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Understanding Motivational Factors of Problematic Video Gaming in the USMC and the US Navy

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NAVAL RESEARCH PROGRAM
NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

UNDERSTANDING MOTIVATIONAL FACTORS OF PROBLEMATIC
VIDEO GAMING IN THE USMC AND US NAVY

EXECUTIVE SUMMARY

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Project Summary

The overarching aim of the project was to assess attributes and aspects of video gaming in the Marine Corps and US Navy. Survey data were collected from three US Navy surface ships (two in port, one deployed) and three United States Marine Corps commands. Marines also participated in semi-structured focus groups. Response rates to the surveys ranged from ~7.5% for Marines to ~22.5% for Sailors. Respondents consisted of 68 Sailors and 927 Marines (median age of 24 years, 92.4% males, 84.2% enlisted). From these 1,013 ADSMs, 91.6% reported playing video games (VGs) (median age of 23 years, 94.3% males, 86.1% enlisted). Results suggest that video gaming is highly prevalent in the military. Video gaming occurred more frequently at home/off duty than when on duty or when underway/deployed. Self-identified gamers reported video gaming later in the day and, depending on the setting (at home/off duty, on duty, underway/ deployed), 5 to 18% of gamers reported sleeping later due to gaming. Self-identified gamers reported symptoms of depression (~23% of ADSMs), generalized anxiety disorder (~19%), and excessive daytime sleepiness (EDS) (~33%). Approximately 39% of these gamers had AUDIT-C scores suggestive of heavy drinking and ~32% reported dissatisfaction with their life. More excessive gamers tended to be younger, use dysfunctional coping styles more frequently, and play video games more frequently and for more hours. Also, more excessive gamers were more likely to have symptoms of major depression, generalized anxiety, and EDS, and were also more likely to report sleeping later because they played VGs. Depending on the criterion used, the prevalence of disordered gaming in the study samples ranged from 0 to 4.85%. Of those who reported playing VGs, ~50% of Marines and 25% of Sailors were identified as problematic gamers. We developed several recommendations and action items to include follow-on research.

Keywords: *Video gaming, disordered gaming, motivational dimensions, depression, anxiety, stress, sleep.*

Background

Video gaming is a popular activity among active-duty service members (ADSMs). The prevalence is not unexpected given the relatively young age of many ADSMs and the high prevalence of video gaming in the United States population. Video gaming has been associated with cognitive benefits, including improvements in visual selective attention (Green & Bavelier, 2003), speed of processing (Dye, Green, & Bavelier, 2009), and executive functions (e.g., decision making and problem solving) (Buelow, Okdie, & Cooper, 2015). Video gaming may also be a tool for coping with stress. This benefit may be especially important in military operational settings which are characterized by high levels of occupational stress and poor sleep conditions which increase the risk of depression, anxiety, and sleep disorders.

In contrast to normal gaming, excessive video gaming may result in degraded well-being and health outcomes. Studies have shown that excessive video gaming is related to high stress levels (Milani et al., 2018), lower psychosocial well-being and psychological functioning (von der Heiden, Braun, Müller, & Egloff, 2019), loneliness and depression (Lemmens, Valkenburg, & Peter, 2011), and delinquency and aggressive behavior (Engelhardt, Bartholow, Kerr, & Bushma, 2011; Ewoldsen et al., 2012; Milani et al.,

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2018). Video gaming may also be related to poor sleep, especially when gamers stay up late playing video games (Matsangas, Shattuck, & Saitzyk, 2020). In extreme cases, video gaming can become an addiction. In the scientific literature, Internet Gaming Disorder (IGD) is associated with poor emotion regulation, impaired prefrontal cortex functioning and cognitive control, poor working memory and decision-making capabilities, and neuronal deficiencies characteristic of substance-related addictions (Kuss, Pontes, & Griffiths, 2018).

The overall aim of this project was to assess attributes and aspects of video gaming in the United States Marine Corps (USMC) and United States Navy (USN). The specific objectives were:

- Assess the prevalence of video gaming.
- Assess the prevalence of problematic video gaming and/or addiction to video gaming.
- Explore why Marines and Sailors engage in video gaming.
- Explore whether Marines and Sailors are using gaming as a maladaptive coping mechanism.
- Identify the key intrinsic factors (e.g., demographic characteristics) and extrinsic factors (e.g., occupational or other) associated with video gaming.
- Assess the effect of video gaming on Marines' and Sailors' behavior, quality of life, and everyday functioning.
- Provide recommendations focused on existing Marine Corps Community Services programs and Sailors to promote healthy coping behaviors in response to stressors.

