IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

MEDIA VIOLENCE AND ANXIETY: A META-ANALYSIS ON THE OUTCOMES OF AGGRESSION BASED ANXIETY

Mahima Das[1], Surej Unnikrishnan[1] and Aishwarya Sibey [2]

[1]Department of Psychology, Indian Institute of Psychology and Research (IIPR), Bengaluru

[2]Department of Psychology, Jyoti Nivas College Autonomous, Bengaluru

Author note

Mahima Das is a M.Sc. Psychology student in Indian Institute of Psychology and Research (IIPR), Bengaluru.
Surej Unnikrishnan is an Assistant Professor in the Department of Psychology in Indian Institute of Psychology and Research (IIPR), Bengaluru.
Aishwarya Sibey is an Assistant Professor in the Department of Psychology in Jyoti Nivas College Autonomous, Bengaluru.
We have no known conflicts of interest to disclose.

Abstract

Objectives: To determine the effect of media violence on aggression based anxiety.

Method: We conducted a meta-analysis of studies where the effect of media violence on aggression and anxiety was seen on control and experimental groups. The effect size in terms of Cohen's d was identified or calculated for the studies that qualified for final analysis.

Results: A comprehensive search yielded 417 studies; 3 articles met inclusion criteria. Meta-analysis suggests that effect of media violence is positive on aggression based anxiety. The anxiety that stems from the viewing violence in media. Theoretical frameworks like social learning theory also supports the assumptions that exposure to media showing aggression increases the anxiety of people who are exposed. The effect sizes of

the included studies are most likely not statistically heterogeneous. A fixed-effects model fits the observed homogeneity in this situation by assuming that all studies are estimating the same underlying population effect.

Conclusion: This meta-analysis suggests that exposure to violent media content has been found to have an effect on aggression and anxiety. However, the form of media inflicting such effect is to be studied, also across different populations and age groups. As many of the studies primarily focused on specific populations, such as children and, adolescents, this may limit the generalizability of the findings to broader populations and different cultural contexts.

Keywords: Media Violence, Anxiety, Media, Meta- Analysis, Aggression

Media Violence and it's Outcome on Aggression Based Anxiety

A growing concern about the possible effects of violent media material on people's emotions and behaviors has been sparked by the pervasiveness of media in modern life. Concerns over the effects of such exposure are becoming more pressing as technological developments increase the accessibility and realism of violent media. The impact of violent media on anxiety has become one of the many psychological impacts linked to its use that are of particular interest.

Most researchers define media violence as portrayals of physical violence perpetrated by one human or human-like character against another in a visual medium. This description represents an effort to identify the type of violent media presentation that is most likely to educate the viewer to be more violent. (Huesmann, 2007).

Numerous studies have investigated the complex relationship between exposure to violent media—ranging from graphic film sequences to interactive video games—and the development or worsening of anxiety in individuals. While media violence studies have historically focused on aggression and aggressive behaviors, it is important to recognize that exposure to violence can cause a wide range of emotional reactions, including fear. The emotional state of anxiety, which is defined by increased alertness and apprehension in reaction to perceived dangers or stresses, is substantial and has the ability to have an impact on both social dynamics and personal well-being. Fear and anxiety are two closely linked, phylogenetically evolved emotions that are felt in reaction to either a present-day threat or a threat that will occur in the future (Mobbs

et al., 2019). According to studies, children and young adults who consume a lot of violent television may develop increased aggressiveness (Huesmann, 2007) and anxiety (Madan et al., 2013).

The pervasiveness of media in contemporary society has culminated in unprecedented access to knowledge, entertainment, and, most notably, the various depictions of violence on various media platforms, which certainly serves as a protective factor for aggressive behaviors (Anderson et al., 2003; Gentile et al., 2017). The results of a meta analysis support earlier meta-analyses' findings that exposure to violent media can heighten aggressive thoughts, angry sentiments, physiological arousal, and aggressive conduct (Bushman, 2016) while one of the meta- analysis states alternative findings where it became apparent that the overall corrected effect size across all studies was r =.08, and at this point it cannot be said that media violence poses a major risk to the public's health (Ferguson & Kilburn, 2009).

