

# Exposure to violent and sexual media content undermines school performance in youth

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## Abstract

**Background:** Humans are hard-wired to pay attention to violent and sexual cues. Because humans have limited attention capacity, attention allocated to violent and sexual cues decreases attention that can be allocated to encoding important information in school. This study examined the effects of exposure to violent and sexual media on general school performance and Test of English as a Foreign Language (TOEFL) scores in Turkish youth.

**Methods:** The relationship between exposure to violent and sexual media on school performance was assessed in a sample of 1545 Turkish adolescents. Then, we compared the TOEFL scores of 143 Turkish boys aged 14 to 18 divided in 71 living in dormitories in which consumption of media was strictly regulated and 72 living at home.

**Results:** A significant negative relationship was found between exposure to violent/sexual media and school success. The effects remained significant even after controlling for the total amount of media exposure. In addition, boys living in the dormitory in which consumption of media was strictly regulated outscored those living at home on the TOEFL post-test immediately after the end of the study, and on a delayed post-test one week later.

**Conclusions:** Because there was no difference between boys living at home and those living in a dormitory on the pre-test, the post-test and delayed post-test differences cannot be attributed to initial differences in English language proficiency. These results suggest that exposure to violent and sexual media impairs adolescent school performance and foreign language memory.

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## Introduction

Educators, teachers, parents, pediatricians, and researchers have long questioned whether media exposure impairs children's attentional abilities and negatively affects their educational outcomes [1-3]. A meta-analysis found associations between media use and attention deficit hyperactivity disorder (ADHD)-related behaviors [4]. There is also evidence that greater consumption of television programming is

associated with diminished reading ability and decreases in academic achievement [5,6]. Therefore, research regarding the relationship between media exposure, attentional problems, and negative educational outcomes is especially timely, since it is currently estimated that children aged 8-18 are exposed to almost 11 hours of media per day [7].

As evidence converges to suggest that overall media exposure influences both attentional abilities and educational outcomes, research has shifted to focus

on the effects of specific types of media exposure, such as fast-paced media, and violent and sexual media [8]. This research focuses on violent and sexual media. Viewing violent media is associated with adolescent executive function deficits [9]. Likewise, exposure to violent and sexual media impairs memory for foreign language vocabulary [10]. The theoretical explanation underlying these effects is that violent and sexual media occupy attentional resources that would otherwise be used for other attentional processes such as training executive functions or encoding important information [11,12].

Using the same theoretical framework, this research addressed the effects of exposure to violent and sexual media on general school performance and foreign language performance. Study 1 employed a large survey in which adolescents reported their school performance, overall media exposure, and exposure to violent and sexual media. We predicted that school performance would suffer among youth exposed to a lot of violent and sexual media. Study 2 used a quasi-experiment to compare foreign language scores of adolescent boys who either lived in a dormitory with strict media regulation, or who lived at home. We predicted no difference on the foreign language pre-test between boys living at a dormitory and boys living at home. However, we expected boys living at a dormitory to outperform boys living at home on the immediate post-test and on the one-week delayed post-test.

## Methods

### Study 1

#### *Participants*

Participants were 1545 Turkish adolescents ages 10 to 18 (47.4% female;  $M_{age}=15.3$ ,  $SD=1.8$ ) from public schools across the country. Of the principals we contacted, 96.5% agreed to participate in the study. To participate, consent was required from parents (consent rate = 96.5%), and assent was required from students (assent rate = 100%).

#### *Procedure*

Participants completed a short survey in their classrooms. First, participants reported their overall level of school success on a five-point scale (1=failure, 2=poor, 3=fair, 4=good, 5=very good;  $M=3.18$ ,  $SD=0.87$ ). Next, participants reported the number of hours they spent consuming media (e.g., TV, Internet, DVD, movies, video games, music) on any device (e.g., handheld, tablet, computer, TV) on a typical school day (Monday to Friday) and on a typical weekend day (Saturday and Sunday). The weekdays and weekends were combined to obtain a measure of the number of hours participants consumed media each week. Finally, participants indicated on a five-point scale (1=never, 2=rarely, 3=sometimes, 4=often, 5=always) whether the media they consumed contained “violence” ( $M=2.80$ ,  $SD=1.29$ ), “sex” ( $M=2.17$ ,  $SD=1.22$ ), “both violence and sex” ( $M=2.21$ ,  $SD=1.23$ ), or “neither violence nor sex” ( $M=3.45$ ,  $SD=1.37$ ).