The study included two major components: Navy and Marine Corps. The first component (Navy) collected data from Sailors on three United States Navy surface ships (two in port, one deployed). Sailors filled out a paper-based cross-sectional survey. Deployed Sailors completed a daily paper-based activity log for 10 days while Sailors who were in port filled out the activity log online. The second component (Marine Corps) collected data from Marines in three commands that were selected by the Marine Corps Headquarters. Marine participants took the cross-sectional survey online; a subset from the three commands participated in semi-structured focus groups.

Findings and Conclusions

Consistent with studies in civilian populations, our results suggest that video gaming is highly prevalent in the military. Compared to the limited number of non-gamers who participated in our study, self-identified gamers were more likely to be young, enlisted males. Many gamers reported that video gaming began early in life, around 7 or 8 years of age. In terms of coping styles, both Marines and Sailors who played video games used problem-focused and emotion-focused coping styles more frequently than dysfunctional coping styles. The most frequently reported motivation for video gaming was recreation, followed by coping with stress. In general, more respondents reported video gaming at home/off duty than when on duty or when underway/deployed. Sailors, however, seem to be more consistent than Marines in their video gaming habits. Depending on the setting (at home/off duty, on duty, when

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deployed/underway), gamers reported playing video games on average 3.75 to 6 days in a typical week for approximately 2 to 3 hours/day. The most frequently reported devices used for video gaming were game consoles and smartphones. In general, gamers reported video gaming later in the day (i.e., after work and before bedtime) and, depending on the setting (at home/off duty, on duty, underway/ deployed), 5% to 18% of gamers slept later due to video gaming. Most gamers reported video gaming in their racks or the mess decks/common areas when deployed/underway. In both USN and USMC populations, self-identified gamers reported symptoms of depression (~23% of the ADSMs) and generalized anxiety disorder (~19%). They also exhibited excessive daytime sleepiness (~33%), AUDIT-C scores suggestive of heavy drinking (39%), and ~32% of gamers reported dissatisfaction with their life. Finally, excessive gamers tended to be younger, to use dysfunctional coping styles more frequently, and to spend more time in video gaming activities (i.e., gaming more frequently and for more hours). Excessive gamers were more likely to report symptoms of major depression, generalized anxiety, and excessive daytime sleepiness, and were also more likely to report sleeping later due to video gaming.

We devised a classification scheme that considered video gaming as a continuum with three mutually exclusive groups (normal, problematic, and disordered gamers). The "disordered" classification was based on three factors (psychological status and health, styles of coping with stress, and time management expressed by whether video gaming interfered with their sleep). The "problematic" classification was based solely on the time management factor and assumes that gamers do not have any issues related to their psychological status/health and styles of coping with stress. The application of the 3-group model led to the conclusion that approximately 50% of Marines and 25% of Sailors who reported playing video games in our sample could be identified as problematic video gamers. Also, depending on the validated criterion used in civilian populations, the prevalence of disordered gamers in the study samples ranged from 0 to 2.20%. With the revised criteria we developed, the estimated prevalence of disordered gamers ranged between 1.3% and 4.85%.

Recommendations for Further Research
Based on our findings we developed several recommendations and action items.

- Develop video gaming training for leadership and active duty service members (ADSMs). Specifically, ADSMs should be educated about the negative effects of video gaming to include video games (VGs) roles as "time wasters" and "sleep thieves," and the potential risk of addiction.
- Conduct a sleep study using objective methods to reliably assess sleep/wake patterns and sleep attributes of gamers (e.g., sleep duration, timing, quality).
- Conduct a follow-on study to validate the current findings and to assess the prevalence of video gaming more reliably in the United States Navy and Marine Corps. This study would add a few questions related to video gaming to a more general survey that is not focused on video gaming *per se*, e.g., the Navy's command climate surveys.

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- Even though tools like the IGDS9-SF (Severo et al., 2020) are extensively validated in civilian populations, existing criteria are not tailored for military personnel or the unique demands of military operational settings. The criteria for "problematic" and "disordered" video gaming need to be refined and tailored for the military.
- Assess whether and how video gaming behaviors change after joining the military.
- Assess the effect of other "time wasters," such as time on the internet and social media use. Even though technology use is often a means of relaxing from the stress military life, the overuse of technologies can perpetuate sleep disturbances by increasing arousal right before bedtime (Troxel et al., 2015).

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Acronyms

ADSM	Active-duty service member
AUDIT-C	Alcohol Use Disorders Identification Test for consumption
EDS	Excessive daytime sleepiness
IGD	Internet Gaming Disorder
VG	Video game