1. Introduction

Video games have long been at the center of a heated debate on the social consequences of violent media. They have been accused of spreading violence in the society by triggering several murder crimes and manipulating individuals’, especially children’s, mental health and psychology. Despite the controversies, today, 155 million Americans from all ages spend an average of 6.3 hours every week on video games (Aamoth, 2014; Theesa, 2015). Around the world, people spend more than $100bn for gaming. While video games and media present a limited interactive experience with a 2D screen and optionally a console, Virtual Reality (VR) immerses users to virtual worlds where any dream may be possible. VR has and will find applications in various areas ranging from gaming to education and the VR products have already attracted more than $4bn investment (Vanian, 2015). In the past, VR technologies have had constrained use cases in military training, and research points to the effectiveness of virtual experiences in psychotherapy and education.

The emergence of VR devices in 2016 has again sparked arguments about how to assess the risks pertaining to the media, especially to VR games and its predecessor video games, and about how to put regulations in the best interest of the society. In this paper, I will analyze the video game regulations in place to mitigate risks of the technology, how the regulations came to be and how the video games example can establish a basis for addressing some of the short-term and long-term potential psychological risks of VR technology. I will analyze Federal Trade Commission’s (FTC) role in addressing short-term risks and American Psychology Association’s (APA) efforts to assess the long-term risks of video games and virtual reality. I will show how planned adaptation has been used successfully by FTC and APA in enforcing socially beneficial regulations in different cases and how planned adaptation can be applied to video games and virtual reality.
2. The History and Controversy of Video Games

The first commercial video games appeared in the early 70s (Cohen, 2016). Since then, there have been games with controversially violent and sexual content. Death Race portraying users driving over creatures called media attention with its disturbing theme and sounding effects. Custer’s Revenge let users control a naked man to reach to an Indian woman tied to a wooden pole to rape her (Plunkett, 2011). The game triggered outrages from Indian’s and Women’s rights representatives and Atari attempted to sue the game company (Ocala Star-Banner, 1982). While both of the games had very poor graphics to be even considered violent by today’s standards, for the first time, they raised questions about what side effects video games might have on players and what should be considered appropriate entertainment. The game industry crashed in 1983 after the overwhelming increase in low-quality games, the pirate game sells and saturation in the market. With demands for higher standards in the industry, Nintendo of America, a major console manufacturer, put licensing requirements for the games and a lock system for its consoles that permits only the licensed games to fight piracy. Nintendo also set policies censoring references to tobacco, alcohol, sexuality and violence in games (GamesRadar, 2009).

In the 90s, the graphics and sound qualities of games significantly increased. Console manufacturers had their own rating systems based on age or intensity, and they had differing opinions on restricting violent and sexual content (Chalk, 2007). Nintendo retained its strict content policy and continued censoring content that may be perceived as improper, while Sega put its own age rating system together (Harris, 2006). In 1992, Joe Lieberman of Connecticut and Herb Kohl of Wisconsin started hearings on complaints to games rendering highly violent and sexually explicit content. In 1993 December, a joint congressional hearing took place. Observing the disunity between the major game developers in resolving the content policies, Lieberman proposed the Video Game Rating Acts of 1994. The act described a federal commission addressing the policies regarding video games (Video Game Rating Act, 1994). At the same time, Senator Kohl had a self-regulatory system in mind, similar to the regulation of motion picture: “We want you to develop a voluntary rating system; we want you to let parents know what they are buying for their children. We would prefer self-regulation to Government regulation. But we are prepared to move ahead if your efforts falter: Regulate yourselves or we
will have to do it for you.” (Kenyota, 2008). These steps would lead to a self-regulatory organization led by the game industry.

3. The ESRB and Game Regulation

Concerned with the business risks of government regulation, Nintendo, Sega, Electronic Arts and others convened to establish an umbrella organization, Interactive Digital Software Association, later Entertainment Software Ratings Board (ESRB), that would standardize the video game content policies. ESRB adapted the rating categories of "Early Childhood", "Kids to Adults" (later renamed "Everyone" (E) in 1998), "Teen" (T), "Mature" (M), and "Adults Only" (AO) to protect minors from negative effects of video games. Later, the E10+ category was added and these categories have not changed over time (Kohler, 2009).

Since then, ESRB has been managing the rating process for video games and enforcing various policies to ensure that the consumers properly receive the content ratings of video games. Rating information is presented in compliance with various principles and guidelines regarding the advertisement and packaging of games. In cases of serious content non-disclosure and other violations, ESRB enforces fines up to $1 million and product recall. This is especially the case for violations of boxed games that are harder to replace or update. Digitally distributed games are usually subject to software updates if parts of the game content do not comply with rating given to the game.

While ratings had been granted based on independent reviews by anonymous reviewers in the past, the Global Ratings by International Age Rating Coalition has centralized the content rating process. It has enabled digital developers to self-assess the content through an online system and publish their games with the appropriate rating marks for different countries. The system does not constrain or alter the policies of any of the game regulatory organizations, but it empowers developers to easily comply with various policies around the world through a single assessment survey. If a self-assessment is flawed, ESRB can later warn the developers based on customer feedback (www.globalratings.com, 2017).

While ESRB ratings are voluntary, most of the retailers and game distributors do not handle games that do not have ESRB rating. This establishes a voluntary but practically
obligatory reason for game developers to comply with the ESRB standards. Usually, developers change game content based on the feedback from ESRB to avoid adult-only content, because most retailers do not sell adult-only games. ESRB also works closely with retailers to ensure that retailers inform the customers on the ratings and do not sell M-rated or above games to minors. ESRB does so without the authority to sanction the retailers for violating its policies (ESRB Enforcement).

