kelsey Ryder
4380 Palmer Bldg.

CC: Dr. Megan Murphy
4380 Palmer Bldg.

FROM: Jan Canny, IRB Administrator
Office of Research Assurances

IRB ID: 07-382
Study Review Date: 29 August 2007

The Institutional Review Board (IRB) Chair has reviewed the project, “The influence of media on physiological arousal” (IRB ID 07-382) and has declared the study exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b), Exempt Category (4). A description of this exemption category can be found in the list on the next page. Please note that you must submit all research involving human participants for review by the IRB. Only the IRB may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

The IRB determination of exemption means that this project does not need to meet the requirements from the Department of Health and Human Service (DHHS) regulations for the protection of human subjects, unless required by the IRB. We do, however, urge you to protect the rights of your participants in the same ways that you would if the project was required to follow the regulations. This includes providing relevant information about the research to the participants.

Because your project is exempt, you do not need to submit an application for continuing review. However, you must carry out the research as proposed in the IRB application, including obtaining and documenting (signed) informed consent if you have stated in your application that you will do so or if required by the IRB.

Any modification of this research should be submitted to the IRB on a Continuation and/or Modification form, prior to making any changes, to determine if the project still meets the Federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.
Appendix D: Annotated Bibliographies


**Topics: Violent Movies, Trait Hostility, State Hostility, Gender**

**Experiment 1**

**Methodology:**

- **Sample.** 53 Iowa State University undergrads (some enrolled in introductory psychology class) were used in this study.

- **Design.** A 2x2 design gender (male v. female) x movie (violent v. nonviolent) was used.
  - Students viewed a 15 minute movie clip (either violent or nonviolent). Then, students filled out a background questionnaire.
  - Students then completed a computer task in which they read words aloud and reaction time was recorded (words came from four categories- aggressive, anxiety, escape, control).
  - Then, students were given a state hostility measure.

- **Measures:** State hostility scale
  - 35 Likert scale questions such as, “I feel furious,” were scored from 1 (strongly disagree) to 5 (strongly agree).

**Results:**

- There was a main effect of movie type on state hostility. Those who watched violent movie clips had significantly higher measures of state hostility.

- There was no main effect of gender or gender/movie interaction on state hostility.
It was hypothesized that watching violent movie clips would prime students to access the “aggressive” words in the computer task faster (lower reaction time). There was no significant main effect of movie or gender or an interaction of gender/movie. However, males had slightly faster reaction times to aggressive words than female. This supports the idea that males are exposed to more violence and therefore have greater accessibility to aggressive thought.

**Experiment 2**

**Methodology:**

- Sample. 66 Iowa State University undergrads (both male and female) participated.
- Design. The design was identical to experiment 1, except for the addition of a trait hostility measure previous to watching the movie clips.
- Measures. Caprara’s Irritability Scale (30 item version)
  - Likert scale questions reflected irritability (“When I am irritated, I need to vent my feelings immediately.”) or lack of irritability (“I never have been touchy.”)
  - Items were scored from 1 (disagree strongly) to 7 (agree strongly).
  - Lack of irritability questions were reverse scored.

**Results:**

- Participants who viewed violent movie clips scored higher on the state hostility measure then those who viewed the nonviolent clips. Scores on the trait hostility measure were positively correlated with scores on the state hostility measure.
• Those who scored higher on the trait hostility measure scored higher on the state hostility measure, regardless of which movie they watched. Males reported higher levels of state hostility than females.

• Those who watched the violent movie clip had faster reaction times (greater aggression accessibility) to the “aggressive” words in the computer task. Viewing the violent movie increased aggression accessibility for those with low trait hostility, but had little impact on those with high trait hostility. These results seem to support the concept the violent media prime aggressive thoughts and that males have greater access to aggressive thought than females.


**Topics: Literature Review, Violence, Children and Adolescents**

**Literature Review:**

• *Randomized experiments.* In a study by Bjorkqvist (1985), 5 to 6 year olds watched either violent or nonviolent films (p. 85). Two raters, blind to condition, observed and rated the children for physical assault (hitting, wrestling) on other children in a room. Those who viewed the violent films rated higher on physical assault (p < .001).

• Josephson (1987) had 7 to 9 year old boys (n= 396) watch a violent or nonviolent movie and then observed them playing floor hockey (p. 85). Blind observers recorded the number of times each boy physically attacked another (hitting, shoving,
etc.). In some conditions, the hockey referee carried a walkie-talkie which had appeared in the violent film and supposedly served as a cue to remind the boys of what they had seen. Aggressive boys (those who scored above average on an aggression measure) who had seen the violent film and the associated cue committed more assaultive behavior than any other combination of film and cue.

- Donnerstein and Berkowitz (1981) had college men watch either a violent sex film, a nonviolent sex film, or a film without sex or violence (p. 85). The men were given an opportunity to retaliate against a woman who had previously angered them by shocking her. Men who had seen the violent sex film punished the woman more severely than did the other men. The effect size was $r = .71$.

- **Cross-sectional surveys.** McLeod, Atkin, & Chaffee (1972) found correlations between aggressive behavioral delinquency (hitting, fighting, etc.) and TV viewing. Correlations between .17 ($p<.05$) and .28 ($p<.01$) for both males and females were found (p. 86).

- Belson (1978) studied English boys ages 12 to 17. Heavy TV violence viewers in this sample committed 49% more violent acts in the past six months than light violence viewers. Correlations between media violence and aggression are usually higher for elementary school-aged children than teenagers and adults (p. 86).

- **Longitudinal surveys.** Using 856 young boys and girls in Columbia County, New York beginning in 1960, Eron et al. (1972) found that exposure to violent media at age 8 was significantly related to aggressive behavior 10 years later ($r = .31, p<.01$). Aggressiveness was assessed by classmates’ answers to questions about other classmates’ aggressiveness. Aggressiveness at age 8 did not predict viewing of
violence at age 18, so it is unlikely that the correlation is the result of aggressive youth liking to watch more violence than non-aggressive youth. This addressed the “chicken and the egg problem.” For the girls, no relationship was found between exposure to violence and aggressive behavior (p. 86).

- Meta-analysis by Anderson & Bushman (2002) on 42 studies of media exposure and aggressive behaviors found a statistically significant effect size of .17. From these studies they drew the conclusions that high exposure to violent TV in early childhood can promote aggression in later childhood, adolescence, and young adulthood (p. 88).


Topics: Meta-analysis, Video game violence, Cognition, Affect, Arousal, Prosocial behavior

Methodology:

- Sample. A meta-analysis of 35 research reports, involving 54 independent samples and 4,262 participants (46% of participants were under 18 years old) was conducted.

- Design. Meta-analysis was done.

Results:

- Across 33 studies, a correlation of $r = .19$ was found between video game violence and aggression.
• For experimental studies of video game violence and aggression, a correlation of $r = .18$ suggests short term exposure to violent video games causes at least a temporary increase in aggressive behavior.

• A higher correlation was found if the object of aggression was an inanimate object ($r = .41$) than if the target was another person ($r = .14$).

• Non-experimental studies produced an $r = .19$, suggesting video game violence is associated with violence in the real world.

• Eight studies of exposure to violent video games and pro-social behavior yielded a negative correlation, $r = -.16$, meaning exposure to violent video games was related to decreased pro-social behavior.

• Twenty studies of violent video games and aggressive cognition resulted in a correlation of $r = .27$. Exposure to violent video games at least temporarily increases aggressive thoughts.

• Seventeen studies of violent video games and aggressive affect resulted in a correlation of $r = .18$. Exposure to violent video games at least temporarily increases aggression by increasing aggressive feelings of anger or hostility.

• Seven studies of violent video games and physiological arousal resulted in a correlation of $r = .22$. Exposure to violent video games increases physiological arousal.


**Topics:** Violent video games, Aggressive behavior, Females
**Methodology:**

- **Sample.** Ninety-one undergraduate females were assigned to one of three conditions: violent video game with female character, violent video game with male character, and nonviolent video game.

- **Design.** Students were assigned to one of three game conditions.
  
  - After playing the video game, students completed the Taylor Competitive Reaction Time (TCRT) Task. During this task, participants compete against an opponent to see who can respond first after hearing a tone. The “loser” for each round receives an aversive stimulus (loud sound) the intensity of which is determined by the winner. However, there is no real opponent. The pattern of wins and loses and the level of intensity received by the participant is predetermined. Aggression is measured by the level of intensity the participant sets for the opponent to receive.
  
  - Following the TCRT Task, participants completed a questionnaire about their motives for setting the intensity levels. Participants rated motives from 1 (not at all) to 5 (a lot). The motives listed were: I wanted to impair my opponent’s performance in order to win more; I wanted to control my opponent’s level of responses; I wanted to make my opponent mad; I wanted to hurt my opponent; I wanted to pay back my opponent for the noise levels he/she set; I wanted to blast him/her harder than he/she blasted me. The first two motives were categorized as instrumental motivation and the last four as revenge motivation.
Results:

- Instrumental and revenge motivation was positively correlated to the number of high intensity blasts delivered by the participant. Revenge motivation was a stronger correlation.

- Students who played the violent video game had higher levels of revenge motivation than students who played the nonviolent game.

- A non-significant difference between character types was found. Students playing the violent game with a female character had higher levels of revenge motivation than students playing the violent video game with a male character.

- Students who played the violent video game with a female character tried to administer more very loud blasts to opponents than those who played the nonviolent game. However, those in violent game-male character condition did not differ significantly on aggressive behavior than those in the nonviolent group.

- These results indicate evidence, although weak, for the same-sex identification effect which posits that people identify more closely with characters of the same sex than opposite sex. This identification could result in a greater effect from the media.