### Study 2

#### *Participants*

Participants in Study 2 were 143 Turkish boys aged 14 to 18 ( $M_{age}=15.8$ ,  $SD=1.0$ ) attending a private school for boys in Istanbul. Of these, 72 lived at home and 71 lived at a school dormitory. All boys were in 9th grade. To participate, consent was required from parents (consent rate = 93.5% for parents of children living at home and 97.2% for parents of children living at a dormitory), and assent was required from students (assent rate = 100% for children living at home and for children living at a dormitory).

#### *Procedure*

As in Study 1, participants first reported the number of hours they spent consuming media on weekdays and weekends, and whether the media they consumed contained violence, sex, violence and sex, or neither violence nor sex. These items were used as manipulation checks to validate our assumption that boys living at home consumed more media in general, and more media containing violence and/or sex in particular. Next, participants completed a pre-test containing 18 vocabulary items from the TOEFL test.

Afterwards, all participants received a 30-minute lesson on the 18 target words contained on the TOEFL test from the same teacher in the same classroom. Immediately after the lesson, participants were given a post-test on these 18 items. One week later, participants were given a delayed post-test on these 18 items. Finally, all participants were debriefed.

## Results

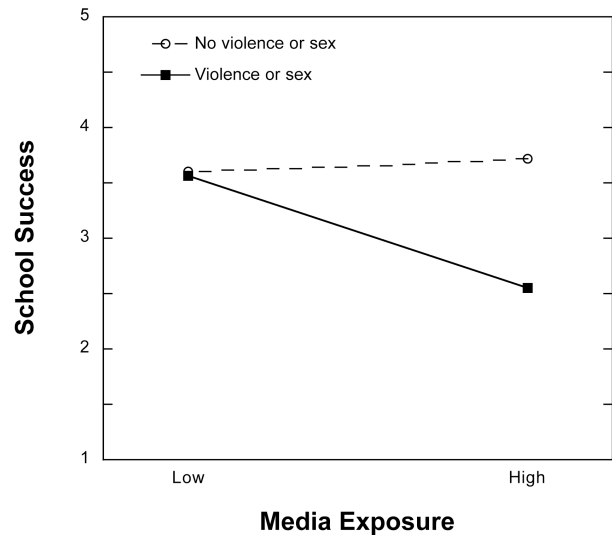
### Study 1

#### Preliminary Analyses

Participants' ratings as to whether the media they consumed contained "violence," "sex," and "both violence and sex" were averaged across the three groups due to internal consistency between these groups (Cronbach's  $\alpha=0.90$ ). The number of hours of participants' exposure to media containing violence and/or sex was obtained by multiplying the number of hours of all media consumed per week by the average of the ratings for "violence," "sex," and "both violence and sex" ( $M=72.9$ ,  $SD=72.7$ ). The number of hours of participants' exposure to media containing no violence or sex was obtained by multiplying the number of hours of all media consumed per week by the rating for "neither violence nor sex" ( $M=87.6$ ,  $SD=60.3$ ). Participants consumed more media without violence and sex than media with violence and/or sex, (Student's  $t(1544)=8.54$ ,  $p<0.0001$ ,  $d=0.22$ ).

#### Primary Analyses

Data were analyzed using multiple regression analysis, with the covariates being participant gender and age. Predictor variables included weekly exposure to media containing violence and/or sex, and weekly exposure to media containing no violence or sex. As expected, there was a significant negative relationship between exposure to media containing violence and/or sex and school success ( $t(1544)=-21.23$ ,  $p<0.0001$ ,  $b=-0.007$ ). In contrast, the relationship between exposure to media containing no violence or sex and school success was non-significant ( $t(1544)=1.84$ ,  $p=0.067$ ,  $b=0.001$ ) (see Figure 1).