According to FTC’s regular inspections, game retailers follow the sales guidelines most rigorously among all entertainment businesses. Retail sales of M-rated games to minors have decreased from 85% to 13% from 2000 to 2011, while sales to minors can be as high as 60% in other entertainment industries (FTC Undercover Shopper Survey, 2011). We will examine how the success of ESRB enforcement has increased with the planned adaptive changes that ESRB has adapted with FTC reviews.

4. Planned Adaptive Approach and Protection of Minors in Video Game

Planned Adaptation processes are regulative and policy-making processes by which the policies are revised “when relevant new knowledge appears”, and steps are taken to “produce such improved knowledge” (McCray, 2009). Planned Adaptation approach has shown to be more effective than permissive and precautionary approaches in policy areas where there are high levels of uncertainty and rapid change, especially policies for emerging technologies. Video games fall into this category. The industry practices and scope have been rapidly changing in gaming from mere hobby in the 80s, to a market of the console, PC, mobile and Internet games today, and it is further changing with the arrival of virtual reality.

The regulation of video games have been enforced by ESRB through voluntary participation since 1994, and the revision and improvement of the regulatory process have been evaluated by Federal Trade Commission (FTC) since 1999. FTC started reviewing “the industry practices in the motion picture, music recording and electronic game industries” (FTC, 2000) to report on violent entertainment regulation for children upon President Clinton’s request after the Columbine High School massacre that raised serious concerns about crime tied to violent games (FTC, 2000). There have been 8 reports since 2000 with the most recent release in 2013 in the form of a press release. The reports aim to inform three major decision makers - the policy
makers, game industry, and parents. Reports include field surveys and evaluations on the
efficacy of the existing organizations, mainly the ESRB for games, in enforcing video game
regulations and putting FTC’s previous recommendations into action, not only for violence but
also any content that could be improper for minors. FTC makes recommendations for further
improving the quality of the existing regulations and points to new trends that ESRB should be
aware of.

The first report in September 2000 describes several concerning issues with the
regulatory practices by the ESRB. The commission conducted several surveys with parents,
retailers, and advertisers on issues including public awareness for ratings, and selling and
marketing M-rated and Adult-only games to children. Most children had access to M-rated
games at retail stores; some M-rated video game ads were accessible to minors, alluding them to
violent games, and parents were unaware of the existence or importance of ratings. The report
proposed several steps that the industry and ESRB should take, including revising the ESRB
codes to regulate the ad content of media with majority minor consumers, informing parents
through packaging and internet media, and ensuring consequences to ESRB regulation violations
(FTC, 2000).

The following year in December 2001, FTC conducted follow-up surveys to evaluate
how its recommendations were implemented. For example, in “undercover shopper survey”, the
surveyors attempted to buy M-rated games at retail stores as minors. The FTC report compares
the outcomes of the surveys in 2000 and 2001 and concludes that ESRB has shown progress in
FTC consistently measures the effectiveness of the ESRB, compares its effectiveness with the
previous years and provides further suggestions. For example, in 2007, the commission, based on
its consumer research, suggested ESRB investigates why parents think that ESRB could inform
them better (FTC, 2007). Following FTC’s recommendation, ESRB conducted surveys and focus
groups and concluded that providing more detailed information on ratings to the parents would
be useful. Since July 2008, ESRB provides in-depth ratings for each rating title (FTC, 2008).
Here we observe that this self-regulatory system follows the planned adaptive framework. As
FTC reveals new information on the effectiveness of the policies, it reviews the existing policies
and how they are implemented. FTC then makes recommendations to the ESRB for properly
revising the policies to better enforce its standards. FTC plans to regularly produce knowledge about the policies’ effectiveness and advises ESRB to do so in areas of improvement.

This adaptive learning approach is effective in the video game case for several reasons. The ESRB has incentives to follow the recommendations without any sanctions by the FTC, while the FTC can conduct objective evaluations of the ESRB and the technology. First, the ESRB was formed after federal regulation threats to games, and since then until 2011 Supreme Court decision, several states had attempted to regulate video games and ban selling games to minors. The ESRB can only stand the time as long as the public and the FTC are happy with the ESRB regulations. Second, the ESRB ratings are robust. The video games used to be rated by three people without any ties and anonymous to the industry. Nowadays, it is a self-rating process through www.globalratings.com. Third, the FTC and the ESRB are separate bodies that do not have any conflict of interests. Fourth, the FTC is incentivized to protect the interests of the citizens, since improper ratings or legislation can easily spark a national uproar, as in the case of Hot Coffee, a hidden mode in the GTA game that reveals explicitly sexual content (Lohr, 2005).

On the other hand, permissive or precautionary approaches to video games regulation could prove ineffective or less beneficial for the society. In fact, almost no significant progress was made in enforcing the ESRB standards until the FTC’s reviews started. While the retail sales of M-rated games to minors stayed around 85% from 1994 to 2000, it has dropped to 13% by 2011 since the FTC reviews has started. The FTC did more than ensuring that the ESRB functions effectively. As we discussed above, it proposed new policies for effectively addressing the regulatory challenges and followed emerging media trends such as the internet to form the necessary regulative response. This indicates that a completely permissive approach could result in a scenario where no age ratings would be enforced for protecting children from side effects of video games. A precautionary approach could upright ban the sales of some games on void grounds, limiting the creativity and production of game developers.