**Topics: Heart rate, Skin conductance**

**Skin conductance:**

- Sweating is reflected in changes of skin conductance (SC) and occurs during emotionally arousing situations (p. 169).
• SC increases with higher levels of arousal and decreases at lower levels.
• Skin resistance is the reciprocal of SC.
• SC is preferred over SR because it follows a more logical pattern and is better suited for statistical procedures because it follows a normal distribution (p. 170).
• SC is measured in mho(s).
• A study by Geen & Rakosky (1973) measured SC while men observed violence from a movie clip. Before watching the clip, the men were either told a explanation of the clip that highlighted its violence or highlighted it as fictional. The fictional group had lower SC while watching the clip. This was thought to occur because the men could dissociate from the violence because it was fictional.
• A study by Hamrick (1974) showed increased SC while participants were exposed to erotic stimuli (slides of nude males).
• When presented with physical or emotional stimuli, electrical changes occur on the surface of the skin.

**Heart rate:**
• Heart rate changes during different emotional states and during stressful situations.
• Heart rate is the number of heart beats in a given period of time.
• A study of heart rate recorded children’s heart rate as they watched different movie clips. Heart rate decreased for sad movie clips and increased for anxiety-provoking clips.

**Topics: Uses of media**

**Entertainment:**
- Adolescents use media as entertainment to have fun.
- Media also represents a temporary escape from life.

**Identity Formation:**
- Media often influences ideas about gender role identity.
- Media provide romantic and sexual scripts for adolescents.
- Media may also provide information that help adolescents form ideas about politics, values, and occupations they want to pursue.

**High Sensation:**
- Adolescents usually seek more sensation than adults.
- Media can provide high levels of stimulation and sensation to adolescents.

**Coping:**
- Adolescents use media to relieve negative emotions.
- Heavy metal music, in particular, is often used to purge anger.
- Adolescents may use media to gain information to relieve anxiety (e.g. adolescents in war zones may use media information to understand what is happening).

**Youth Culture Identification:**
- Media may give adolescents a sense of connection to a larger peer group.
• Adolescents almost anywhere in the U.S. can find other adolescents who like the same music, TV, or movies.

• Adolescents may use media to create a subculture.

Socialization:

• Media is unlike other socialization agents (parents, legal institutions, etc.) because they are not motivated to promote social order or pass on cultural values to the next generation. Rather, media is motivated by the ways adolescents will make use of the media. The media is market-driven.

• Adolescents have greater control of their socialization from the media than other sources.

• Adolescents often make choices about media use regardless of parents’ views.


Topics: Violent computer games, Hostility, Arousal, Desensitization

Methodology:

• Sample. Participants were 87 undergrads (53 males, 34 female) age 18 to 25 at different universities in Lisbon, Portugal. Participants were randomly assigned to 1 of 4 groups: non-violent action-oriented games (Lotus), non-violent non-action games (Flowers), violent action games played on a computer (Doom I), and violent action games played with a virtual reality headset (Doom I).

• Measures.
Aggression was measured by the Portuguese version of the Aggression Questionnaire measuring physical aggression, verbal aggression, anger, and hostility.

Anxiety was assessed with the State-Trait Anxiety Inventory which measures state and trait anxiety.

State hostility was measured by the State Hostility scale translated in Portuguese.

Arousal was measured by heart rate (HR) and skin conductance levels (SCL).

Participants rated the video games for game action, frustration, perceived violence, perceived reality, excitement, enjoyment, absorption in the game, nausea, and dizziness.

Procedure.

Participants completed questionnaires about electronic game habits one month before the experiments.

Baseline HR and SCL were collected.

All participants first played the game Tetris and had physiological scores collected.

Then each participant played the game they were assigned to (all participants had received game instructions prior to starting) and scores were collected.

After playing the game assigned to them, participants completed state hostility and state anxiety questionnaires.

Results:

Boys spent more time playing video games than girls.
• Females reported higher state anxiety than males.

• Participants who played the violent game on the computer reported higher state hostility than those who played non-violent games.

• Playing violent video games seems to have more of an impact on females than males as they had higher levels of arousal.

• However, self reports of excitement did not differ by gender. This could be because males have more exposure to violent video games and have physiologically habituated to the violence.

• The use of virtual reality technology did not differ from using the computer, despite the hypothesis that great immersion in the game would make it more realistic.


**Topics: Physiological arousal, Sexuality**

**Methodology:**

• Sample. Participants were recruited through a student newspaper from the University of Minnesota. The final sample included 48 males, average age 19.81. Participants were screened for visual and hearing impairments.

• Procedure.
  
  ▪ Participants completed a biographical questionnaire including health information, medication use, and visual or hearing impairments.
  
  ▪ Then, participants were connected to the electrodes used to measure physiology and put on earphones.
A series of 66 pictures were viewed on a screen. Participants were told to ignore any noises heard through the earphones. After viewing the picture, participants rated their reactions to it according to its pleasantness, arousal, dominance, and interest.

**Measures.**

- The pictures used represented different thematic content. Pleasant pictures featured erotic scenes and adventure scenes. Unpleasant pictures featured victimization and threatening figures or weapons. Neutral pictures featured inanimate objects such as household appliances.
- During the presentation of the pictures, 54 startle probes (loud sounds) were sounded during various points of the picture presentation.
- Muscle reactions, blink reactions, heart rate, and skin conductance were measured.

**Results:**

- Skin conductance was significantly higher when viewing erotic pictures than other visual themes.
- As the intensity of the erotic images increased, skin conductance also increased.


**Topics:** Sexual media, Adolescent females
Methodology:

- Sample. Nineteen white, middle-class girls age 11 to 15 living in Michigan were interviewed. Participants were selected because the interviewers knew them or were suggested to the interviewer by other participants.

- Procedure. This project was a small, ethnographic study. Girls were asked to keep journals for a month about any use of sex or relationships in the regular media they observed. At the end of the month, the girls were interviewed in their bedrooms. Interviewers were white women age 25-37. During the interview, the girls filled out a questionnaire assessing their sexual behavior. From these interviews, the girls were classified into one of three categories based on their pattern of sexual media use: disinterested, intrigued, or resisting.

Results:

- The disinterested girls, despite encouragement, did not pay attention to the use of sexual content in media. These girls were the least physically mature and the least likely to have had erotic physical contact with a boy. These girls saw sex as “gross.”

- The resisting girls rejected the sexual content in media. They were the most critical of the media and most unhappy because real-life relationships did not resemble the relationships in the media. These girls were also the most physically mature and more likely to have had erotic physical contact with a boy.

- The intrigued girls were in between the other two groups. Some had had erotic physical contact with a boy, but none had had intercourse. These girls sought out sexual media content for advice, models, and fantasy.
• The girls became more interested in sexual media content as they physically matured and experimented with their own sexuality.


Topics: Media exposure, Perceptions of sexual behavior

Methodology:

• Sample. Undergraduate students (n = 343) in a communications class at a university in the Midwest took part. The students were 38% male and 62% female, most predominately middle-class. The average age was 18. Since all students at the university must take this class, the sample was representative of the 17,000 students at the university.

• Procedure.
  
  o Students rated how often they viewed daytime soap operas (0 to 5 days a week).
  
  o Students also rated how often they viewed prime-time TV shows (0= never to 5= every week). The prime-time shows were divided into five categories: action/adventure (The A-Team), situation comedies (Three’s Company), evening serial dramas (Dallas), “hi-brow” evening serials (St. Elsewhere), and love shows (Fantasy Island).
Students were also asked questions about sexual attitudes and exposure to other sexual media (MTV and pornography).

Finally, students were also asked their perceptions of male and female sexual behavior in the real world.

**Results:**

- High exposure to sexual content on TV was associated with increased perceptions of frequencies of sexual behavior in the real world. These findings support the Cultivation Hypothesis that suggests the media influences a person’s perception of the real world.

- Erotic media was the best predictor of perceptions of erotic behavior in the real world.

- Popular media predicted perceptions of more ordinary sexual behaviors.

- Daytime and prime-time serial dramas were associated with perceptions about problems with sex, sex without love, frequent sex, and virginity.

- MTV was associated with bragging about sex.


**Topics: Violent video games, Arousal, Desensitization**

**Methodology:**

- Sample. Participants included 257 college students (124 men, 133 women) who received extra credit for their participation.
• Procedure.
  o A baseline for heart rate (HR) and galvanic skin response (GSR) was measured for five minutes.
  o Before the experiment, students were evaluated for video game preference and trait aggression. A sample item from the aggression measure was “Given enough provocation, I may hit another person.”
  o The electrodes were removed, and students played one of eight randomly assigned video games for 20 minutes. (4 violent video games, 4 nonviolent video games)
  o A second set of HR and GSR measures were taken for 5 minutes.
  o Students then watched a 10 minute video of real-life violence, while having HR and GSR measured constantly.
  o Students then rated the video games they had played from 1 (strongly disagree) to 10 (strongly agree) for action-packed, frustrating, enjoyment, fun, absorbing, arousing, boring, entertaining, exciting, involving, stimulating, addicting, and violent.

Results:
• HR measures did not differ between the violent game and nonviolent game groups at baseline and after playing the game.
• HR of the violent game group did not change when viewing the real-life violence.
• HR of the nonviolent game group increased while viewing the real-life violence.
• GSR was similar for violent and nonviolent game groups during the baseline and after game measurements.
• GSR decreased for the violent game group while watching the real-life violence, it increased for the nonviolent game group (not significant).

• Playing a violent video game, even for 20 minutes, may cause people to become less physically aroused by real-life violence.


Topics: Media exposure, Sexuality

• As children physically develop at earlier and earlier ages, they may be physically capable of sexual behavior long before they are emotionally ready (p. 799).

• Adolescence is a time when young people develop their personal identities, form intimate relationships with others, develop sexual identities, and start to become independent from their parents. As children break away from their parents, they may turn to the media as a new source of information (p. 801).

• The theoretical framework of Uses and Gratification can improve understanding about sexual behavior and attitudes. Arnett (1995) proposed that adolescents use the media as entertainment, identity formation, high sensation, coping, and youth culture identification. The media is different than other socializing agents because it is profit-driven and controlled more by the adolescent (p. 802).

• Bandura (1977) conducted studies which indicate that sexual behavior is influenced more by social conditioning than hormonal stimulation (p. 804).