A major area of interest and academic research now centers on the connection between media violence and its potential impact on psychological and behavioral aspects of people. The complex question of how media violence exposure may affect people's propensity for aggression-based anxiety rests at the junction of these concerns. It has been discovered that there is a consistent correlation between exposure to violent media and aggression across nations, indicating that violent media may increase the risk of violence (Krahé, 2016).

Empirical research has shown TV violence as a significant risk factor for aggressive behavior. In this context, the Causal Effect Theory has been put out to explain the relationship (Brewer et al., 1995). This model postulates that social learning is the psychological mechanism by which violent behavior can be taught into the young person's repertoire of behaviors.

Huesmann and Eron (2013) claim that children who spent a lot of time watching violent television in elementary school tended to behave more aggressively as teenagers, providing a lifespan perspective. When these participants were followed into adulthood, it was discovered that those who had grown up watching a lot of violent TV were more likely to be detained and charged with crimes as adults. It's interesting to note that watching more violent TV didn't predict becoming more aggressive, suggesting that watching violent TV might actually drive aggressive behavior rather than just be a byproduct of it. Later studies, however, revealed

that violence in the media is only one of several factors that can influence aggressive behavior (Gentile & Bushman, 2012).

Some of the conceptual frameworks offer a conceptual basis for comprehending the various pathways through which exposure to violent media content may affect the emergence or aggravation of aggression-based anxiety.

Social Cognitive Theory

It was pioneered by Albert Bandura (1977), posits that individuals learn behavior through observation, imitation, and reinforcement. When people are exposed to violent media, it can be said that they are engaging in an observational learning process where they are observing violent behaviors and their effects. People may internalize violent behaviors when they continually see them in the media, either with no consequences or with favorable outcomes. This could result in more aggressive inclinations (Huesmann et al., 2003). Violence in the media can operate as a role model for aggression, which can lead to the emergence of violent inclinations and, as a result, worry about acting aggressively.

Script Theory

Script theory suggests that individuals possess mental representations or "scripts" for various situations and events. These scripts guide behavior by providing a structured framework for understanding and responding to specific situations (Abelson, 1981). People might be thought of as "scriptwriters" in the context of media effects, creating mental scripts depending on what they perceive in media narratives. People may internalize and assimilate these violent scripts into their cognitive repertoire, for instance, if they constantly see aggressive behavior in the media. Their attitudes, perceptions, and behaviors can then be affected by these scripts, thereby increasing their propensity for aggression (Huesmann & Kirwil, 2007). When individuals repeatedly witness aggressive acts in media, these scripts may become more salient and accessible in their minds. As a result, individuals may be more likely to resort to aggressive scripts when faced with real-life situations, potentially leading to heightened aggression-based anxiety.

General Aggression Model (GAM)

GAM acts as a metatheory that attempts to explain the causes of aggression. Developed by Anderson and Dill (2000), integrates social-cognitive and social-information processing theories. It suggests that exposure to media violence can influence cognition, affect, and arousal, leading to increased aggressive thoughts, feelings, and behaviors. The accumulation of these effects over time can contribute to aggression-based anxiety (Anderson & Dill, 2000). Increased physiological arousal, aggressive thoughts, and furious sensations are all results of violent media exposure. The GAM has been particularly beneficial for comprehending how being exposed to violent media could make individuals more aggressive.

Cultivation Theory

Gerbner and Gross's (1976) cultivation theory provides important insights into the dynamics of media violence and its possible impact on aggression-based anxiety. Long-term exposure to violent media content might cause people to overestimate the frequency and extent of aggressiveness in society, creating a heightened perception of violence, according to research by Gerbner and his colleagues (Bryant & Zillmann, 2002). Additionally, according to the cultivation theory, such exposure can make people less sensitive to violence (Morgan & Shanahan, 1997) while also encouraging dread and anxiety in people in response to sensationalized depictions of aggressiveness (Shrum, 2012). This theory emphasizes the intricate interactions between media exposure, perceptions, and emotional responses when it is used to discuss how media violence affects anxiety.