In the same reports, FTC seems to implement a planned adaptive policy framework for movies and music industries by evaluating the conduct of motion picture and music industries. The reports repeatedly state that game industry is the most successful among motion picture, music and game industries in implementing the self-regulatory system. While evaluating the
policy-making mechanism for motion picture and music industries is beyond the scope of this paper, it is worth pursuing for the future.

5. The Limitations of the ESRB and Recommendations for the FTC

There are limitations to the self-regulatory, adaptive system of the ESRB. Each FTC report concludes with a paragraph calling out for the involvement of the industry leaders and public. As Commissioner Orson Swindle stated at the end of the 2002 report, “if the public wants a change in these marketing practices, the public must demand that change and express its wishes in the currency of the marketplace”. If the public awareness for and interest in ensuring protection from the adverse effects of the video games die out, the ESRB and the FTC would have less incentive to work towards enforcing the regulations in the way most beneficial to the society. The government would feel have less pressure to protect the minors from problems that may come with the video games, and the FTC program could then even be abolished. If there are no public complaints, the ESRB can easily ignore content disclosure violations or fail to enforce proper sanctions to games violating its policies.

In fact, the latter may become the case especially if there are conflicts of interest within the ESRB. Video game industry leaders on the ESRB board can influence the way how their own games are treated by the organization. The industry leaders would be incentivized to produce games with types of violent content that attract children and take soft stands on sanctioning their own games. This may have been happening for some of the most controversial ESRB decisions, including the Grand Theft Auto (GTA). GTA games simulate a realistic world where players can gamble, explicitly kill, and arrange prostitutes. With its violent, abusive, sexually explicit content, the game has long been central to the video game debates. However, the game has never been rated as adult-only, or policy steps were taken to re-evaluate standards for adult-only with emergence of new game genres like GTA. The critics argue that since rating games as adult-only limits games’ market reach and can diminish sales significantly, the ESRB have strong interest in avoiding the adult-only rating, because some games with high success potential may otherwise be categorized as adult-only. While it is unclear if such improprieties have ever been the case, there are potential grounds for conflict of interest. For example, Strauss Zelnick, a chairman for the ESRB board, is also the CEO of Take Two Games that develops the GTA series. Since the public is invested in the video games cause, the conflict of interest has not become a major
problem for the organization. In any case, such issues of conduct should be included in the FTC reviews. The FTC should investigate if the conflicts of interests have any impact on individual game rating cases. Right now, the FTC only focuses on the outcome of the ESRB enforcement, not the process of the enforcement.

Moreover, the FTC seems to be falling short in the last 5 years in describing the emerging trends, and recommending action for recent technologies, which is the knowledge producing and evaluative component of the planned adaptation. After 2009, there hasn’t been a comprehensive FTC report other than the commission press releases in 2011 and 2013 that does not address or follow up with most of the points from the 2009 report. In the meantime, mobile apps have become prevalent and VR games have been emerging. FTC has not researched or published on mobile apps or VR games yet, although VR games will include violent actions in potentially more influential ways requiring serious attention. Only after 2015 has the ESRB ratings become available at Google Play, the Android mobile app store.

Finally, FTC should investigate how emerging gaming platforms that establish its own rating standards comply with the ESRB standards. The Apple iTunes App Store for mobile applications for iPhones and Oculus Experiences for Oculus’ VR applications have their own standards and rating procedure. Although their ratings seem to parallel the ESRB ratings, FTC should still ensure the coherency across existing and emerging technologies.

6. Adverse Psychological Effects of Video Games:

So far, we have discussed the historical development of video games and regulative responses to reduce risks for minors who may be affected by the media content. These responses follow the trajectory of the entertainment regulation. Motion picture and television has long been rated similarly, and it could be expected that video games were going to be subject to a similar regulatory process. On the other hand, there has been an ongoing scientific debate about what type of media content is actually harmful for children, if some of the video game content psychologically manipulate their consumers, if such effects hold not only for children, but also for adults and if these effects are worth policy attention.

There are two types of potential psychological effects of video games. First, there are short-term effects that can be more easily observed. The regulations I have discussed so far aim to reduce risks of short-term harms on children who may be vulnerable to various content and
engagement in video games and may develop abnormal behaviors in a “short” amount of time. I will present below examples that are attributed as video games’ short-term effects. One of the arguments for not regulating games for adults is that adults can choose what is right for them, and they would not be affected significantly from violent or abusive media. This leads us to the distinction of video games’ long-term effects. Some research argues that video games may have long-term, cumulative influence on individuals. Video games may be making the consumers more aggressive over the span of years in a subtle way that the consumers do not realize. As more people are exposed to TV and video games with violent, aggressive, and misleading content, our reactions and behaviors may be shifting towards more aggressive, less empathetic and so forth. These potential long-term effects of video games are very tough to point to and may be the outcome of numerous other factors over years as much as the outcomes of video games.

Short-term and long-term adverse effects of video games have long been a scientific controversy. Since 80s, there has been conflicting research on video games’ negative and positive psychological effects on the consumers. In 2015, the American Psychological Association (APA) published the “Technical Report on the Review of the Violent Media Game Literature” that revises a similar APA report from 2005 and reviews the academic literature between 2005 and 2015 on video games in depth. The report was carried out by the APA Task Force on violence media in a similar fashion by which the APA reviewed important social issues such as sexual orientation and discrimination. The report demonstrates that there is “an association between violent video game use and both increases in aggressive behavior, aggressive affect, aggressive cognitions and decreases in prosocial behavior, empathy, and moral engagement” and describes video games’ impacts on aggressive behavior as robust. The impact of violent video games is claimed to be long lasting as shown by long-term studies. However, the report remarks that there are some methodological issues with the collection of studies, including the measures used, the sample distributions, small and varied sample sizes and inconsistent metrics.