**Topics: Media, Sexuality, Peers**

**Methodology:**

- **Sample.** Participants included 213 University of Wisconsin-Madison students between age 18 and 19 (75% female, 88% Caucasian, 81% reported religious affiliation).

- **Design.** A survey measuring how frequently adolescents watch TV with sexual content and how often they believe peers watched such TV was administered.
  
  - Two scales were used to measure sexual attitudes about sexual permissiveness. Participants rated their agreement with statements about sexual permissiveness (e.g. “premarital sexual intercourse for young people is acceptable to me”) from 1 (strongly disagree) to 7 (strongly agree).
  
  - Participants also completed a scale measuring their likeliness to engage in premarital sex and casual sex if given the opportunity.
  
  - Participants were also asked if they believed sexual content on TV influenced their peer’s sexual attitudes.
  
  - Participants were asked to estimate the sexual attitudes of their peers too.

**Results:**

- A positive correlation was found ($r = .58, p < .001$) between exposure to sexual content on TV and participant’s perceptions of peers’ consumption. The more sexual TV a person watched, the more likely they were to believe their peers were exposed to the same content.
• The more participants believe their peers were exposed to sexual content, the more they thought the media influenced their peers and the more participants perceived sexual permissiveness in peers.

• Participants with more sexually permissive attitudes perceived their peers to have sexually permissive attitudes.

• Sexual permissive attitudes are related to likelihood to engage in sexual activities. Permissive attitudes were associated with engaging in premarital sex, sex earlier in dating, and casual sex.

• These findings suggest that media’s influence on adolescents’ sexual behavior is mediated by their peers.


**Topics: Media exposure, Sexuality**

**Methodology:**

• Sample. A list of households with a high probability of having 12 to 17 year-olds was purchased. Minority participants were over-sampled because such participants are usually underrepresented. Participants included 1,762 youths who completed both surveys (surveys were administered 1 year apart). From this sample, 48% were female, 77% Caucasian, 13% African American, 7% Hispanic, and 4% Asian or another race.

• Measures. Exposure to sexual content was assessed.
A list of 23 popular television shows known to have sexual content was developed using Nielsen ratings and other sources for shows most often watched by males and females age 12-17. These shows were coded for sexual content.

Average hours of TV viewing were assessed by 5 questions about viewing on various days of the week and times of day.

Sexual behavior was assessed by asking participants whether they had ever: kissed, made-out, touched a breast/had their breasts touched, touched genitals/had their genitals touched, given or received oral sex. Scores ranged from 1 (only kissed or no sexual activity) to 5 (everything including oral sex). Participants were also asked if they had ever had sexual intercourse with a boy or girl (penile-vaginal penetration).

Covariates were also measured including: age of friends, living with both parents or not, parental education, parental monitoring, mother’s work status outside the home, and perceived parental response if sexual activity of the participant occurred. These covariates are environmental factors used to predict initiation of sexual activity.

Participants were also asked to report their school grades and educational aspirations.

Finally, participants completed measures of self-esteem, sensation-seeking, mental health, religiosity, and deviant behavior.
Results:

- Amount of sexual TV viewed was strongly related to progression in sexual activity over the year between interviews.
- Those who viewed the highest level of sexual TV doubled the likelihood of initiating sexual intercourse or advancing at least one level in sexual activity.
- After controlling for the covariates, these relationships were weaker but still significant.
- Among those who reported being virgins at the first interview and initiation of intercourse at the second interview, the following factors were significantly related to initiation of sexual intercourse: older age, having older friends, getting low grades, deviant behavior, and sensation-seeking.
- Parental monitoring, parent education, living with both parents, having parents who would disapprove of sexual activity by the adolescent, religiosity, and good mental health were related to low probabilities of initiation of intercourse.


Topics: Media exposure, Violence, Desensitization

Methodology:

- Sample. A simple random sample of 2,485 high school students in Winston-Salem/Forsyth County, North Carolina high schools was used. Of these participants,
2,228 completed the survey, and 1,935 completed the follow-up survey 6 months later. Participants were 48.8% female with an average age of 15.6 years.

- Measures. Students completed a questionnaire measuring the frequency of health-risk and problem behaviors. Questions came from the Centers for Disease Control and Prevention. The Youth Risk Behavior Survey included questions about fighting with a date, fighting with a boy/girlfriend, carrying weapons, use of alcohol and drugs while fighting, and viewing of professional wrestling.

Results:

- Watching professional wrestling on TV was significantly associated with the frequency of substance use, fighting, and carrying a weapon.

- For males, the frequency of watching professional wrestling was positively associated with being involved in a date fight (as perpetrator or victim). This relationship was found even stronger for females.

- Even though females reported watching wrestling less frequently than males, the associations to fighting behaviors were stronger. This may be due to desensitization to violence that has occurred in males who have been exposed to a lot of media violence.

- Watching professional wrestling at the time of the first survey (Fall 1999) was associated with date fighting (as perpetrator or victim) at the time of the second survey (Spring 2000) for females, but not males.

- There may be a gender-bias in reporting, as males may not want to admit to participation in dating violence.

**Topics: Media exposure, Violence, Desensitization**

**Methodology:**

- **Sample.** In this study, 150 children from private, Catholic schools and public day cares participated. Eighty-two males and 68 females from grades 4 and 5 participated. The average age was 9.99 years. Of these participants, 58% were European American and 24% African American.

- **Measures.** The background questionnaire included basic demographic questions and questions about time spent using media. Children indicated how many hours a week they used media and categorized their favorite video games, TV shows, movies, and Internet activities based on content.
  
  - To measure real life violence exposure participants completed the KID-SAVE, a 34 item questionnaire in which children rate the frequency and impact of real-life violence they have witnesses in several environments: home, school, and the neighborhood.
  
  - The Attitudes Toward Violence Scale: Child Version (ATVC) was completed by the children to rate their agreement with statements about violent attitudes with 1= no, 2= maybe, 3= probably, or 4= yes. Example question: “People with guns and knives are cool.”
  
  - The Children’s Empathy Questionnaire was completed by the children to rate their agreement with statements about empathy with 1= no, 2= maybe, 3=
probably, or 4= yes. Example question: “When I see a kid who is upset, it bothers me.”

Results:

- Higher exposure to video game violence was related to lower empathy scores.
- Higher exposure to video game violence and movie violence was related to higher score of pro-violence attitudes.
- Significant correlations among the other variables were not found.
- While playing violent video games, empathy is not rewarded. Pro-violent attitudes and behaviors are.
- Video games may have a greater desensitizing effect than other media because of the interactive component associated with playing video games. The intense engagement of video games could generalize to the outside world.


Topics: Violent media, Self concept, Adolescents

Methodology:

- Sample. Participants were 357 seventh and eighth graders (183 girls) from a mid-sized Midwestern town. Twelve percent of participants were minorities.
- Measures.
  - Harter Self-Perception Profile for Adolescents measures competence in 9 domains: scholastic competence, social acceptance, athletic competence, physical appearance, job competence, romantic appeal, behavioral conduct,
close friendship, and global self-worth. Higher scores represent higher perceived self competence.

- A questionnaire was used to gather participant’s gender, level of mother’s education, time spent playing video games or computer games, and up to 3 favorite video games. Favorite video games were categorized as either: general entertainment, educational, sports, fantasy (cartoon) violence, or human violence.

Results:

- Girls were more likely than boys to list a favorite game that had fantasy violence. Boys were more likely than girls to list a favorite game that had human violence.
- Boys had higher scores on the Harter Self-Perception Profile in the subscale of global self-worth, athletic competence, and physical appearance than girls. Girls had higher scores than boys on the close friendship scale.
- For girls, more time spent playing video or computer games was associated with lower self-concept scores. Such a relationship was not found for boys.
- It may be more socially acceptable for boys to spend time playing video and computers games, especially violent games. This may be why no relationship between playing video games and computers and self concept was found for boys.


Topics: Video game violence, Rating systems
Methodology:

- Sample. 201 fourth graders, 52 sixth graders and their parents, and 145 college students participated in the study.

- Design.
  
  o The fourth graders listed up to 3 favorite video games and then categorized those grades into 1 of 6 categories: general entertainment (GE), educational (ED), fantasy (cartoon) violence (FV), human violence (HV), nonviolent sports (SP), sports violence (SV).
  
  o All participants in the study categorized each game from the list generated by the fourth graders that they had played or observed. This list of games generated by the fourth graders was categorized by 145 college students.
  
  o The same list was again categorized by 52 sixth graders and some of their parents.
  
  o For the top ten games most frequently recognized by participants, commercial ratings were found for 8 of these games.
  
  o The perception of the game content as reflected by assignment to 1 of the 6 categories was compared to the commercial rating available for the game.

Results:

- Raters from across the groups (children, non-parents, and parents) were consistent in their ratings of games on either end of the violence continuum. There was agreement between raters on games that were categorized as educational or general entertainment and games that were categorized as human violence.
• The game Street Fighter was categorized as a violent game by 93% of sixth graders, 97% of non-parents, and 87% of parents with adults being more likely to categorize this game as human violence. Several commercial ratings for this game were found including: K-A (6 years old to adult), Teen (age 13+), and Mature (age 17+).

• Team sports games were most commonly categorized as sports, sports violence, and general entertainment. Commercial ratings for these games were K-A and GA (general audiences).

• The biggest discrepancies between commercial ratings and participant ratings were for games featuring cartoon characters committing violent acts (fantasy violence). A large percentage of participants (especially children and non-parents) categorized these games as violent, while commercial ratings did not recommend any restrictions for these games.

• The greatest variance of ratings among the different rater groups was also for games featuring cartoon-type violence (fantasy violence). Non-parents were more likely than parents to place these games in a violent category. A majority of sixth graders also categorized such games as violent.

• It seems commercial ratings are based on the presence of realistic, human violence instead of fantasy violence. However, there is no data to support the idea that only realistic violence should be restricted. Paik and Comstock (1994) found a strong correlation between exposure to cartoon violence and subsequent aggression and antisocial behavior (p. 304).

