

Getting Angry? Counting Sheep? Could Video Games Make You Lose Sleep?

Relations Between Game Play, Sleep Deprivation, and Aggression.

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Introduction

- In samples of adolescence, playing violent videogames has been associated with increases in normative beliefs about aggression and hostile attribution bias (Möller & Krahe, 2009), while playing videogames prior to bed has been shown to result in decreased hours of sleep (King, et al., 2013).
- Research suggests a link between electronic device use, sleep, and depression (Lemola, et al., 2014), though no known research has yet to explore a similar relation between videogame use, sleep, and aggression.
- Sleep deprivation may lead to increases in aggression as increased fighting behaviors were found in REM sleep deprived rats (Morden, Conner, Mitchell, Dement, & Levine, 1968) and shorter sleeping lengths were found to correlate with increases in physical and verbal aggression, and anger in young adults (Randler, & Vollmer, 2013).
- Taken together these findings suggest that sleep may potentially be the moderating factor between violent videogame play and normative beliefs about aggression and hostile attribution bias which then leads to increased aggression.

Hypotheses

- Hypothesis 1: Amount of sleep will moderate the relationship between general videogame play and hostile attribution bias in such a way that more time spent on videogame play will be associated with less sleep which in turn is associated with increases in hostile attribution bias.
- Hypothesis 2: Hostile attribution bias and normative beliefs about aggression will both correlate positively with self-reported aggression.

Method

- Surveys were conducted with two samples, the first with an adult sample, the second with an adolescent sample.
- Study 1: Adult participants ($N = 181$) age 18 – 67 ($M = 32.57$) took the survey through Amazon's Mechanical Turk.
- Study 2: High school and college first year adolescent participants ($N = 37$) age 14 – 18 ($M = 17.16$) took the study in a research lab at Kenyon.

Measures

Aggression measurements:

- The State Hostility Scale
 - ($\alpha = .96$; Anderson, Deuser, & DeNeve, 1995)
- The Hostile Scenario Scale (HAB_b)
 - ($\alpha = .90$; Self-created)
- Normative Beliefs and Hostile Attribution Bias
 - Normative beliefs ($\alpha = .94$)
 - Hostile Attribution Bias (HAB_a; $\alpha = .37$)
 - Möller & Krahe (2009)
- The Buss and Perry (1992) trait aggression scale
 - ($\alpha = .93$)
- Aggressive and Prosocial Stem completion task
 - (Gitter, Ewell, Guadangno, Stillman, & Baumeister, 2013).

Sleep

- In study 1 number of hours slept was questioned based on the findings of Lauderdale (2014).

Tiredness

- In study 2 tiredness was measured using a scale designed by the present study along side the PSS-10
 - ($\alpha = .71$; Cohen, & Williamson, 1988).

Videogame Play

- Ewell, Guadangno, and Hamilton's (under review) videogame scale was used to evaluate videogame play.

Results (Continued)

Hypothesis 1

- Number of hours slept was not significantly correlated with videogame play or aggression however, self-reported tiredness was related with aggression.
- Moderation analysis for Hypothesis 1 showed that neither sleep nor tiredness moderated the relationship between videogame play and aggression.
- Tiredness related with increased reporting in trait aggression and a specific measure of hostile attribution bias.
 - Results are presented in Table 2

Hypothesis 2

- Hostile attribution bias did not correlate with normative beliefs about aggression or state aggression.

Additional Findings

- Results did not indicate a significant relation between general videogame play and any form of aggression however correlations were shown between specific types of games:
 - State Aggression positively correlated with playing flight/racing games and mobile games
 - The Buss and Perry (1992) trait aggression measure correlated positively with all types of videogames.
 - Results are presented in Table 1

Results

Table 1
Correlation Matrix of Aggression Scales and Videogame Play Type for Study 1.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------------|-------|-------|------|-------|------|-------|------|---|
| Normative Beliefs | | | | | | | | |
| HAB _a | .26* | | | | | | | |
| HAB _b | .25** | .24** | | | | | | |
| Trait Aggression | .40** | .41** | .14 | | | | | |
| State Aggression | .25** | .14 | .16* | .52** | | | | |
| Fighting/Racing | .26 | .01 | .21 | .40** | .26* | | | |
| Sports | .26 | .14 | .19 | .31** | .20 | .45** | | |
| Mobile | -.04 | -.01 | .09 | .24** | .28* | .26* | .34* | |

* Denote significance at $< .05$

** Denotes significant at $< .01$

Table 2
Aggression Variables Compared by Self-Reported Tiredness for Study 2

| | Tired | | Not Tired | | t-test (sig) |
|-------------------|----------------|----------------|-----------|--------|--------------|
| | M (SD) | M (SD) | M (SD) | M (SD) | |
| Trait Aggression | 27.96 (6.56) | 22.44 (2.46) | | | .019* |
| HAB _a | 2.79 (.47) | 2.58 (.54) | | | .290 |
| HAB _b | 116.21 (11.73) | 105.56 (12.52) | | | .025* |
| Normative Beliefs | 1.72 (.80) | 1.42 (.55) | | | .299 |
| State Aggression | 71.86 (17.45) | 67.22 (19.24) | | | .503 |

Discussion

- Results from the adult sample partially supported our hypothesis by indicating that tiredness, not sleep, related with increases in aggression.
- The first study did not show the expected relation between sleep, videogame play, and aggression, however this sample was significantly older compared to previous research.
- Results from the second study did not support any of the present study's hypotheses.
- Much of the present research was based on the General Aggression Model. while our results did not support expected findings, they seem to follow the criticism of the GAM as suggested by Ferguson & Dyck (2012).
- Future studies would be wise to examine a more detailed scale for tiredness, more accurate scales for hostile attribution bias, and differentiate type of game play.