The APA report and similar studies suggesting negative effects of video games have been disputed with the claims of methodological issues. In 2013, 228 scholars and academics around the world published an open letter to refute the APA’s 2005 violent media statement and pointed to potential problems regarding the ongoing report for 2015. The report underlined that the laboratory experiments are not externally valid, that there is a negative correlation between
video games and crime rates in populous cities, and that the self-selecting academic process for
“positive” findings providing evidence for the link between aggression and video game violence
manipulates the scientific discourse (The Media Coalition, 2013).

Even if the APA’s conclusions are robust, the conclusions do not tell anything about how
serious the aggression is invoked by violent video games. As long as the intensity of the
increased aggression or other psychological reactions is not scientifically established, the
research is very unlikely to affect policy decisions. The challenge of the long-term effects of
video games is to properly investigate how video game use may be subtly altering human
behavior and how this change brings about higher crime rate, gun violence or other problems.

The same inconclusiveness arguments for short-term effects of video games can be made.
Unfortunately, it is very though to explicitly link video gaming to serious crimes, because video
games’ effects are psychological, and psychological factors are harder to measure without
explicit statements of the crime makers. Yet, there are crime cases around the world suggesting
adverse short-term effects, or at least convincing the public that there may be negative effects of
video games. In 2003, Devin Moore, 18-year-old American, murdered two policemen and
another man after being arrested for stealing a vehicle. Moore told the police “Life is like a video
game. Everybody's got to die sometime.” Devin’s moral engagement and empathy was possibly
diminished after his engagement with video games (Leung, 2005). In 2007, Daniel Petric killed
her mother and wounded his father by shooting them to head. His parents took away his favorite
video game Halo 3, a first-person shooter game where players kill aliens, and they locked the
game to a lockbox where the father keeps his pistol. Stealing the box’s key, Daniel took the
game and grabbed the gun to shoot his parents. The Judge Burge stated his belief that “Daniel
Petric had no idea at the time he hatched this plot that if he killed his parents they would be dead
forever”, while he rejected the notion that Daniel had become psychologically insane due to the
game. Daniel perhaps lost his moral engagement as well as developed strong aggressive behavior
tied to the game (Daily Telegraph, 2013). In 2012, a 13-years-old cut his friend’s throat after
playing Gears of War 3 together. The research team investigating the issue concluded that
violent games may foster the conviction that conflict and anger can be dealt with aggression
(Yin-Poole, 2013). The actors of the crimes were immersed in the game in a way that the death
and violence in the game did not seem to be any different to him from that in the real life, and
violence and aggression in the game may have had spillover effects to real life. These incidences
suggest that aggressive behavior, lack of empathy and moral disengagement might be triggered by video games.

7. Psychology Research and Regulation

The short-term effects of the video games can be mitigated by the existing regulatory structure, and in practice, the ESRB approach seems to be working. However, the scientific basis for the ratings is not well established. APA recommends revisions and detailed the ratings, but the basis for this recommendation is subject to criticism itself. The ESRB only accounts for protecting minors and the discussions on the psychological impacts of video games to young adults and beyond in the long-term has always been secondary at best. The scientific evidence on long-term effects for restricting video game use for adults and further limiting minors’ access to video games seems to be inconclusive. In fact, in 2011, Supreme Court pointed to the flaws in the psychology research on violent media to withhold the California ban on selling M-rated video games to minors, and argued that the video games are protected as speech (Supreme Court, 2011).

Though more than 30 years past, the scientific community could not yet come to a consensus about the adverse effects of video games. Not only adverse effects, but positive effects are not clear. While there is research describing the positive contributions of video games to children’s learning, the benefits of educational games are still unclear. If a collective and systematic effort is not directed towards understanding the implications of the technology, we may only arrive to a suboptimal outcome. This discussion leads us asking several questions on psychology research.

How and by whom should the psychology research be conducted and advocated that the research can establish proper knowledge assessment for important social and political issues? How can better tools and incentives be developed to establish better scientific practices that produce conclusive and consistent results? I will focus on American Psychology Association that has long been the most vocal and impactful organization in psychology knowledge assessment.
APA acts as a guiding body in the knowledge assessment for psychological aspects of policies. APA is the umbrella psychology organization in the US that aims to “to advance the creation, communication and application of psychological knowledge to benefit society and improve people's lives” (About APA, 2017). APA leads various efforts to promote best practices in psychology, review the literature to make conclusions on psychology, and channelize the scientific knowledge into practice through its policy statements, resolutions and government relations.

APA assesses the scientific knowledge for the psychologists by issuing guidelines prepared by using a planned adaptive framework. APA reviews and approves guidelines in areas of professional conduct such as treatment of homosexual clients, children, and autistic clients. The guidelines are prepared to educate psychologists in existing or new practice areas and also outline best practices. The guidelines review the literature or the relevant APA task forces, summarize the key concepts and provide the state-of-the-art best practices drawn from the literature. Rather than a checklist of “do’s and don’ts”, the guidelines describe how practitioners should approach to their clients in cases of medical certainty and uncertainty. The rationale behind the recommendations is explained based on extensive literature review. The reports expire with time or with major advances in the field and revisions and reviews are conducted (APA Guidelines, 2016). APA has issued dozens of guidelines so far. This guideline system is very similar to the guideline system for cardiac surgeries that follows a planned adaptive framework for knowledge assessment (McCray, 2016). Both APA and cardiac surgery guidelines are meant to be revised and improved over time, i.e. they are adaptive to learning and planned ahead.