**Topics: Violent video games, Psychopathology**

**Methodology:**

- **Sample.** Participants were 32 adolescents including 17 females ages 11-15 (average age = 12.59). The participants came from 2 different middle schools. One school was a suburban school in a mid-sized, Midwestern town. The other school was an alternative middle school for adolescents with school-based behavioral problems.

- **Procedure.** Students completed questionnaires about background information, the number of hours spent playing video games in a typical week, and listed up to 3 favorite video games.
  
  - Students placed each of their favorite video games into 1 of 6 predetermined categories (three violent and three nonviolent).
  
  - Students were then placed in either a “low preference” or “high preference” category. Students in the low preference group placed less than half of their favorite video games in 1 of the 3 violent categories. The high preference group placed at least half of their favorite video games into 1 of 3 violent video game categories.

- **Measures.** Youth Self Report (YSR) measures the participants’ perceptions of their own behavior in 8 problem areas: withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior, and aggressive behavior.
The YSR has 3 subscales measuring total problems, internalizing behaviors, and externalizing behaviors.

Participants rate responses to statements about their behavior in the last 6 months with 0 (not true), 1 (somewhat or sometimes true), or 2 (very true or often true).

**Results:**

- Thirty percent of girls were categorized as high preference, and 60% of boys were in this category.
- Both boys and girls in the high preference group had clinically significant elevated levels on the total problems subscale. (Of the 8 individuals with these levels, 6 were in the high preference group).
- High preference boys had significantly elevated levels on 8 of the 11 subscales.
- Boys were higher than girls in the subscales of thought problems and delinquent behaviors, with higher score on thought problems being associated with higher preference for violent video games.
- The hypothesis that those with a higher preference for violent video games would have higher levels of externalizing behavior was not supported.
- High preference for video games may result in desensitization or emotional disconnect which could account for the lack of support for the hypothesis.


**Topics:** Media violence, Myths
Seven myths about media effects

1. Media effects are simple and direct.

2. The effects of media violence are severe.

3. Media effects are obvious.

4. Violent media affect everyone in the same way.

5. Causality means “necessary and sufficient.”


7. Effects must be “big” to be important.

- Media violence can affect children differently depending on what developmental tasks they are facing. For example, a child learning to speak may be affected by media violence in the words he begins to say or a teenager trying to negotiate gender roles may become submissive to men based on models in violent media.

- Children may be affected by media violence differently based on risk and resilience factors. Risk factors (gang membership, drug use) make it more likely that a child will be affected by media violence. Resilience factors (good relationship with caregivers) make it less likely that the child will be affected by media violence. Risk factors and resilience factors are not determinants in themselves, but create a predisposition.

- Movie ratings are designed to give information about the content of movies and appropriate ages for viewers. This process is voluntary; however, the National Association of Theater Owners will not show unrated movies.
- Movie ratings are determined by 12 board members who are not connected to the movie industry and should be parents.
- Music ratings only include a label saying, “Parental advisory explicit content.” The use of the label is determined by the record company and artist. No standards exist for using the labels, and restriction of sales is decided by the individual stores.
- Two different video game rating systems emerged in the mid 1990s. However, the Entertainment Software Ratings Board now has the prominent rating system. Three raters play the game independently and then rate the game. If two raters give the same rating, that rating is used. If there is no consensus, more raters are recruited. Coin-operated video games do have a different rating system.
- In 1996, the Telecommunications Act required that all TVs include a v-chip allowing certain programming to be blocked.
- TV ratings follow no standards. Ratings are determined by the networks.
- Ratings need to be reliable, valid, easily understood, and easily accessible. Many of the current rating systems are not reliable, valid, or easily understood.
- Over time, ratings include more and more graphic content. A movie rated R in 1980, may be rated PG-13 today. This is known as “ratings creep.”
When comparing parents’ ratings to industry ratings, parents agreed with 50% of the ratings for G movies as appropriate for children age 3 to 7, 63% of PG movies as appropriate for kids age 8 to 12, and 60% of PG-13 movies as appropriate for kids age 13 to 17.


**Topics: Media use**

**Methodology:**

- **Sample.** A national random sample of 527 parents of 2 to 17 year olds (including 105 low income families) was provided by a national list vendor.

- **Design.** Questionnaires were mailed out to families. If families did not respond to initial mailings or two reminder mailings, they were contacted by phone.

- **Measures.** MediaQuotient questionnaire was used to measure 6 indexes.
  - Media use- assesses overall pattern of media use (high scores indicating healthy use of media).
  - Monitoring- parents use of rating systems and rules and discussions about media (high scores for parents who monitor media use).
  - Consistency- consistently apply rules to media use (high scores=consistent).
  - Media effects- children’s vulnerability to media effects such as copying characters or being frightened (high scores for children not affected).
  - Media knowledge- family’s knowledge about media and media effects (high scores for more knowledge).
o Alternative activities- families use of alternative activities to media (high scores for families doing many alternative activities together).

Results:

- All indexes except Media Effects were positively correlated with each other.
- Families that use electronic and print media carefully monitor media usage, are consistent with rules about media use, know more about media and media effects, and do more alternative activities together.
- This study also found that having a TV in a child’s bedroom was correlated with lower scores in all 6 indexes and lower school performance.
- The author suggests that teaching media literacy through media education programs could be beneficial to families.


Topics: Media exposure, Race

Methodology:

- Sample. The sample included 500 black and 597 white teenagers in which 28% were white males, 27% were white females, 21% were black males, and 25% were black females. Two-thirds of the white teenagers lived with both parents, and 42% of blacks did. Fifteen percent of both black and white teenagers lived with 1 parent and a step-parent. Two-thirds of black teenagers had working mothers, and 42% of whites did.
• Measures. A questionnaire measuring TV and movie exposure, viewing behaviors, parental/peer mediation of the adolescent’s media experiences, co-viewing, and self-perceptions was used.

Results:

• Blacks reported watching more TV than whites.

• Blacks saw more sex content on TV than whites. They watched 42% of the sex content available, compared to 28% for white teenagers.

• Black teenagers saw more R rated movies than white teenagers.

• Little mediation occurs in homes of both black and white teenagers, but black teenagers had fewer rules at home about TV. However, blacks discussed TV with their parents more often.

• If sex-oriented content on TV influences sexual perceptions and behaviors, than it may be a bigger factor for black teenagers than white.


Topics: Media exposure, Sexual media, Gender

Methodology:

• Sample. 1200 high school students completed questionnaires in class. Roughly 50% of participants were female, and approximately 50% of participants were white and
50% Black. 46% came from 2 parent households, 15% from 1 parent and stepparent, and 26% from single mother households.

- Measures. Three variables were used: exposure to TV and movies (including exposure to sexual content), parental mediation, and self perception measures.
  
  o Television exposure variables included: overall TV viewing, prime-time TV viewing, soaps viewing, sex acts in prime time, sex acts in soaps, total sex acts, ratio of all prime-time sex acts, and ratio of prime-time acts of sexual intercourse.

  o Movie exposure variables included: total R-rated and PG-rated films; total R and PG movies seen in theater, on TV, or VCR; and ratio of all R movies to all movies seen.

  o Mediation of TV behaviors variables included: co-viewing with parents; discussion of TV content with parents; parental control over TV; absence of TV rules; frequency of TV viewing alone, with a boy/girlfriend, other friend, or parent.

  o Mediation of movie behavior variables included: viewing R movies with parents; discussing R movies with parents; and how often went to movies with parent, boy/girlfriend, or other friend.

  o Self-perception variables included: negative self worth, positive self worth, positive peer-relations, family satisfaction, dating, dating problems/parents, negative attitude toward school, school activities, sex-role beliefs.
Results:

- Females watched more TV overall, both prime-time and soaps.
- Females watched more shows with sexual content and were exposed to a higher ratio of sexual content.
- Males saw a higher ratio of prime-time acts of sexual intercourse.
- Males saw more R movies on TV than females, but not in theaters or tapes for the VCR.
- Females were more likely to see PG movies than males.
- Females were more likely to co-view and discuss TV and movies with their parents.
- Males were more likely to watch TV alone but were more likely to see an R movie with parents.


Topics: Sexual media, Perceptions

Methodology:

- Sample. This study included 443 ninth and tenth graders in Michigan, of which 28% were white males, 31% white females, 22% black males, and 19% black females.
- Procedure. Participants viewed 1 of 2 tapes. Tape 1 had 3 clips of prostituting and 3 clips of sexual activity between married characters. Tape 2 had 3 clips of homosexuality and 3 clips of sexual activity between unmarried characters.
After viewing the clips, participants rated the scenes based on enjoyment, acceptability, perceptions of scene as being real-to-life, being funny, and being sexy.

After viewing each set of 3 clips, understanding and beliefs about the content area was assessed. Understanding and beliefs about the 2 content areas not seen (the 2 content areas shown on the other tape) was also assessed.

Results:

- Those students who watched the clips learned more about the content area than those who did not for the prostitution, homosexuality, and marital intercourse clips. The unmarried intercourse items had no difference between viewers and non-viewers.

- Overall, viewing the clips did not alter the students' beliefs about the content area.

- Prostitution scenes were most enjoyed, acceptable, and funny, but not sexy.

- Married intercourse scenes were enjoyed least, acceptable, least funny, and not sexy.

- Homosexual scenes were least acceptable, most funny, and least sexy.

- Unmarried intercourse scenes were acceptable, most realistic, not funny, and the most sexy.


Topics: Sexual attitudes, Media, Adolescents
Literature Review:

- Other countries, such as the Netherlands, have more “sex-positive” values than the United States (p. 352).
- Sexual attitudes and behaviors and media consumption may have reciprocal influences upon each other.
- Media-viewing has been linked to permissive attitudes about premarital sex.
- Studies have shown that negative sexual attitudes predict less voluntary exposure to sexual media content.