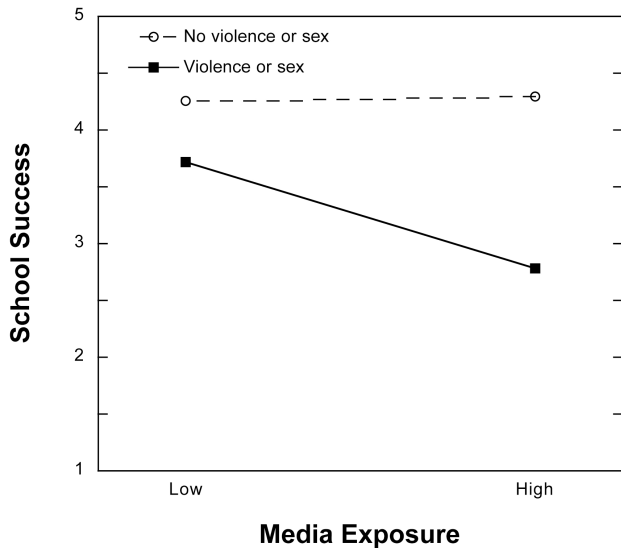


**Figure 1.** Relationship between weekly exposure to media containing violence and sex, and media containing no violence or sex on academic success (1=failure, 2=poor, 3=fair, 4=good, 5=very good), controlling for participant sex and age. Low scores are one standard deviation below the mean, whereas high scores are one standard deviation above the mean.

In addition, females reported higher school success ( $M=3.37$ ,  $SD=0.83$ ) than did males ( $M=3.01$ ,  $SD=0.87$ ,  $t(1544)=3.44$ ,  $p<0.0001$ ,  $b=0.133$ ,  $d=0.18$ ). No significant effects were found for age ( $p=0.32$ ). The model explained over 31% of the variance in school success ( $R^2=0.312$ ). Variance inflation factors (VIF) were quite low ( $<1.52$ ), indicating low multicollinearity. Similar results were obtained when violence and/or sex ratings were not multiplied by the number of hours of exposure.

An alternative explanation for the results we obtained is that the effects on school performance are due to the sheer amount of media consumed, rather than to the amount of violence and sex in the media. To rule out this alternative explanation, an alternative analysis was performed, in which we controlled for the total amount of media exposure, as well as participant gender and age. We used the ratings for "violence and/or sex" versus "neither violence nor sex" (rather than multiplying these ratings by the number of hours of media participants consumed each week). Similar results were obtained. As expected, there was a significant negative relationship between exposure to media containing violence and/or sex and school success ( $t(1539)=-21.81$ ,  $p<0.0001$ ,  $b=-0.409$ ).

There was no significant relationship between exposure to media containing no violence or sex and school success ( $t(1539)=1.03$ ,  $p>0.30$ ,  $b=0.014$ ) (Figure 2).



**Figure 2.** Relationship between exposure to media containing violence and sex and media containing no violence and sex on academic success (1=failure, 2=poor, 3=fair, 4=good, 5=very good), controlling for overall exposure to media, and participant sex and age. Low scores are one standard deviation below the mean, whereas high scores are one standard deviation above the mean.

As expected, there was also a significant negative relationship between hours of media consumed each week and school success ( $t(1539)=-9.77$ ,  $p<0.0001$ ,  $b=-0.011$ ). The effects for participant gender ( $p>0.87$ ) and age ( $p>0.27$ ) were non-significant. The model explained over 43% of the variance in school success ( $R^2=0.439$ ). VIFs were low ( $<1.66$ ), indicating low multi-collinearity.

## Study 2

### Preliminary Analyses

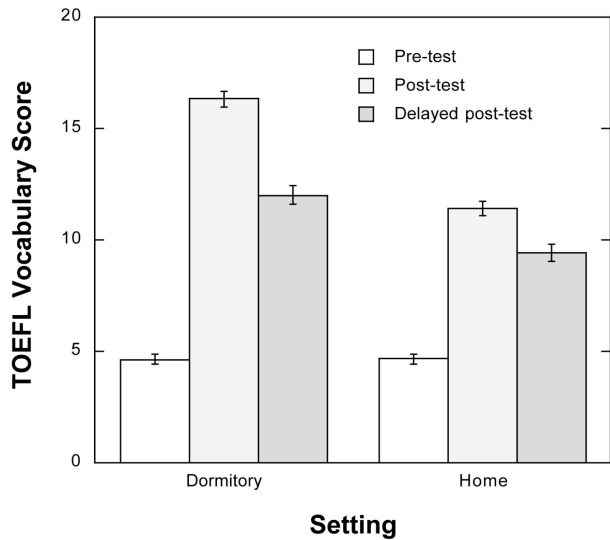
As a manipulation check, we tested whether boys living at home consumed more media in general, and more media containing violence and/or sex in particular. As expected, boys who lived at home spent more hours consuming media ( $M=36.3$ ,  $SD=22.5$ )