Moreover, APA forms policy opinions through its task forces that make extensive review and knowledge assessment on various socio-political issues from a psychological perspective. The task force topics include education, media, family and children, and sexual orientation. Task forces review the whole literature on the topic, methodologically study the findings, make conclusions and point to the gaps in the research. The task force reports conclude with a set of resolutions or recommendations. The reports state APA’s standpoint on the issue, sets goals on the issue for further development, and points to what areas of research to further focus on, and
what the groups and people affected by the findings should do. The reports also include specific policy recommendations for the government or organizations. Just like the guidelines, the report is revised if the topic stays relevant as an important social issue and the existing report becomes outdated over time (Task Force Reports, 2016).

The “Sexualization of Girls” report is a good example of what task forces work on. The task force consists of 7 expert members from APA. The report starts by stating that the task force was formed to address public concerns on the issue. It covers the theory and findings on the topic, proving the sexualization in our societies and its consequences for girls. Then, it describes further research on the topic, including that most research so far has been conducted on women, but not on girls. The report outlines what practitioners can do and what should be done for education, training and increasing public awareness. On the policy side, the task force recommends the APA to advocate for funding for research it outlines, advocate for educational programs, and work with federal agencies, industry and Congress to reduce sexualization of girls (APA Task Force on Sexualization of Girls, 2016).

Through task forces, APA updates its policies in a planned adaptive manner. While task forces do not regularly research a topic, they aim to revise APA’s existing goals and efforts for the subject matter as the need arises or time passes. For example, APA has published four reports since 2004 on sexual orientation and homosexuality. Task force on “Appropriate Therapeutic Responses to Sexual Orientation” in 2007 reviewed the 1998 report, and similarly other reports built on previous reports.

APA’s knowledge assessments are meant to be of the highest credibility, voicing the authoritative scientific opinion on the issues APA investigates. APA has established a strong organizational structure for its guidelines, task forces and other efforts to ensure that the opinions it presents are relevant, up-to-date and expert opinions. However, APA is more than a purely scientific community with high involvement in policy-making and with ties to the US government and federal agencies. A task force formed by an APA executive with a political agenda may as well merely voice one aspect of the reality on a divisive scientific issue. The high controllability in APA in deciding which part of the opinions among thousands of APA members is to be presented raises concerns about credibility, too.
APA’s Impact on Social Policies

APA lobbies its opinions through The Public Policy Office and other government relations offices. It sends member psychologists to Washington for policy fellowships that make to positions of influence in government, including the legislative director for Senator Jeff Bingaman, and president of National Research Center for Women and Families. So far, more than 10 APA members made their way to The House of Representatives (Maton, 2006).

However, aside from the guidelines used by the psychologists in their practices, it is hard to measure how effective APA’s efforts have been in driving change on the issues it addresses. In the policy-making arena, the impact of the reports and advocacy efforts is long-term and indirect. It is usually not clear how much of the policy-makers’ decisions are based on psychology research or APA’s studies, and how the policy decisions would be different without the psychology research conclusions in hand. APA’s opinions penetrate through the federal offices, but it is hard to know which decisions are heavily influenced by the APA’s opinions without statements by policy-makers that attest the psychology research’s impact on the issue. One concrete example is the CIA’s secret collaboration with APA to create an ethics policy for its tortures as part of its post-Sept. 11 war on terror interrogation program. I could not find other evidences that point to APA’s direct contribution to federal policy decisions, while I acknowledge that more research may reveal other concrete examples. Despite the lack of concrete and direct APA contributions, indirect effects such as creating public awareness, changing public perception should not be underestimated.

Psychology research is increasingly becoming more effective on the legal cases regarding public policies. APA sends amicus briefs to Supreme Court cases presenting scientific research and knowledge assessment on the issues in hand and can in some cases influence the court opinion. City of Akron v. Akron Center for Reproductive Health struck down various restrictions on abortion. APA’s brief on who can provide abortion counseling was the single piece of scientific evidence that supported the Court’s decision. Supreme Court cited several identical resources and alternative regulation suggestions that APA presented. In this case, APA’s opinion very likely had a direct impact on the decision. In Oregon v. Miller case that discussed the patient-pyschotherapist confidentiality privileges, Supreme Court based its decision on APA’s arguments and upheld the interpretation of privilege that APA promoted (Tremper, 1987). There
are also cases where APA’s briefs with psychology knowledge assessment were less effective.

Lockhart v. McCree at Supreme Court discussed how the jury’s pre-supposed opinions on death penalty could violate the neutrality of the court, the APA brief presenting sound research over 30 years was cited heavily by defendants of “death qualified” jurors who don’t have religious or ethical convictions about the capital punishment. The research may have had convincing arguments for the defendants of the case, but the majority opinion was not swayed by the research. In the Bowers v. Hardwick case on if sodomy can be criminalized, APA contributed with an amicus brief including a breadth of research supporting that sodomy does not incur any psychological problems. The evidence was weighed low against morality and history and the court upheld that Georgia could criminalize homosexual sodomy. (Bersoff, 1987). We can conclude that APA has had direct as well as indirect impact on policies through regulative and legislative structures.