Methodology:

- Sample. Participants included 2,184 middle and high school students from 29 schools in the Netherlands. Participants ranged in age from 12 to 17, with approximately half of the participants being female.
- Measures.
  - Exposure to sexual content was assessed by a 6 item measure in which participants rated their level of exposure to certain types of sexual media over the past 6 months.
  - Participants also evaluated the quality of sexual information they received from the media by rating 6 items on a 5 point scale from 1 (bad) to 5 (very good).
  - Participants’ motives (pleasure-seeking motives, relationship enhancement motives, wanting information about sex, and sexual preoccupation) for viewing sexual media were assessed. Also, sexual guilt was assessed.
- Sexual attitudes were assessed as permissiveness toward premarital sex and egalitarian gender roles.
- Sexual behavior was assessed as sexual initiation.

**Results:**

- Positive attitudes about casual sex and permissive attitudes about premarital sex had significant positive correlations to sexual media exposure.
- Older participants reported greater contact with sexual media.
- Sexual preoccupation was also significantly correlated with sexual media contact.


**Topics: Skin conductance, Heart rate**

**Skin conductance:**

- Wetter skin conducts more electricity. More sweating results in higher skin conductance, a measure of electrodermal activity (p. 102).

**Heart rate:**

- Heart rate changes in response to stressors such as physical exercise, emotional states, and cognitive exercises.


**Topics: Media exposure, Risk behaviors**
Methodology:

- **Sample.** Participants were surveyed as part of a larger campaign to prevent adolescents from using cigarettes. Adolescents age 12 to 14 were randomly sampled from ten Standard Metropolitan Statistical Areas in the southeastern U.S. Of the 2,534 adolescents eligible for the study, 2,105 (83.1%) completed the first survey in 1985 and 1,637 (78% of original sample) completed the follow-up survey in 1987. Of those participants included in the final sample, 34.9% were white males, 33.7% white females, 15.0% black males, and 16.4% black females. All participants of other races were excluded because there were not enough participants to compare.

- **Measures.**
  - Participants answered “yes” or “no” to indicated whether or not they had ever engaged in 8 risk behaviors: smoked cigarettes; drunk beer, wine, or hard liquor; smoked marijuana; driven a car without permission; stolen something worth over $10; cheated on a test in school; had sexual intercourse; or cut school.
  - Participants who had engaged in 0 or 1 behaviors (24.9%) were categorized as “low risk.” Participants who had engaged in 2 to 4 behaviors (51.8%) were categorized as “moderate risk.” Participants who had engaged in 5 or more behaviors (23.3%) were categorized as “high risk.”
  - As a measure of media use, participants reported the average weekly hours spent watching TV or listening to the radio. Participants were also asked to report how often they watched particular types of television shows such as soap operas, sitcoms, action/adventure shows, etc.
Participants also provided a list of favorite musical groups and magazines they read regularly. These were coded into groups based on content.

**Results:**

- Listening to heavy metal music was strongly correlated with being high risk for white males and females.
- High risk adolescents were more likely to read sports and music magazines than low risk adolescents.
- High risk adolescents listened to the radio more; watched music videos more; and watch movies, cartoons, and soap operas on television more than low risk adolescents.
- Low risk adolescents were more likely to watch the news, public affairs programs, action/adventure shows and games shows than high risk adolescents.
- These media use variable taken together with demographic variables accounted for 21% of variation in risk behavior scores. However, the models were more predictive of white adolescents’ risky behavior than black adolescents’ risky behavior.


**Topics: Measures of physiological arousal**

**Literature Review:**

- Heart rate is often used as a biomarker of psychological stress (p. 105).
Methodology:

- **Sample.** Participants included 11 females and 10 males. Average age of participants was 22.5 years with a range from 19 to 29.

- **Procedure.** Participants were exposed to psychological and physical stressors. Urinary catecholamines, salivary cortisol, blood pressure, heart rate, electromyography (EMG) and electrocardiography (ECG) were measured during the stressors and afterward during a baseline measurement period.

- **Measures.**
  - Computerized Stroop Color-Word Test is a mental exercise in which participants must read aloud color words written in a different color while a computerized voice says the name of another color.
  - Norinder Test is a mental arithmetic task in which participants add and subtract one-digit numbers mentally while following certain rules.
  - Another arithmetic task involved participants subtracting the number 13 repeatedly, starting with the number 1022.
  - Color Pressor Test required participants to hold their left hands in cold water (4°C).
  - Physiological measures recorded urinary catecholamines, salivary cortisol, blood pressure, heart rate, electromyography (EMG) and electrocardiography (ECG).

Results:

- There was a significant increase in all physiological measures except cortisol during the mental and physical stressors.
Physiological responses to stress (after adjust for body weight) did not significantly differ between women and men except for norepinephrine levels.

Consistent with previous studies, women had higher heart rates at baseline.


**Topics: Media, Heart rate, Physiology**

**Methodology:**

- Sample. Participants included 37 college students, including 19 females. All participants were screened, and participants with various health problems and mental illnesses were excluded.

- Procedure.
  
  o Participants watched six movie clips (2 sadness-inducing, 2 fear-inducing, and 2 control). Each clip was preceded by a brief description of the plot and followed by a 3 minute rest period.
  
  o Physiological measures, including heart rate and skin conductance, were collected while participants watched the films.
  
  o After each movie clip, participants self-reported their emotional responses to the clip.
Results:

- Participants experienced significantly different physiological arousal while watching the emotion-inducing films than during the control films.
- The fear-inducing films and sadness-inducing films produced distinct patterns of physiological response from one another.
- Heart rate and skin conductance increased during the fear-inducing films.


**Topics: Media exposure, Violence, Behavior Disorder**

**Methodology:**

- Sample. Participants included 54 adolescents age 13 to 17 who either had a DSM-IV diagnosis of Disruptive Behavior Disorder with Aggressive Features or no diagnosis. Each group had 21 males and 6 females. Each group was matched on age and IQ. The groups did not significantly differ in race or socioeconomic status.

- Measures.
  - Media Exposure Measure (MEM) includes a self-report adolescent interview and parent questionnaire about television viewing and video game playing. The MEM has three sections: self-report past week, self-report past year, and parent-report past year.
Adolescent Symptom Inventory-4 is a 120 item, parent-completed measure based on DSM-IV criteria (used to measure executive functioning).

Personality Inventory for Youth uses 270 true/false self-report items to measure personality. The subscales of distractibility and impulsivity were of special interest as these mark deficits in executive functioning.

Stroop Color Word Test is a laboratory measure of executive functioning in which participants read color words written in different colored ink. For example, the word “blue” is written in red ink. The participant must suppress saying the word “blue” and say “red” to identify the color of the ink. Higher scores indicate higher levels of executive functioning.

Conner’s Continuous Performance Test includes participants completing a computer task in which letters appear on the screen on at a time. Participants press the space bar after each letter that is not an X. Scores have been found to predict deficits in attention and executive functioning.

Wechsler Abbreviated Scale of Intelligence is an assessment of global intelligence.

Procedure.

All measures were completed during visit 1. Visit 2 consisted of an MRI scan.

Results:

Higher exposure to media violence was related to poorer executive functioning across all functioning variables.
- Adolescent who had a DBD diagnosis had a stronger relationship between exposure to media violence and scores on the Continuous Performance Test.

- Adolescents with a DBD diagnosis may have fewer self-control mechanisms to counteract the effects of violent media on executive functioning.

- The hypothesis was supported that the relationship between exposure to violent media and aggressive behavior is mediated by the relationship between exposure to violent media and poor executive functioning.


**Topics: Aggressive media, Hostility, Aggressive thought**

**Experiment 1**

**Methodology:**

- Sample. 75 introductory psychology students (both men and women) participated.

- Design. 2 x 2 factorial design (pain v. no pain) X (aggressive prime v. non-aggressive prime). The independent variable was trait hostility and the dependent variable was state hostility.

  - Pain condition was operationalized as keeping an arm raised in the air for minutes at a time, and no pain condition consisted of resting arms on a desk.

  - Aggressive prime consisted of photos of weapons, and non-aggressive prime consisted of photos of nature scenes.

  - Participants’ scores of trait hostility had already been found.
Session began with 3 minute pain period (no pain group they sat in silence).

A rest period followed. After the rest period participants rated the photos (either of weapons or nature) for familiarity, design, and appeal. This pattern was repeated several times.

Then participants completed the state hostility scale.

The session ended with a questionnaire to determine if participants suspected what the experiment was about.

- Measures.
  - Trait hostility was measured with Caprara’s Trait Irritability Scale.
  - To measure state hostility participants read aloud 35 adjectives (24 hostile-related adjectives and 11 non-hostile adjectives) and rated from 1 (not at all) to 5 (extremely) how much they currently felt the adjective.

Results:

- Trait hostility positively correlated with state hostility.

- Participants in the pain condition scored higher on state hostility than participants in the no pain condition.

- There were no significant results from the prime conditions.

Experiment 2

Methodology:

- Sample. 81 introductory psychology students (male and female) participated.

- Design. This study was identical to experiment 1, except the dependent variable was accessibility of aggressive thought.
- Measures. To measure accessibility of aggressive thought, students completed a computer task. Strings of letters were presented on the screen, and the student was to press “yes” if the letters made a word or “no” if they did not. There were 96 strings of letters including 24 aggressive words (e.g. butcher), 24 escape related words (e.g. depart), 23 control words, and 25 non-words. Reaction time was recorded. Accessibility of aggressive thought was determined by subtracting average reaction times of aggressive words from the average reaction times of the other words.

Results:

- Those students who were exposed to the photos of weapons had greater accessibility to aggressive thought than those who viewed the nature photos.

- All participants in the weapons photos group had higher accessibility means except those with low-hostility in the pain condition.

- Trait hostility was positively related to greater accessibility to aggressive thought in all conditions except those in the nature scene/pain condition.

- A possible interpretation of these findings is that participants in pain tried to distract themselves from thinking aggressive thoughts by focusing on something more pleasant.

- This experiment revealed that trait hostility and weapon primes were related to aggressive thoughts in at least some conditions.