General Learning Model (GLM)

The GLM proposes that certain structural and procedural characteristics of digital games create a learning context that can lead to enduring changes in affect, cognition, arousal, and behavior, including aggressive behavior (Sarmet & Pilati, 2016, p. 2) . The GLM is based on Anderson and Bushman's General Aggression Model (2002) and was developed to account for other behavioral phenomena (Sarmet & Pilati, 2016, p. 3) . The GLM proposes that media products have both immediate (or short-term) effects and long-term effects due to repeated exposure to the same or similar stimuli, which can lead to enduring changes in

affect, cognition, arousal, and behavior (Swing et al., 2009, p. 2) .The GLM is used to explain how repeated exposure to media violence can lead to desensitization to violence, the development of aggressive scripts, and an increased likelihood of aggressive behavior, particularly among individuals who are already predisposed to aggression (Sarmet & Pilati, 2016, p. 9).

Method

Study Selection and Categorization

To locate relevant studies, we searched electronic databases like PsycINFO and PubMed; no date limitation was followed to include as many studies as possible as there is already a dearth of studies pertaining to the variables mentioned in the research question. It has also been seen that including many studies increases statistical power, generalizability and reduces the publication power of the meta analysis (Higgins & Thompson, 2002; Borenstein et al., 2009; Egger et al., 1997). We considered the effects of violent (aggress* or violen*) media on aggression based anxiety. Words like violent media, anxiety, aggression were used to search, along with the use of Boolean operators. As is frequently the case with meta-analyses (e.g., Burnette et al., 2013; Bushman & Phillips, 2001), this extensive search produced an initial search of 417 studies, but not all of them were pertinent. 160 records were removed as duplicates and 62 studies were removed by automation tools of the software used, leaving 195 studies for further screening. To determine whether articles were relevant, we read the titles, abstracts, or both. We also searched ProQuest and Google Scholar citations of previously located studies to locate unpublished studies and dissertations, to include in the database to address potential publication bias (i.e., the “file drawer problem”; Rosenthal, 1979). We found two unpublished research reports, including doctoral theses. Additional literature was also cross-checked by hand search using references from the excluded and selected studies, and other meta analyses were done in agreement with the co-authors. It is conventional to use unpublished data in meta-analyses in order to reduce publication bias. Gray literature isn't inherently inferior to research that are published in peer-reviewed journals in terms of quality, either (Conn et al., 2003). The search ended on September 13, 2023.

Technology-assisted search and screening

The database screening for inclusion criteria was aided by the Rayyan software. All of the articles were examined, and those that did not satisfy the inclusion requirements were removed and an automated screening and exclusion of duplicates was done too.

Selection criteria for inclusion of papers

The following inclusion and exclusion criteria were applied to the papers chosen for the review in order to make them more specific. These criteria were used to maximize the homogeneity of the included studies. Criteria for inclusion-

(1) Studies that looked for the effect of violent media on some measure of anxiety, anxious feeling, or anxious behavior.

(2) Studies focusing on media violence and aggression based anxiety. Video games, violent mass media, or news reporting, were all acceptable forms of media. Aggression or aggressive behaviors have been shown to significantly correlate with anxiety in specific age groups, particularly adolescents (Chung et al., 2019), therefore, these studies are also taken into consideration.

(3) Studies that included primary data.

(4) Literature published in English language.

Exclusion criteria-

(1) Studies using any type of media as a direct intervention for medical illnesses.

(2) Studies with insufficient details about the research methodology.

(3) Any study using a purely qualitative methodology.

(4) Studies from the same author.

Data collection

Relevant data were extracted from eligible studies and entered into a spreadsheet. Elements extracted included author names and publication year, study sample size or number of observations, the effect size, if effect size not present then it was calculated, same was done for standard error.