10. What Should Be APA’s Role In Video Game Violence?

APA has long played the pioneering role in knowledge assessment for psychological aspects of policy-making and legislation. It has the resources to work closely with the government on the video game violence issue especially in addressing the long-term effects of video games. It has the expertise and the organizational culture to make knowledge assessment through psychology research. APA should collaborate with the FTC to conduct comprehensive knowledge assessment on the relation between the video games and violence. This collaboration should follow a planned adaptive framework for knowledge assessment. While APA is managing the knowledge assessment process and improving its knowledge assessment procedure based on new research outcomes, the FTC should be evaluating APA’s procedure and recommending revisions. This knowledge assessment framework should cover 3 areas: problem assessment, funding, and data collection.

First, following a planned adaptive approach, FTC should assess what research problems should be pursued for resolving practical policy and legal questions and advise APA on that. APA should set internal policies for researching a specific aspect of the knowledge assessment problem that would most effectively contribute to the society. These policies can include advocacy and grant collaborations for conducting research on the specific problem. Currently,
when Supreme Court or federal agencies are seeking scientific expertise, APA experts review the existing literature and prepare a report, but they do not conduct research to address the problem. The incentives for the knowledge generation by academia and use of this knowledge by different bodies are mostly misaligned and independent from each other. Since proving causality on even a single issue requires thorough and meticulous psychological studies, research done without considering concrete public benefits beforehand sometimes fail to establish the desired knowledge assessment. Assessment for violent media is a clear example of this problem. Due to variance across measures and methodological problems, the research cannot form strong evidence for the knowledge assessment. If the research community years ago set a goal to collaborate on various aspects of properly understanding the effects of violent media, a more coherent set of studies could have existed. To address this problem, researchers should be incentivized by APA to produce knowledge that can collectively establish proper knowledge assessment for relating media and violence. In this way, psychology research will be directed by APA to address issues that FTC determines to be relevant for policy-making. FTC should regularly evaluate the current scientific discourse on the problem area and make recommendations to APA if there is a misalignment between the scientific discourse and public needs.

Second, APA should assess the amount and potential use of funds for conducting research on the problem area determined. APA should regularly evaluate the distribution of funds among various areas of research concerning the problem area to find out what research is underfunded. FTC should evaluate this process, and advocate to NSF and other federal agencies for providing funding to psychology research.

Third, APA should develop better methods for data collection, data sharing and collaboration with the FTC’s assistance. When a transparent and systematic collaboration is not established, the studies around the same topic may not conform to a consistent framework. Conventional lab experiments, field studies and longitudinal studies pose various challenges that slow down the experiments, and practically limit the number of participants. Most of the psychology lab experiments cannot be scaled or conducted on various independent and dependent variables with larger sample sizes without increasing the organizational burden of the experiments. A data initiative should aim at collecting anonymized data of video game users in collaboration with game developers with consumers’ full consent on shared data content and
shared parties. This would give researchers access to millions of data points collected from natural experiment-like environments for finding patterns. This data initiative should expand on APA’s recent initiative for open access to research data of papers. The FTC can come up with policy ideas to voluntarily encourage game developers to engineer consumer data access points within the games. These policy ideas can be voluntarily enforced through ESRB.

11. Conclusion for Video Games Regulation and Knowledge Assessment

Mitigating the adverse effects of video games require proper knowledge assessment and regulation. The ESRB in cooperation with the FTC has been successfully regulating the video game content ratings with planned adaptation, where ESRB is enforcing and revising the regulations based on FTC’s evaluations on the effectivity of the regulations. On the other hand, APA, as the credible authority for providing knowledge assessment for various policy issues, should direct the scientific research for better assessing video games’ adverse effects. APA and FTC should implement an adaptive knowledge assessment process.

While concluding the analysis on video games regulation, we move on to virtual reality, a new medium for media and video games, with potentially much more powerful social and psychological consequences.

12. Virtual Reality and The Future

Virtual Reality will open doors for unprecedented possibilities. VR will open a window to a real-like interactive experience in any lab and educational environment with anyone around the world. Students in Malaysia will be able have a virtual lecture in an archeological field in Mozambique investigating the stones there, and switch to a field trip to CERN the next lecture. In virtual worlds, players will create their dream lives, with the virtual characters of their dreams, and they will live, work, get married, make virtual money and trade goods. Arguably, some will like the infinite possibilities of virtual life more than the constraints of real life, and they will want to just be part of the virtual life. On the extreme, virtual worlds will open a new world with little to no accountability, where players can act out the most violent things without hurting anyone.
However, the success of these developments will depend on understanding how humans perceive, interact with and be influenced by the virtual worlds and how we utilize the technology for maximizing social benefits and minimizing adverse outcomes.

13. Video Games and Virtual Reality

Virtual reality devices have already entered mainstream consumer market in 2016 with Oculus Rift and HTC Vive. While many more VR applications in areas ranging from education to tourism are expected, the current major use case of the virtual reality technology is and will be gaming that will involve virtual worlds. At the moment, at least half of the VR applications are games, and the most time-consuming use case of the technology is gaming (Cnet, 2016). Virtual reality has enabled video games to become more immersive in different ways. In comparison to traditional video games that are projected on 2D screen and played with a basic game control mechanism like game consoles or keyboards, VR games immerse users to a 3D environment where players can interact with the environment and each other using a VR console or body movements. Aside from the differences in some of the game dynamics of VR and video games, existing VR games are mostly continuations of the existing video games or they are based on the same technological principles with similar content.