**Topics: Media exposure, Sexual behavior, Sexual attitudes**

**Methodology:**

- **Sample.** The data came from the first 2 waves of a longitudinal study, National Surveys of Children, about the well-being of American children. Data collection was based on a probability sample of households containing at least 1 child age 7 to 11. Blacks were over-sampled to gain at least 500 interviews. In total 2,301 children in 1,747 families participated in the first wave in 1976-77. The second wave was completed in 1981 with 1,423 of the children then age 11 to 16.

- **Measures.** The first wave included interviews with each eligible child and the parent who could give the most information about the child. Parents were asked to estimate the amount of TV their child watched each day. Children were asked if they had rules to follow about the amount of TV or content of TV they could watch. A follow-up study of the school was also done. The second wave of surveys asked the children about the sexual and pregnancy experiences of their friends and themselves. Additional TV viewing data was collected.

**Results:**

- There was no statistically significant relationship between the amount of television viewed in 1976 and subsequent sexual behavior. Though not significant, males who were heavy viewers of television did have the highest rates of sexual activity, 35%
• Similar insignificant findings were found from the 1981 surveys linking television viewing to sexual activity.

• For females, there was a modest positive correlation between TV viewing time and sexual activity for those girls who watched TV away from their parents.

• For females, higher rates of sexual activity were fairly strongly related to: lower self-esteem, watching TV apart from parents, never or rarely discussing TV with parents, and parents having more permissive sexual attitudes.

• For males, higher rates of sexual activity were related to lower educational aspirations, watching TV apart from parents, never or rarely discussing TV with parents, and parents having more permissive sexual attitudes.

• Boys who reported having rules that limited the amount and content of television were half as likely to have had sexual experience as those boys who reported having no rules.

• Boy’s sexual experience was related to higher levels of self esteem.


**Topics: Advertisements, Sexuality, Gender**

**Methodology:**

• Sample. Participants were recruited from public schools. The sample included 185 Anglo males, 116 Anglo females, 42 Latino males, and 42 Latina females. Of the sample, 55% were in junior high and 45% in senior high. Although this sample was
not randomly selected, school officials confirmed the sample represented a wide range of demographics.

- Design.
  - Advertisements were randomly selected from a variety of televised programs. Seventy-two advertisements were selected: 24 beer ads, 24 beer ads with sports content, and 24 non-beer ads.
  - Participants were randomly assigned into groups. Each group viewed six advertisements (4 beer ads and 2 non-beer ads) which had been spliced into a 20 minute television clip to create a realistic flow of commercial breaks. After viewing each advertisement, participants were given time to write down “thoughts and feeling [they] had while watching the commercial.”
  - Participants also reported demographic information, media use, their attention to beer ads, and frequency of viewing beer ads.
  - The participants’ comments about the advertisements were coded as “sexist,” “neutral,” or “nonsexist” which revealed something about the participant or about the advertisement. Comments were also possibly coded as criticisms of the ad or counterarguments to the ad.
  - The advertisements were coded for sexual and sexist content, age of targeted audience, and targeted gender.

Findings:
- Women made more comments about the advertisements than men.
- There was no significant difference between men and women in the number of comments made about the models’ attractiveness.
• Participants made more critical responses about the sexism and sexual portrayals in beer advertisements than non-beer advertisements with no differences between genders.
• However, females made more comments about sexism and sexual content in beer advertisements than males.
• Beer ads with sports content received more counterarguments if they contained traditional gender roles, sexist or sexual imagery, and were targeted towards males.


**Topics: Violent media, Aggression, Adolescents**

**Methodology:**

• Sample. Participants included 2,550 students from 20 middle schools across the U.S. At the first administration, students were in sixth or seventh grade (mean age 12.34). Of those students, 1,778 completed all 4 rounds of surveys. Forty-six percent of students were male.

• Measures.
  
  o Use of violent media content was assessed by students rating from 1 (not at all) to 5 (very often) how often they watched action movies, played video or computer games involving firing a gun, and visited websites that promote violence. The average of these 3 ratings was used to measure violent media content usage.
Aggressive behavior was measured by ratings of 1 (not at all) to 4 (very often) of the frequency of 6 statements about aggressive cognition, values about aggressive behavior, and engagement in aggressive behavior.

Four covariates were also measured: gender, age, general Internet usage, and sensation-seeking. Sensation-seeking refers to a person’s willingness to engage in risky activities without concern about its consequences.

Results:

- The results supported the downward spiral model, meaning that adolescents predisposed to aggressive behavior seek out aggressive media. This exposure to aggressive media, in turn, reinforces their aggressive predispositions. This is the downward spiral or negative feedback loop model.

- The model also suggests that those who are most vulnerable to antisocial attitudes and behaviors would be the most influenced by aggressive media. Those students who were most vulnerable were male and sensation-seekers.


Topics: Media exposure, Pregnancy, Sexuality

Methodology:

- Sample. In the study, 359 non-pregnant white and 290 non-pregnant black females and 54 pregnant white and 92 pregnant black adolescents (mean age = 15)
participated. Fewer than 5% of pregnant females lived with both biological parents. The non-pregnant females had more highly educated parents (20% completed a college degree, 4% for pregnant females’ families.)

- Measures. A questionnaire measuring TV and movie exposure, viewing behaviors, parental/peer mediation of the adolescent’s media experiences, co-viewing, and self-perceptions was used.

Results:

- Pregnant females reported more TV viewing overall and more soap operas than non-pregnant females.
- Non-pregnant females viewed more sex acts on TV than pregnant females.
- Pregnant females watched a higher ratio of R movies to all movies viewed.
- There was no significant difference in co-viewing, discussing TV with parent, or amount of TV rules between the groups.
- Non-pregnant females discussed movies more with parents than pregnant females.
- Discriminant analysis revealed attributes that most strongly distinguished pregnant females: watching soap operas (.64), diet of prime-time intercourse (.32), ratio of R movies (.30), and watching TV with a boyfriend (.29).


Topics: Sexual media, Sexual behaviors, Race

Methodology:
• Sample. A random selection of students from 2 schools was asked to voluntarily participate. Four hundred seventy-three students from ninth to twelfth grade participated (196 males, 253 females, and 24 unreported). Average age of participants was 15.81. One hundred nine participants identified themselves as African American, 181 as Caucasian, and 183 as Hispanic.

• Measures. Demographic variables were recorded.
  o Sexual attitudes were assessed by a 5 item measure asking participants to rate their level of agreement on statements about premarital sex.
  o Frequency of engagement in 5 different sexual behaviors in the last year was rated by participants from “never” to “daily.” Participants were also asked to indicate age of first intercourse, number of sexual partners, and contraceptive use from “never” to “always.”

• Design.
  o Participants were asked to list every television show they regularly watch during the week. This list of shows was rated by college undergraduates for the amount of sexually suggestive dialogue (SD) and explicit sexual content (SC) in each show on a 5 point scale ranging from 1 “never” to 5 “very frequently.”
  o Undergrads rated only shows they had viewed at least 3 times. An average of the ratings for each show was used as a measure of SD and SC. This average SD/SC scores for each show was multiplied by the number of times that show was watched each week, added together, and divided by the number of shows watched a week to get a composite media viewing score for each participant.
Results:

- Hispanics and African Americans did not significantly differ in the amount of SD/SC watched as compared to Caucasian. Although, Hispanics viewed significantly more SD/SC than African Americans.

- For Hispanics and African Americans, only age significantly explained variations in sexual attitudes and contraception use.

- For Caucasians, SD/SC composite and age significantly explained variations in sexual outcomes. Caucasians who watched more sexual television were more sexually active and had more sexual partners.

- SD/SC composite predicted engagement in oral sex and intercourse for males and more liberal attitudes about premarital sex in females.

- These results suggest many inconsistencies among adolescents’ sexual attitudes, media viewing, and sexual behavior.


Topics: Media exposure, Sexuality, Adolescents

Methodology:

- Sample. Participants were recruited by flyers, friends, and from community organizations for adolescents. Participants ranged in age from middle school aged to high school aged. Fifty-one people participated. Roughly half the participants were male, and roughly half were middle school aged.

- Design.
Participants were organized into focus groups to discuss sexual media content. Each session began with the participants watching 2 popular music videos. The following discussions lasted from 60 to 90 minutes. The moderators followed a loosely structured format but encouraged discussing topics as they arose.

A subset of the original sample completed a media journal. One to three people from each focus group kept a media journal for 7 days about the type of media content they saw and how it affected what they learned about sex, love, and relationships from other sources. Each participant was given an audio-recording device, notebook, pen, glue, and scissors. Participants were encouraged to cut and paste ads, articles, and song lyrics into their journals.

Finally, most participants who completed media journals also participated in an in-depth interview either in their own bedrooms or other chosen locations. Participants were asked to further discuss the material in their media journals and to describe items in their rooms reflecting their sense of self.

Results:

- Participants selected media content that matched their own lived experiences. Television shows that appeared realistic or credible were often selected by participants. Media selection was also influenced by gender, age, and race.
- Participants also interacted with and comprehended media differently based on age, gender, and race. Interaction is defined as the level of emotional, psychological, and physical engagement in media. For example, younger participants overlooked or
misinterpreted the sexual messages the media producers were trying to send in the music videos.

- Some participants described how they consciously and subconsciously use media as models of behavior and as models of “normality.” Other participants described using media as a way to challenge the current state of society.


**Topics: Media exposure, Violence, Sexuality, Adolescents**

**Literature Review:**

- Comstock & Strasburger (1990) found that 5-15% of real-life violence is contributed to by media violence (p. 19).

- American TV and movies are the most violent in the world. American children and teenagers view 1,000 murders, rapes, and assaults on TV per year (p. 21).

- Huesmann & Eron (1986) looked at over 1,000 kids from the U.S., Australia, Finland, Israel, the Netherlands, and Poland over 3 years. TV violence was related to aggressive behavior for boys from all countries and girls from the U.S. They found aggressive boys identify with violent characters (p. 30).