than boys who lived in at a dormitory ( $M=20.0$ ,  $SD=9.4$ ,  $F(1,141)=31.80$ ,  $p<0.0001$ ,  $d=0.95$ ). Because there are strict regulations about showing media containing violence and sex in school dormitories, it is therefore not surprising that boys living at home consumed much more media containing violence, sex, or both violence and sex ( $M=123.3$ ,  $SD=97.1$ ) than did boys living at a dormitory ( $M=48.4$ ,  $SD=29.9$ ,  $F(1,141)=38.64$ ,  $p<.0001$ ,  $d=1.05$ ). Boys living at home also consumed more media containing no violence or sex ( $M=89.2$ ,  $SD=60.8$ ) than did boys living at a dormitory ( $M=72.1$ ,  $SD=36.8$ ), although the difference was much smaller ( $F(1,141)=4.12$ ,  $p=.044$ ,  $d=0.34$ ).

### Primary Analyses

Data were analyzed using 3x2 repeated measure analysis of variance (ANOVA) analysis, with the time of the TOEFL examination as the repeated measures factor (i.e., pre-test, post-test, delayed post-test), and setting as the between-subjects factor (i.e., home or dormitory). A main effect for measurement time was observed ( $F(2,282)=618.27$ ,  $p<0.0001$ , partial  $\eta^2=0.81$ ). As expected, TOEFL scores were lowest at pre-test ( $M=4.71$ ,  $SD=1.91$ ), followed by delayed post-test ( $M=10.76$ ,  $SD=3.74$ ), followed by immediate post-test ( $M=13.99$ ,  $SD=3.75$ ). All pairwise post-hoc tests were significant.

As expected, boys living at a dormitory had higher TOEFL scores ( $M=11.00$ ,  $SE=0.26$ ) than boys living at home ( $M=8.66$ ,  $SE=0.26$ ,  $F(1,141)=40.22$ ,  $p<0.0001$ , partial  $\eta^2=0.22$ ). Most importantly, there was a significant interaction between measurement times and where boys lived ( $F(2,282)=40.64$ ,  $p<0.0001$ , partial  $\eta^2=0.22$ ). As can be seen in Figure 3, at pre-test, there was no significant difference in TOEFL scores between boys living at home and those living at a dormitory ( $F(1,141)=0.24$ ,  $p=0.86$ , partial  $\eta^2=0.002$ ,  $d=0.083$ ). At the immediate post-test, boys living at a dormitory outscored those living at home ( $F(1,141)=90.76$ ,  $p<0.0001$ , partial  $\eta^2=0.39$ ,  $d=1.60$ ). Likewise, at the delayed post-test, boys living at a dormitory outscored those living at home ( $F(1,141)=17.64$ ,  $p<0.0001$ , partial  $\eta^2=0.11$ ,  $d=0.71$ ).



**Figure 3.** Test of English as a Foreign Language (TOEFL) vocabulary scores for boys living in a dormitory that restricted access to media, or at home, at pre-test before any instruction was given; at post-test immediately after instruction; and at delayed post-test one week later. Capped vertical bars denote 1 standard error.

### Supplementary Analyses

Supplementary analysis was also carried out, whereby we ignored the setting in which boys lived, and examined the effects of exposure to media containing violence and/or sex on TOEFL scores at pre-test, post-test, and delayed post-test. As in the primary analysis, there was a main effect for measurement time ( $F(2,298)=168.77$ ,  $p<0.0001$ , partial  $\eta^2=0.53$ ). Across measurement times, exposure to media containing violence and/or sex influenced TOEFL scores, but exposure to media containing no violence or sex did not ( $F(1,149)=9.18$ ,  $p<0.003$ , partial  $\eta^2=0.058$ ; and  $F(1,149)=2.40$ ,  $p>0.12$ , partial  $\eta^2=0.16$ , respectively). There was a significant interaction between measurement time and exposure to media containing violence and/or sex ( $F(2,298)=15.47$ ,  $p<0.0001$ , partial  $\eta^2=0.094$ ), but no significant interaction between measurement time and exposure to media containing no violence or sex ( $F(2,298)=2.02$ ,  $p>0.13$ , partial  $\eta^2=0.013$ ). Regression analysis found no significant relationship between exposure to media containing violence and sex on pre-test scores ( $t(150)=1.64$ ,  $p>0.10$ ,  $b=0.003$ ), a significant negative relationship for post-test scores

( $t(150)=-3.93$ ,  $p<0.0001$ ,  $b=-0.014$ ), and a significant negative relationship for delayed post-test scores ( $t(150)=-2.22$ ,  $p=0.028$ ,  $b=-0.008$ ).