Data extraction

The PRISMA Flow diagram, shown in Figure 1, was used to select the reviewed papers. Data was taken from the relevant articles after careful study. One researcher did the data extraction, while another researcher reviewed the papers to ensure that they complied with the purpose and inclusion criteria.

Study characteristics

The participants were from the West particularly from North America and from South-East Asia. The sample size varied from 135 to 384, and the participants were mainly in the age group of 18-25 years, with the maximum mean age detailed at 21.4 . The type of media used in the three studies can be seen in Table 1.

Results

Analysis

According to findings, media violence has a positive effect on anxiety based on aggression. Violent movie clips can induce anxious feelings but according to Figure 2 the study crosses the line of null effect and thus does not illustrate a statistically significant result, certaining that it could be a true value. On the other hand, other two studies show statistically significant positive effect with the study conducted by Teng et. al (2011) having the highest weightage. Based on the effect sizes observed in the meta-analyzed studies, the prediction interval is calculated. The prediction interval roughly corresponds to the range of effect sizes that are meta-analyzed and that are represented in the forest plot, depending on how much sampling variation there is in the meta-analyzed studies. As a result, it follows that the prediction interval can only "predict" with some degree of accuracy if there is no meaningful selection bias in the group of populations that have been

researched (i.e., if the populations whose effect size estimate is included in the meta-analysis are "representative" for the domain).

Cochran test of heterogeneity's Q value, p-value, and tau values indicate that there is no statistically significant heterogeneity across the effect sizes of the studies included in this meta-analysis. This indicates that estimates of the effect under investigation are typically similar across studies. The difference between the observed effects and the weighted average effect, weighted sum of squared, is the Cochran Q-test. It assesses a measure of variation around the average. A Q-value of 0.06 indicates very low heterogeneity in this situation. Because of this, the observed variations in effect sizes between studies are not statistically significant and are most likely the result of random variation. The p-value associated with the Q-test helps determine whether the observed heterogeneity is statistically significant. The p-value is not an indicator of the extent of heterogeneity because it is not an indicator of effect size. The result of 0.971 suggests that the effect sizes of the included studies are most likely not statistically heterogeneous. In other words, it seems unlikely that anything other than random chance could be responsible for the variations in effect sizes.

When the I-squared (I^2) value is zero, it indicates that there is either no observable heterogeneity or very little heterogeneity in the effect sizes of the studies included in the meta-analysis. An I^2 score of 0% specifically signifies that sampling error (random chance) alone, rather than actual differences in effect size, is the only source of effect size variability. I^2 can be used to determine whether a moderator analysis or subgroup analysis is necessary (Borenstein et al., 2009). As I^2 is low, it implies that there is little discernible heterogeneity and, hence, nothing that has to be investigated in a subgroup or moderator analysis. According to the studies, the effect of media violence on aggression-based anxiety appears to be rather consistent and unaffected by differences in study populations, interventions, or methods.

In terms of the scale of the effect size, T^2 and Tau are both indicators of the variation of true effect sizes between studies. Given that the range in effect sizes can be entirely attributed to random sampling error, a score of 0.00 indicates that there is essentially no heterogeneity. This finding strengthens the confidence in the reliability of the pooled effect size estimate. It suggests that the effect of media violence on aggression-based anxiety, as indicated by the included studies, is highly consistent and not significantly influenced by extraneous factors.

A fixed-effects model might be the ideal choice because the I^2 value is very low and the level of homogeneity is high. A fixed-effects model fits the observed homogeneity in this situation by assuming that all studies are estimating the same underlying population effect.

Risk of publication bias

The assumption that all psychological experiments prioritize a certain kind of individual could be one explanation for psychological experiments' low levels of heterogeneity (Hak et al., 2016). Publication bias is one type of selection bias that may be found in the meta-analysis itself. It is assumed that the domain is homogeneous while doing a publishing bias analysis, which means that bias cannot exist even if populations are arbitrarily chosen for studies. Funnel plots are one type of analysis- shown in Fig. 3. It is assumed that observed effect sizes of comparable precision (i.e., with comparable standard error) should be more or less symmetrically distributed around the combined effect size.