- Japanese entertainment is almost as violent as American, but Japan’s society is less violent. Japanese violence is more realistic with a greater emphasis on the consequences of violence. Japanese “bad buys” commit most of the violence compared to “good guys.” The opposite is true for American TV (p. 32).
• National Institute of Mental Health (1982) found American teenagers rate the media as the third biggest influence on their sexual attitudes and behaviors, behind parents and peers (p. 41).

• Americans view 27 accounts of sexual behavior an hour on television (p. 47).

• In a study of 75 adolescent girls by Corder-Bolz (1981), half pregnant and half not, the pregnant girls watched more soap operas before pregnancy and were less likely to believe their favorite soap star would use birth control (p. 49).

• In a study of 391 junior high students in North Carolina by Brown and Newcomer (1991), those who selectively viewed more sexy TV were more likely to have become sexual active (had intercourse) in the last year (p. 49).


**Topics: Media exposure, Sexual attitudes**

**Methodology:**

• Sample. Participants were 457 undergraduate college students in a speech class at a Midwestern university. Mean age for both males and females was 19. Nearly all students at the university must take the class, so the sample was considered representative of the campus as a whole.

• Measures. A questionnaire was designed for this study assessing media exposure, self-evaluation, religious devoutness, and sexuality.
Results:

- Female reported watching more soap operas, for more years, and listened to more popular music than males.
- Playboy was the most commonly purchased magazine for men.
- Cosmopolitan was the most commonly purchased magazine for women.
- Males reported having more sexual partners than women.
- Despite not rating their sexual attitudes as more liberal than women, men more strongly agreed with the statements, “it’s ok to be sexually involved with more than one person at the same time” and “love is not a necessary component in all sexual relationships.”
- For females, MTV viewing frequencies was the most potent predictor of the number of sexual partners with perceived parental openness to discussing sex as least. Religiosity, self-esteem, and soap opera consumption were the second, third, and fourth predictors respectively.
- For males, self-esteem was the greatest predictor of the number of sexual partners with higher self esteem associated with more sexual partners. Soap opera consumption, relationship status, and MTV consumption were the next highest predictors respectively. Action/adventure and sitcom viewing was the least powerful predictor.
- Men were more likely to report the motivation for sexual intercourse to be fun and gratification. Women were more likely to report the motivation for sexual intercourse to be love and commitment.

**Topics: Sexual media, Sexual attitudes, Sexual beliefs**

**Methodology:**

- **Sample.** Undergraduate students were recruited to participate in the study from a communications course. One hundred eighty-eight students ranging in age from 18 to 26 participated (122 females and 66 males).

- **Procedure.**
  
  - First, participants completed measures of demographic variables and media use.
  
  - Participants were divided into small groups of 5 to 10 people. Each group was randomly assigned to 1 of 4 conditions: no-viewing control, viewing control, verbal viewing, and visual viewing. The no-viewing control group read paragraphs from magazines, and the viewing control group watched nonsexual television. Participants in the verbal viewing group watched television in which sex was verbally discussed. Finally, the visual viewing group watched television with visual implications or suggestions of sex.

- **Measures.**
  
  - Participants completed the Premarital Sexual Permissiveness Scale to measure sexually permissive attitudes. They rated the level of appropriateness of sexual intercourse at several relationship stages.
  
  - To measure sexual beliefs, participants estimated the number of their peers out of ten who they believed to be sexual active.
As each clip was viewed, participants rated it for realism. An average realism score for the 6 clips was found.

Findings:

- There was no significant difference in perceived sexual activity of peers among the groups that saw some sort of sexual content.
- Participants that viewed some sort of sexual content and scored high on perceived realism had more permissive sexual attitudes than any other group.
- Those who scored high in perceived realism and viewed verbal sexual content perceived their female peers to be more sexually active than those who scored high in perceive realism and viewed visual sexual content or no sexual content.


Topics: Psychophysiology

- Psychophysiology has been used to study interpersonal relationships in married couples, parent-child interactions, and families with schizophrenia.


Topics: Media exposure, Sex-roles
Methodology:

- Sample. Randomly selected adolescents age 12 to 15 and their mothers from 10 areas in the southeast U.S. participated. Participants had similar social and demographic characteristics. 2,105 of the adolescents contacted agreed to participate (response rate = 83%). 77% participated in the second round of questionnaires (n = 1613). 30% of participants were black, and 40% were female.

- Measures. Independent variables included: parental education, maternal employment, school achievement, grade, stereotype acceptance, total TV time, and gender-typed TV.
  
  - Stereotype acceptance was determined by responses to statements about men and women concerning attitudes toward heterosexual relationships and attitudes toward male dominance. Statements such as “Most women like to show off their bodies” tapped attitudes toward heterosexual relationships. Male dominance was tapped by questions such as “Most women can’t take care of themselves without help from men.”
  
  - Shows divided into Male TV and Female TV (gender-typed TV) based on the percentage of viewers of that type of show (soap opera, action-adventure show, etc.) that are female or male.

Results:

- Blacks watched more TV per week than whites.

- Although amount of TV watched decreased over time, males continued to watch more “male shows” and females watched more “female shows.”
• Overall, sexual relationship stereotypes were more accepted over time, but there was no significant change in acceptance of male dominance stereotypes.

• Of white girls, those who watched more TV at time 1 had smaller increases of acceptance of relationship stereotypes than those who watched less TV had time 1.

• Of Black boys, those who watched more Female TV at time 1 had greater increases of relationship stereotypes than those who watched fewer soap operas and situation comedies.

• White boys who watched more Female TV reported less acceptance of relationship stereotypes at time 2 than time 1.

• Different TV genres portray relationships differently. Female TV focuses on interpersonal conflicts. Male TV focuses on physical problems.

• Children seek out TV that reinforces their view of gender norms.


**Topics: Sexuality, Media**

**Methodology:**

• Design.
  
  o The top 10 television programs, as determined by the Nielsen ratings, for children age 2-11 and adolescents age 12-17 were combined. After eliminating overlap, a list of 12 shows was produced.
Three episodes of each program were recorded and coded. When possible, consecutive episodes were used.

Episodes were broken down into segments and coded for the presence of 17 different sexual messages. These messages included sex as recreational, relational/marital, and procreational, and messages about gender roles.

Each segment was coded as either containing one, more than one, or none of the 17 sexual messages. Segments could also be coded as “counterscript” when it contained messages directly counter to 1 of the 17 messages.

Results:

- Of all the segments coded, 29.4% contained sexual messages. Only 9.5% of these sexual messages were coded as “counterscript.”
- Older adolescents preferred shows with more sexual content than younger children.
- The most common sexual themes found were “sexual relations as a competition,” “males see females as sexual objects and value women by their physical appearance,” and “masculinity is linked with being sexual.”
- More of the sexual segments contained messages about the male sexual role (31.3%) than female (18.9%). Examples of messages about the male sexual role include “sex is a defining act of masculinity” and “in sexual relations, men are the initiators and aggressors.” Messages about the female sexual role include “women are attracted to specific types of men” and “women know that looking good is an important asset for attracting partners and for success in life.”
- The segments contained more messages about sex as recreational (19.9%) than sex as relational (17.7%). Very few messages about sex as procreational (2.2%) were found.
• Of the total messages coded, 8.8% were messages about the upside of relationships and 8.9% about the downside of relationships. Messages about the upside of relationships included messages about caring, sharing, happiness, and love. Messages about the downside of relationships included messages about conflict, pain, anxiety, and responsibility.


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**Topics: Media exposure, Sexual attitudes**

**Methodology:**

• Sample. Participants included 269 undergrads (64% female, 68% white, 15% Asian American or Middle Eastern, 10% African American, and 6% Hispanic). Of these participants, 37% reported being virgins and 29% reported having only one sexual relationship.

• Measures.
  
  o Television viewing behaviors was measured by participants rating how often they watched a list of 98 shows from 0 (never/not this season) to 4 (every week). Average weekly hours spent watching music videos was also calculated.
  
  o Viewer involvement was measured by participants rating 22 motives for watching TV from 1 (strongly disagree) to 6 (strongly agree). Motives were grouped into two categories, viewing for learning and viewing for entertainment.
Participants also completed the Ward Active Viewing Measure measuring selectivity is seeking specific programming, involvement during exposure, and post-exposure use. Finally, participants were asked to rate how much they identified with 28 popular male and female TV characters from 1 (do not identify with at all) to 4 (strongly identify). For characters the participants weren’t familiar with, they could rate them with N/A.

- Attitudes toward sexuality were assessed using the Attitudes Toward Dating and Relationships Measure. Participants rated their agreement with statements from four themes: dating as a game, women as sexual objects, men as sex-driven creatures, and sexual relationships center around religious dictates and traditional courtship norms.

- Attitudes about gender roles were assessed using the Attitude Toward Women Scale for Adolescence. Participants rated their agreement with statements such as “Boys make better leaders than girls.”

- Perception of peers’ sexual experience was assessed when participants were asked to estimate the number of males and females out of ten that had engaged in certain risky or recreational sexual behaviors by age 18 (e.g. had sex on a first date). Participants were also asked to indicate their current level of sexual experience from 0 (just starting out) to 10 (several sexual relationships).

• Design.
Stimulus clips were chosen from popular TV sitcoms and dramas that represented 1 of 3 sexual stereotypes: dating as a game, women as sexual objects, and men as sex-driven creatures.

Participants were assigned to 1 of 3 experimental conditions (3 sexual stereotypes) or the control condition and viewed 6 clips in these experimental groups. Participants rated each clip for how funny/entertaining it was, how realistic the actions were, and how much they identified with the characters.

After viewing the clips, the participants completed the battery of questionnaires.

Results:

- Participants’ agreement with the 3 sexual stereotypes was low.
- One average, the participants had had 1 sexual relationship.
- Women were more active viewers and identified more strongly with female characters. Men identified more strongly with male characters.
- Women were less traditional in their gender role attitudes than men, were less supportive of the 3 sexual stereotypes, and assumed more sexual experience in their male peers.
- Female participants who watched more prime-time TV and music videos, watched TV more intently for learning or entertainment purposes, and identified more strongly with popular female characters, and were more likely to endorse the 3 sexual stereotypes (dating as a game, women as sex objects, and men as sex-driven).
- For males, frequent TV and music video watching was associated with higher agreement with sexual stereotypes.
• Frequent viewing by males was also associated with higher levels of perceived sexual experience of peers, especially male peers.