Due to this close proximity, VR games are currently regulated with the frameworks used for the video games. I will extend the discussions and considerations made for video games to VR and base the regulatory solutions regarding VR on these discussions. However, VR requires special attention and reconsideration of the existing frameworks, because VR devices introduce a new type of immersive experience, beyond the experience from a game console. VR games manipulate the players’ psychology at least as much, and probably more than games. Virtual environments immerse the user into games in much stronger ways than video games. They strongly signal to the brain the perception that the game is actually real, as I discussed below in detail, and they enable players with body motions to be more active agents in enacting the violence. The potential adverse effects of video games carry to VR games and require more careful attention since the virtual environments are more powerful in influencing human psychology. A review of the psychological effects of VR will highlight this feature of the technology.
14. Psychological Effects of Virtual Reality Environments

Potential short-term psychological effects of VR are concerning to a level that they require regulatory attention. Since virtual worlds enable players to act and interact freely with other virtual players, some violent and abusing actions that are not programmed to be possible in video games are left possible in virtual worlds. Strongly negative acts may induce strong traumas especially if the consumers start perceiving the virtual worlds near to real. Jordan Belamire’s experience in a multiplayer virtual world names QuiVR marked one of the first serious incidences of abuse in virtual worlds. Another player abused her by groping her with his hands while she had a virtual experience that didn’t involve any real interaction, she recounts that “The virtual groping feels just as real” (Belamire, 2016). Once she started perceiving the world as “real”, her VR experience had strong effects on her psychology. Similarly, an explicitly violent and unexpected scene may be traumatic for someone who starts perceiving the virtual environment as real. Research supports the premise that humans may perceive VR as real. When participants next to the edge of a deep pit in the virtual world are asked to lean over the edge of the pit to put an object on the ground, the subjects show increased stress, even though they know that the pit is just virtual. When the participants are asked to walk over a beam over a virtual pit, they again show increased stress and fear (Meehan, 2012). These effects are certainly not present in video games, and calls for more careful consideration of adverse effects and content regulation policies for VR games. To mitigate these risks, content rating policies and informative descriptions should be used. How these policies can be put into action will be discussed in the next section.

The long term psychological effects of immersive virtual environments on human mind and behavior are grounded on three concepts of modern psychology. First, brain plasticity suggests that brain is able to learn attitudes and behaviors drastically different than its existing attitudes and behaviors in any age (Rakic, 2002). Second, the context-sensitivity shows that human behavior is easily manipulatable depending on the environment. Our behaviors and attitudes can change in the context of immersive virtual environments when we embody different self-representations, a phenomenon termed as “Proteus Effect” by Jeremy Bailenson from Stanford VHIL. In his study, attractive avatars, the characters used by the participants in the virtual environments, approached strangers more quickly and demonstrated increased self-
disclosure and more intimate interactions compared to the behaviors of less attractive avatars. Taller avatars negotiated more confidently by showing willingness to split negotiation tasks unfairly compared to shorter avatars (Bailenson, 2007). Third, the brain is able to perceive virtual worlds as real. For instance, VR environments, individuals can start associating their self and body with virtual identities and bodies, and start feeling strokes on a virtual hand located virtually in the real arm’s position without the real hand being stroked (Ehrsson, 2005). In the light of these concepts, we can easily perceive virtual worlds as a different, real context; demonstrate different attitudes and behaviors depending on the context, and our brains may start adapting these attitudes and behaviors outside of that context.

Research indicates that the real-life effects of virtual experiences can be negative. The Proteus effect can invoke negative attitudes and behaviors. In a study of self-objectification and sexualized representation, participant women were randomly assigned to sexualized and not sexualized avatars. They observed themselves in mirror in a virtual environment and had interactions with other virtual users. Women with sexualized appearances reported more body-related thoughts than women with neutered appearances. As the research concludes, “women who wear sexualized avatars may internalize the features of their avatars and start perceiving themselves in a sexually objectified manner” in real life (Bailenson, 2013). Modern psychology shows that self-objectification can lead to depression, aggression, acceptance of violence against women and decreased cognitive performance. Moreover, interactions with sexualized characters in video games lead men to be more inclined to harass women and lead women to show lower self-efficacy. In an immersive virtual environment, these effects can be magnified (Bailenson, 2013). The self-objectification study is a concrete example of a psychological mechanism that roughly explains how virtual experiences can change social attitudes over years and decades.

Over time, the virtual engagement might be dominated by addictive and attractive virtual worlds with highly violent, abusive and sexually explicit content driven by the financial interest of private companies. The violence attitudes, race and gender biases, deceptive practices in virtual environments might unconsciously manipulate our real life through the mechanism explained above. In the further future, if virtual reality becomes too real and prevalent in our lives, our virtual identities built on problematic foundations and ethical principles may become a major driving part of our lives. While these claims may sound too stretched, they deserve research attention.
On the other hand, critics of claims on VR’s psychological effects argue that individuals might be experiencing heightened effects, since the experience is fairly new. When people first watched motion picture in early 20th century, some were frightened and uncomfortable. The critics also point to contradictory research on video games’ effects and claim that current VR research similarly cannot be trusted (Marshall, 2016).