In the context of publication bias analysis, both the Egger regression method and Begg and Mazumdar's rank correlation test were used. The estimated slope and intercept values in Egger regression analysis provide insights into the potential presence and direction of publication bias in the meta-analysis and the later is a statistical test used in meta-analysis to assess the presence of publication bias. It evaluates whether there is a relationship between the ranks of effect sizes and their variances across studies.

The level of asymmetry in the funnel plot is reflected in the slope estimate from the Egger regression analysis. The funnel plot may be slightly asymmetrical, as indicated by a positive slope of 0.32, which raises the possibility of publication bias in favor of studies with higher or more significant effect sizes.The Egger regression analysis's positive slope (0.32) and intercept (0.27) results imply that there might be some publication bias. In particular, there is a propensity for smaller, less precise studies (lower sample sizes) to report greater effect sizes, which can suggest a bias toward the publication of studies with more significant or positive outcomes.

There is some suggestion of potential publication bias based on the outcomes of Begg and Mazumdar's rank correlation test, although the backing evidence is weak. The correlation between effect size ranks and variance ranks is not very statistically significant, since the p-value of 0.059 is only slightly above the standard

threshold of 0.05. This implies the possibility of publishing bias, albeit it cannot be proved by this test alone. The z-value of 1.57, although it indicates some divergence from the null hypothesis, is not very high, further showing that there is not much support for publication bias. A Tau-a value of 1.00 implies a perfect positive correlation between the rankings of the effect size and the ranks of the variance, which may be a sign of bias to some extent. Figures 4 and 5 give a summary of the risk of bias for each included study. Rob2 tool was used to assess risk of publication bias and generate the graph plot as well as the summary according to the Cochrane's guidelines (Sterne et al., 2019).

Discussion

The complex relationship between emotional states and behavioral adaptations is reflected in psycho-behavioral responses (Lin et al, 2020), which are important psychological correlates of anxiety (Watson & Clark, 1984). People frequently display heightened arousal, which is characterized by enhanced physiological activation and cognitive attentiveness, when they are exposed to anxiety-inducing stimuli or situations (Lang, 1968; Cannon, 1915). Anxiety along with the fear of COVID-19 through the media showed a significant effect on anxiety (Yıldırım et al., 2021; Lin et al, 2020; Bakioğlu et al., 2020). Studies have also shown that anxiety also gets considerably reduced when a break has been taken from any kind of media exposure (Lambert et al., 2022; Bakioğlu et al., 2020; Hayes et al., 2008; Ybarra et al. 2008).

Due to the dearth of time and resources and limited search only a handful studies qualified for the analysis leaving out chances for publication bias as discussed above. Through literature, some moderator and mediating variables have been identified which can have a significant effect on aggression based anxiety.

Ybarra et al. (2008) conducted a cross sectional study that added to the relationship between media violence and aggressive behavior among youths, the findings revealed a significant association between exposure to violent content on the internet and an increased likelihood of reporting seriously violent behavior. The study highlighted that this association was particularly strong when compared to other forms of media violence, suggesting that online exposure to real violence, combined with the interactive nature of the internet, may contribute to this effect. In the context of understanding the role of media violence in aggressive behavior, some studies offer a thorough analysis of the connection between exposure to violent media and ensuing

violent behaviors (Huesmann & Taylor, 2006 ; Bushman & Anderson, 2015) along with meta-analysis suggests that exposure to violent media increases aggressive behavior and aggressive cognition and mood, while decreasing empathy and prosocial conduct (Anderson et al., 2010), on the contrast, Ferguson and Kilburn (2009)'s study showed that the overall corrected effect size across all studies was r =.08, and pointed that it cannot be said that media violence poses a major risk to the public's health.