We also performed an analysis in which we controlled for the number of hours of media adolescents consumed each week. For pre-test scores, no significant effects emerged ( $p>0.27$ ). For post-test scores, there was a significant negative relationship between ratings for violence and/or sex and TOEFL scores ( $t(149)=-3.82$ ,  $p<0.0001$ ,  $b=-1.23$ ), but hours of exposure to media was not significantly related to post-test TOEFL scores ( $p>0.16$ ). For delayed post-test scores, there was a significant negative relationship between ratings for violence and/or sex and TOEFL scores ( $t(149)=-3.02$ ,  $p<0.003$ ,  $b=-0.98$ ), but hours of exposure to media was not significantly related to post-test TOEFL scores ( $p>0.68$ ).

## Discussion

### Study 1

In Study 1 it was found that adolescents' school success decreased as their consumption of violent and sexual media increased. This negative relationship was found for both boys and girls of all ages in both public and private schools. The results were not due to participants consuming more media with violence and/or sex than media without violence and sex; in fact our study revealed the opposite to be true - the media consumed by participants was largely without violence or sex than with. The results cannot also not be fully explained in terms of the volume of media consumed by youth. As expected, school success decreased as hours of media consumption per week increased. However, even after controlling for hours of media consumed each week, there was still a significant negative relationship between exposure to media containing violence and/or sex and school success.

### Study 2

As expected, in Study 2 it was found that boys living at home had poorer English language scores than those living at a dormitory, both immediately after the English lesson and one week later. Because there were no differences between boys living at home and



those living at a dormitory in the pre-test, the post-test and delayed post-test differences cannot be attributed to initial differences in English language proficiency between the two groups of boys. Study 2 also replicated the findings from Study 1, this time using a more rigorous outcome measure - TOEFL scores - rather than self-reported success in school.

### *General Discussion*

The two studies presented here both found that exposure to violent and sexual media was associated with diminished academic performance. Both studies are consistent with previous research, which found that violent and sexual media exposure undermines foreign language learning and performance [10,13]. Taken together, these findings indicate that violent and sexual media can negatively affect executive functioning and attention, and can negatively influence academic abilities and achievement for children, adolescents, and young adults [9,14].

The ability of children to learn a foreign language is an academic outcome we are particularly interested in, since it requires effective encoding of information. Previous research has suggested that exposure to violent and sexual media undermines effective encoding of foreign language words [10]. The results of the delayed post-test in Study 2 confirms this notion; the persistent difference in TOEFL scores between boys living at a dormitory and boys living at home one week after the English lesson was administered suggests that foreign language was more effectively encoded by boys at a dormitory. This finding supports the theoretical argument that emotionally arousing content, such as violent and sexual media, attracts attentional resources at the expense of encoding neutral content, such as foreign language words [12,15-17].

Educators emphasize foreign language proficiency as a crucial skill in a globally connected society. Whereas children in most European countries begin foreign language education in or around the first grade, children in Turkey begin their foreign language education several years later, as do children in the United States [18,19]. In both countries, media exposure peaks during the age range when foreign language education begins, typically between ages 11

and 14 [7,20]. Interestingly, Turkey is the worst performing European country on the English Proficiency Index, and foreign language deficiencies in the United States are well documented [18,21]. It is speculative to assert that the foreign language deficiencies of children in Turkey and the United States are due to a confluence of peak media exposure at the onset of foreign language education without explicit evidence. Nonetheless, the timing of initiation of foreign language education and the prevalence of violent and sexual media exposure merit careful consideration, both on their own and in relation to each other.

Of course, it is important to consider the limitations of our studies. Both studies used self-reported violent and sexual media exposure, and Study 1 used self-reported academic performance. Future research should use measurements less susceptible to reporting bias. Likewise, we implemented a cross-sectional survey and a quasi-experiment to address our predictions. Future research using longitudinal designs and controlled experiments would bolster our findings. Finally, we used a Turkish sample; future research should seek to replicate these results in other cultures.

### **Conclusions**

An important implication of our findings for pediatricians, parents, teachers, and researchers is that exposure to violent and sexual media impairs adolescent school performance and foreign language memory. This is concerning because violent and sexual media are readily available to children, and foreign language proficiency is a crucial skill in a globally connected society.

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