Aside from the mentioned potential adverse effects, virtual environments can possibly be designed to increase positive attitudes in the society, create novel educational opportunities and foster empathy, confidence, collaboration, multicultural understanding, social well-being, connectedness and happiness. As a matter of fact, it is too early to make conclusive statements about how human attitudes and behavior will be affected by VR. The current body of research and practice is just too preliminary. Knowledge assessment for long-term cumulative effects of VR and assessment for how VR can be used for education and therapy should be accomplished. The knowledge assessment for psychology of VR and its implications will be further discussed.

15. **Virtual Reality Content Regulation**

As discussed in the previous section, within virtual environments, user behavior and psychology may be more strongly affected by the environment, since users engage with a more immersive, 3D environment, and use body motions. Exposure to inappropriate VR content may even cause traumas or other strong negative effects on the customers. The FTC and the ESRB should at least have the same protective incentives they have for the video games case to regulate VR.

Similar to the video game case, short-term risks of virtual reality, most importantly games and virtual worlds content, can be addressed by properly informing consumers about what content may be appropriate for them. The ESRB and the FTC collaboration is a successful example of enforcing self-regulatory standards that are revised and improved with changes in the technology and new information. Virtual reality content should be rated by the ESRB with the oversight of the FTC, in the same way the FTC made recommendations with the emergence of game content in new environments like internet and mobile apps in its earlier reports.

As of December 2016, the FTC has not made any comment or showed interest in investigating the best practices for entertainment in VR. Because the technology is new,
interpreting VR games’ content based on their impact on the users is still an open-ended question. So far, the ESRB has rated VR games solely based on the explicitness of the content, seemingly disregarding how the users experience the virtual immersion and body interactions. For instance, should knifing in a game using keyboard buttons be considered at the same violence level as knifing using hands in VR as in real life? VR experiences require revision of the ratings and may require addition of further descriptions to best inform consumers.

The ESRB and the PEGI, the EU version of the ESRB, seem to be keeping with the VR trends and considering revisions as the VR market expands. The PEGI director Dirk Bosmans stated that the rating criteria involving horror and fear might be revised (Calvin, 2015). An ESRB representative commented that the current the ESRB ratings for the existing VR games are sufficient, but the ESRB will be tracking the developments in VR games to make rating revisions as necessary (Jagnéaux, 2016). The initial reactions of the organizations show promise for adaptive learning. However, FTC in the US and NICAM in the EU should follow-up with and evaluate the new rating standards to increase the credibility of the knowledge assessment for VR games’ impacts.

In fact, rating titles describing the intensity of the games may as well be useful for adult users. The review of the research in the previous section on immersive virtual environments suggests that brain can perceive the virtual environment as real and a traumatic event in VR may be able to perturb the consumers as much as it would perturb in real life. Since the potential effects are much stronger, the game ratings describing the intensity and other elements of the games would be useful for all of the users. Ideally, these ratings should be based on sound scientific evidence. Knowledge assessment should be done to investigate the effectiveness of the ratings as well as longer-term effects of VR.

16. Knowledge Assessment for Virtual Reality

The most important step towards better virtual reality in the long run is to bridge the scientific knowledge gap on the potential beneficial and adverse effects of virtual reality and how these effects can be realized. As long as the clouds of uncertainties around virtual reality and its effects exist, a healthy knowledge assessment for public good is impossible. Without proper knowledge assessment, the laissez faire approach towards the development and use of various virtual reality technologies will continue to pose potential long-term risks. Moreover, in the
absence of sound exploration of various aspects of VR, neither the public awareness on virtual reality will be created nor the potential beneficial use cases of the technology especially in education will become reality.

Video games case is a good example on what can go wrong with the knowledge assessment as well as what practices should be applied for the VR case. The discussion in section 6 suggests that the knowledge assessment on adverse effects of video games have failed. This is mainly due to the lack of research standards and research direction. If proper steps are not taken, research on VR’s impact on the society will fail in a similar fashion. A valid knowledge assessment can be conducted with a similar framework described in section 10. For better knowledge assessment, better problem assessment, funding and data collection processes should be developed. APA should work with the FTC to put the framework into action. The difference between the video games and virtual reality cases is the existing scientific ecosystem and government awareness on the two technologies. While video games have a long history of research and policy discussions, there is little research done on VR and no serious policy or legal debates. It is not clear how differently the public will perceive VR over time and if Supreme Court rulings and some existing regulations for video games will apply to VR. This uncertainty with the technology and the technology’s social implications emphasize again the importance of adaptive learning in establishing better knowledge assessment, as described in section 10.

17. Conclusion

Video games have long been part of our lives. Virtual reality is about to revolutionize the way we think of education, social interactions and gaming. Yet, new technologies come with the cost of disrupting our existing practices and bringing changes to our lives that can have positive and negative externalities. This analysis of the psychological effects of video games and VR and how to better assess the adverse effects and put necessary regulatory practices in action has presented several existing successful and potential applications of planned adaptation for better public policy.

The ESRB and the FTC have already been regulating the video games in a planned adaptive manner. However, the FTC has been failing to fulfill its responsibility of evaluating video games regulations in the last 5 years, and this failure has demonstrated itself on the
effectiveness of the ESRB in regulating recent media technologies. VR regulation should learn lessons from the video game case and its regulation should be based on the same framework as the regulatory framework for video games. APA has shown success and failure in advocating scientific knowledge for policy-making, particularly due to lack of external accountability. A planned adaptive collaboration between the FTC and APA will prove successful in directing scientific research for understanding the psychological aspects of VR for public policy.

Bibliography


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