Results seemed to be robust with little evidence of selection (publication) bias, according to the findings of several sensitivity studies. It has been emphasized that regular exposure to violent media, particularly on television and in video games, might desensitize viewers to aggressiveness, reduce their capacity for empathy, and raise the risk that they will act aggressively in real life. It is highlighted how crucial it is to take into account both immediate and long-term consequences, with long-term exposure being especially problematic. Various theoretical perspectives, such as social-cognitive and script theories help explain the mechanisms underlying the link between media violence exposure and violent behavior. They also acknowledge that the relationship is complex and influenced by individual, familial, and societal factors. Chung et al. (2019c) conducted a study to examine out the relationship between adolescent aggression and anxiety propensity. Higher anxiety levels were substantially correlated with aggressive behavior (Kashani et al., 1991). Anxiety was independently correlated with gender, age, headache, constipation, asthma, and aggression score, according to multivariate analysis.

Wakshlag et al. (1983) found that exposure to crime drama can increase fear and anxiety among initially less apprehensive viewers and that threatening conditions, which ostensibly evoke fear or apprehension, can induce preferences for exciting stimuli, including some depicting aggression. Weaver and Wakshlag (1986) found that there was a negative relationship between crime-related viewing or exposure to violent media and perceptions of personal vulnerability among individuals with interpersonal and direct criminal victimization experience. The study also found that gender was a significant predictor of exposure to crime-related and noncrime-related television programs, with male respondents viewing more of these programs than female respondents. Aftermath, the study found that female respondents reported higher levels of situational and environmental anxiety than male respondents, whereas, a study conducted by Curtis et al. (2021), which says men may experience anxiety more frequently as a result of media exposure. It does suggest

that criminal victimization experience is a critical factor mediating both perceptions of personal vulnerability to crime and the linkage between such perceptions and television viewing. This suggests that criminal victimization experience may have an impact on anxiety levels related to crime. However, the study does not explore the relationship between criminal victimization and aggression.

Rule and Ferguson (1986) conducted a study where they found that cognitive and emotional arousal processes mediate the relationship between violent media and aggressive behavior. These processes include attention and comprehension of the viewed media, as well as attributions and moral evaluations of the perpetrators of violence. Emotional arousal is also a factor, as observing violence may arouse feelings associated with aggressive thoughts, but at the same time may reduce emotional reactions to the negative consequences of aggression for the victim. The potential negative effects of media exposure on arousal and emotional desensitization (Anderson, Bushman, et al., 2017), include emotional desensitization to the consequences of aggressive against the victim and the excitement of an observer's aggressive inclinations. Observing violence may arouse feelings associated with aggressive thoughts, but at the same time may reduce emotional reactions to the negative consequences of aggression for the victim which substantiates the desensitization theory. According to this theory, exposure to violent media can lead to a reduction in emotional responsiveness to violence and aggression, which can in turn lead to an increase in aggressive behavior (Krahé et al., 2011).

In future, longitudinal studies would be needed to track the long-term effects of media violence exposure on individuals' anxiety and aggressive behaviors (Anderson & Dill, 2000). Diverse populations, including different age groups and cultural backgrounds, should be included to understand potential variations in how media violence affects aggression-based anxiety (Huesmann, 2007). Investigating moderator and mediator variables, such as family dynamics, social support, and cognitive processes, can provide a more nuanced understanding of the relationship. Additionally, interventions and prevention strategies should be developed and assessed to mitigate the negative effects of media violence exposure, potentially involving media literacy programs and content ratings (Ferguson & Kilburn, 2009). Finally, cross-cultural studies can shed light on how cultural attitudes towards violence influence the relationship between media violence and aggression based anxiety (*Cross-cultural Study Strengthens Link Between Media Violence and Aggressive*

Behavior • News Service • Iowa State University, 2017). These future directions will contribute to a more comprehensive understanding of the complex interplay between media violence and aggression-based anxiety.

From a practical perspective, these findings underscore the importance of media literacy programs and parental guidance to help individuals, especially children and adolescents, navigate media content and develop critical thinking skills to discern and contextualize violent imagery. Clinically, mental health professionals should be attuned to the potential effects of media violence exposure when assessing and treating anxiety-related issues, particularly in cases involving youth. Integrating media exposure assessments into clinical practice can inform tailored interventions that address the psychological consequences of media violence. Furthermore, these insights call for collaborative efforts among educators, policymakers, and mental health practitioners to develop strategies that mitigate the potential harm of media violence on individuals' mental well-being, ultimately promoting a healthier and less anxiety-inducing media environment.