• Females in the experimental conditions endorsed the 3 sexual stereotypes significantly higher than the females in the control condition.

• Women who naturally watched higher amounts of prime-time sitcoms and dramas endorsed the stereotypes significantly more than women who watched lower amounts of prime-time sitcoms and dramas.

• Males did not seem to be affected by condition, endorsement of the stereotypes did not differ between experimental and control groups.

• Males with more personal sexual experience more strongly supported the 3 sexual stereotypes.


Topics: Media, Sexual Health, Women

Media can offer sexual information

• Fifty-one percent of magazine readers age 12 to 18 report using magazines as a source of sexual information.

• Magazines are a good source of information because they are accessible, can be consumed privately, and have no negative connotation for buying or reading them.
• One study found that 34% of magazine articles on sexual issues focused on sexual health (pregnancy, contraception, STDs, HIV/AIDS, etc.) rather than sexual behaviors or activities.

• Media can be used as entertainment-education. Sexual information and statistics included in popular television shows (e.g. soaps, ER, and Friends) was found to increase viewers’ knowledge of such issues.

**Media can offer diverse sexual models**

• Individual performances have the power to overcome sexual stereotypes.

• Young women choose a variety of role models from television to fit their personal values and beliefs.

• Identifying media figures as role models is associated with student’s sexual attitudes and behaviors.

**Media offer vicarious practice of dating norms and ideals**

• Young girls are able to have fantasy relationships with celebrities in which there is no fear of rejection or pressure to do things they are not ready for.

• Media may act as a “super-peer” for early-developing girls seeking sexual information whose peers have not yet developed.

**Resisting through self expression**

• Girl-zines or zines are self-published magazines created by girls and young women to frankly discuss puberty, sexuality, feminism, gender, and relationships.

• These magazines allow girls to anonymously discuss sexual issues that mainstream media may not address.
• These magazines also help girls become more critical consumers of mainstream media.


**Topics: Media exposure, Media involvement, Sexual attitudes**

**Methodology:**

• Sample. Three hundred fourteen undergraduates from the University of Michigan and the University of California- Los Angeles voluntarily participated in this study as part of their introductory psychology course. Participants were split almost evenly among the 2 universities. Almost all (97%) participants were between age 18 and 20 with 55% of the participants being female. Participants reported their race as the answer to an open-ended question: 54% Caucasian, 26% Asian American/Pacific Islander/Middle Eastern, 12% Latino/Latina, and 8% African American.

• Measures.

  o Viewing frequency was assessed by the participants rating frequency of viewing a list of 150 popular TV shows. Weekly TV shows were rated from “every week” to “not at all this season.” Daily shows were rated from “once a day” to “not at all this season.” Monthly viewing totals were calculated for each participant.

  o Level of general involvement in watching television was also assessed for each participant. Participants rated their level of agreement with statements
about motives for watching TV such as “to help me understand the world.”

To measure level of active involvement in watching television, participants completed the Active Viewing Measure by rating their level of agreement with statements about their involvement in television shows. Items were designed to measure selectivity in exposure seeking (e.g. “I often plan my day around TV shows I like to watch”), involvement during exposure (e.g. “I often try to guess what will happen next or how an episode will end”), and post-exposure use (e.g. “I frequently talk to others about what I have recently seen on TV shows”).

- Participants rated 4 clips from popular sitcoms for realism, likelihood to happen in their own lives, and level of identification with the main character.
- Participants also completed the Attitudes Toward Dating and Relationships Measure to assess their sexual attitudes. Three themes about sexual relations commonly found in television were addressed: recreational orientation (sex as a game), procreational orientation (sex only belongs in marital relationships), and relational orientation (sex as a part of a loving relationship). Participants indicated their level of agreement with statements regarding these orientations.
- The Attitudes Toward Women Scale for Adolescence was administered to assess participants’ beliefs about gender roles.
- To measure sexual expectations, participants estimated what percent of their peers had engaged in 12 risky sexual behaviors. Participants also reported
their own level of sexual experience from “just starting out” to “have had several sexual relationships.”

- Participants were randomly assigned to either watch the clips first and then complete the measures or to complete the measures before watching the clips. Those who watched the clips first were less likely to support traditional dating norms.

**Results:**

- For females, watching more hours of prime-time TV was related to endorsing recreational attitudes about sex. Watching more soap operas was related to females having more dating and sexual relationship experience. Also, females who watched more sitcoms and dramas held more traditional views on gender roles.

- Females and males who identified strongly with TV characters in sexual situations were related to holding recreational attitudes toward sex, higher expectations of the peers’ sexual behavior, and greater personal sexual experience.

- The more realistic the female participants found the clips they viewed to be, the more sexual experienced they believed their peers to be.

- Being an active TV watcher and watching TV to learn about the world was associated with endorsing recreational attitudes about sex for females.

- For males, viewing more hours of soap operas was associated with less endorsement of recreational attitudes about sex.

- Rejection of traditional dating norms, high expectations about male peers’ sexual experience, and perceived relevance of television’s sexual content were strong
predictors of participants’ sexual experience. Perceived relevance was a significant predictor for males but not females.

• TV viewing appeared to be a stronger predictor of participant’s beliefs about their peers’ sexual experience than their own.


**Topics: Sexual media, Sexual attitudes, Sexual behaviors**

**Methodology:**

• Sample. Participants included 609 black adolescent females who were recruited from various health clinics and health classes. To be eligible, participants had to be female, black, between age 14 and 18 at the time of enrollment, and sexually active in the previous 6 months. Among those recruited, 522 (85.7%) participated in the study.

• Procedure.
  
  o Data was collected at the Family Medicine Clinic.
  
  o Each participant completed a survey, a personal interview, and provided a self-obtained vaginal swab sample.
  
  o The survey assessed demographic characteristics, parental monitoring, exposure to x-rated movies, attitudes toward condoms, sexual behaviors, STD status, contraceptive behaviors, and desire to conceive.
  
  o The personal interview was conducted by a trained, black female interviewer to assess sexual risk behaviors.
Vaginal swab samples were tested for the presence of 3 STDs: Nesseria gonorrhoeae, Chlamydia trachomatis, and Trichomonas vaginalis.

- Measures.
  - To assess parental monitoring, participants indicated whether they lived in a 1 or 2 parent family and whether their mother, as opposed to another relative, was most likely to know their whereabouts.
  - Participants reported the number of PG or PG-13, R, and X-rated movies they had seen in the previous 3 months. Viewing of X-rated movies was determined by the participant reporting watching at least 1 X-rated movie.
  - The Condom Impact Scale was used to assess participants’ attitudes toward condom use. Participants rated their level of agreement with statements such as “If I asked my partner to use a condom he would think I didn’t trust him.”
  - Sexual behaviors assessed includes whether participants had had multiple sexual partners in the last 6 months and frequency of sexual intercourse in the last 30 days. Participants also reported whether they had tested positive for an STD.
  - Participants were asked whether they used contraception the last time they had intercourse and if contraception was used in the last 6 months.
  - Participants rated their desire to conceive at the time from “very much” to “not at all.” Those who responded “very much” were categorized as having a strong desire to conceive.
Results:

- Being exposed to X-rated movies was associated with negative attitudes towards contraceptive use, engaging in risky contraceptive practices, and a strong desire to conceive.

- Exposure to X-rated movies was associated with living in one-parent families and being monitored by someone other than their mother.

- Those exposed to X-rated movies, as compared to those not exposed, were 1.4 times more likely to have negative attitudes about condoms, 1.5 times more likely to not have used contraception the last time they had sex, 1.7 times more likely to have Chlamydia, 1.8 times more likely to have more frequent sex, twice as likely to have had multiple sexual partners, twice as likely to have a strong desire to conceive, and 2.2 times more likely to have not used contraception during the last six months.

- Because X-rated movies rarely show contraceptive or STD prevention practices, it may influence adolescent viewers’ beliefs about contraception and STD prevention. Adolescents may be particularly vulnerable to these movies because of their limited personal sexual experience.


Topics: Violent media, Hostile behaviors, Desensitization
Methodology:

- **Sample.** Ninety-three undergraduate students (53 males and 40 females) enrolled in a communications course volunteered to participate in the study. Participants were compensated with extra-credit and movie coupons.

- **Procedure.**
  - Participants had previously completed measures of extraversion, neuroticism, psychoticism, empathy, and Type A personality.
  - Participants were randomly assigned to watch either violent or nonviolent movies on 4 consecutive days. After each movie, the participants rated the film for market viability.
  - On the day after watching the fourth movie, the participants completed a supposedly “unrelated” study. The participants completed an emotion-recognition test and were graded by the experimenter who gave feedback. The participants had been previously assigned to receive neutral or negative feedback from the experimenter.
  - Once this task was completed the participants went into another room to receive their compensation. In this room, another assistant asked the participants to evaluate the experimenter’s performance. Participants were told that the experimenter was seeking financial aid and asked whether the experimenter should receive the aid. Hostility was measured by a participant’s response to deny the financial aid to the experimenter.
Results:

- Participants who viewed the violent films were more likely to deny financial support to the experimenter than participants who viewed the nonviolent films.

- Participants who were provoked by the experimenter were more likely to deny financial support than participants who remained unprovoked.

- Female participants found the experimenter less support-worthy than males, but were no more likely to deny the experimenter financial support than male participants when forced to make a yes or no decision.

- When the variables of extraversion, neuroticism, psychoticism, empathy, and Type A behaviors were controlled for, the effect of the violent film exposure to hostility increased.

- Participants who were exposed to the violent films were less likely to interpret the faces in the emotion-recognition task as “angry.” This would suggest that these participants had been desensitized to anger after watching the violent films.
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