Limitations of the study

Many of the studies discussed primarily focused on specific populations, such as children, adolescents, or individuals exposed to certain types of media content since the research question focused only on aggression. This may limit the generalizability of the findings to broader populations and different cultural contexts.

Some studies did not extensively explore potential moderator variables that could influence the relationship between media violence exposure and aggressive behavior or anxiety. Future meta analysis can focus on mediator as well as moderator factors that can acts as a catalyst if not directly have an effect on the anxiety or aggression based anxiety. A wide and extensive search may happen to eradicate the publication bias, as studies with negative or null findings may not have been included or reported in this analysis. Some studies primarily focused on immediate effects of media exposure, while limited attention was given to long-term consequences. There is a dearth of longitudinal studies to claim whether the long term of exposure of violent media throughout lifespan plays a role in the outcome of aggression based anxiety.

Conclusion

The research surrounding the complex relationship between media violence and aggression-based anxiety has yielded several significant insights. Exposure to violent media content, particularly in the context of the internet, has been associated with an increased likelihood of reporting seriously violent behavior among youths, indicating a strong link between online exposure to real violence and aggression. This relationship is more pronounced in comparison to other forms of media violence. Moreover, studies exploring the connection between media violence and aggressive behavior have presented mixed findings. Some research suggests that exposure to violent media is linked to increased aggressive behavior and cognitive patterns, accompanied by decreased empathy and prosocial conduct, emphasizing the potential desensitizing effect of media violence. However, it's important to note that not all studies find a substantial risk associated with media violence, with some research pointing to a relatively small effect size. Nevertheless, findings appear to be robust with little evidence of selection bias, providing confidence in the observed associations. The desensitization theory posits that prolonged exposure to violent media may reduce emotional responsiveness to violence and aggression, potentially leading to increased aggressive behavior.

In addition, several moderator and mediating variables have been identified in the literature that can influence aggression-based anxiety. These variables include individual factors such as gender and personal experiences with criminal victimization, as well as cognitive and emotional arousal processes. Cognitive and emotional processes play a significant role in mediating the relationship between violent media exposure and aggressive behavior, affecting attention, comprehension, attributions, and moral evaluations of violent content.

In the context of anxiety, studies have shown that anxiety levels can be influenced by exposure to anxiety-inducing stimuli, including media coverage of events such as the COVID-19 pandemic (Curtis et al., 2021). However, anxiety levels also appear to decrease when individuals take breaks from media exposure, highlighting the dynamic nature of media's impact on emotional states. Furthermore, the relationship between media exposure and anxiety may be influenced by gender, with varying effects observed in different studies.

Overall, the abundance of research points to a complex association between media violence, anxiety, and aggressive behavior, emphasizing the necessity of extensive research that takes into account multiple

individual, environmental, and cognitive aspects. For an informed understanding of the influence of media on emotional and behavioral reactions, it is essential to comprehend these complexity.

References

Abelson, R. P. (1981). Psychological status of the script concept. *American Psychologist*, *36*(7), 715–729. https://doi.org/10.1037/0003-066x.36.7.715

Anderson, C. A., Berkowitz, L., Donnerstein, E., Huesmann, L. R., Johnson, J. D., Linz, D., Malamuth, N. M., & Wartella, E. (2003). The influence of media violence on youth. *Psychological Science in the Public Interest*, *4*(3), 81–110. https://doi.org/10.1111/j.1529-1006.2003.pspi_1433.x

Anderson, C. A., Bushman, B. J., Bartholow, B. D., Cantor, J., Christakis, D. A., Coyne, S. M., Donnerstein, E., Brockmyer, J. F., Gentile, D. A., Green, C. S., Huesmann, R., Hummer, T. A., Krahé, B., Strasburger, V. C., Warburton, W., Wilson, B. J., & Ybarra, M. L. (2017). Screen violence and youth behavior. *Pediatrics*, *140*(Supplement_2), S142–S147. https://doi.org/10.1542/peds.2016-1758t

Anderson, C. A., & Dill, K. E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology*, *78*(4), 772–790. https://doi.org/10.1037/0022-3514.78.4.772

Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., Rothstein, H. R., & Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries: A meta-analytic review. *Psychological Bulletin*, *136*(2), 151–173. https://doi.org/10.1037/a0018251

Anderson, C. A., Suzuki, K., Swing, E. L., Groves, C. L., Gentile, D. A., Prot, S., Lam, B. C. P., Sakamoto, A., Horiuchi, Y., Krahé, B., Jelić, M., Wei, L., Toma, R. A., Warburton, W., Zhang, X. M., Tajima, S., Qian, F., & Petrescu, P. D. (2017). Media Violence and Other Aggression Risk Factors in Seven Nations. *Personality and Social Psychology Bulletin*, *43*(7), 986–998. https://doi.org/10.1177/0146167217703064

Bakioğlu, F., Korkmaz, O., & Ercan, H. (2020). Fear of COVID-19 and positivity: mediating role of intolerance of uncertainty, depression, anxiety, and stress. *International Journal of Mental Health and Addiction*, *19*(6), 2369–2382. https://doi.org/10.1007/s11469-020-00331-y

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037/0033-295x.84.2.191

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to Meta-Analysis*. https://doi.org/10.1002/9780470743386

Brewer, D. D., Hawkins, J. D., Catalano, R. F., & Neckerman, H. J. (1995). Preventing serious, violent, and chronic juvenile offending: A review of evaluations of selected strategies in childhood, adolescence, and the community. A sourcebook: Serious, violent, and chronic juvenile offenders, 61-141.

Bryant, J., & Oliver, M. B. (2009). *Media effects: Advances in Theory and Research*. Routledge.

Bryant, J., & Zillmann, D. (2002). Media effects. In *Routledge eBooks*. https://doi.org/10.4324/9781410602428

Bushman, B. J. (2016). Violent media and hostile appraisals: A meta-analytic review. *Aggressive Behavior*, *42*(6), 605–613. https://doi.org/10.1002/ab.21655

Bushman, B. J., & Anderson, C. A. (2015). Understanding causality in the effects of media violence. *American Behavioral Scientist*, *59*(14), 1807–1821. https://doi.org/10.1177/0002764215596554

Bushman, B. J., & Anderson, C. A. (2020). General Aggression model. *The International Encyclopedia of Media Psychology*, 1–9. https://doi.org/10.1002/9781119011071.iemp0154

Cannon, W. B. (1915). *Bodily changes in pain, hunger, fear and rage: An account of recent researches into the function of emotional excitement.* https://doi.org/10.1037/10013-000

Chung, J. E., Song, G., Kim, K., Yee, J., Kim, J. H., Lee, J. Y., & Gwak, H. S. (2019a). Association between anxiety and aggression in adolescents: a cross-sectional study. *BMC Pediatrics*, *19*(1). https://doi.org/10.1186/s12887-019-1479-6

Conn, V. S., Valentine, J. C., Cooper, H., & Rantz, M. (2003). Grey Literature in Meta-Analyses. *Nursing Research*, *52*(4), 256–261. https://doi.org/10.1097/00006199-200307000-00008

Cross-cultural study strengthens link between media violence and aggressive behavior • News Service • Iowa State University. (2017, April 11). https://www.news.iastate.edu/news/2017/04/11/mediaviolence#:~:text=The%20researchers%20identified%20four%20key,controlling%20for%20other%20risk%20factors

Curtis, A., Rodgers, M., Miller, M. B., & McCrae, C. S. (2021). Impact of sex on COVID-19 media exposure, anxiety, perceived risk, and severity in Middle-Aged and Older adults. *Journal of Aging and Health*, *34*(1), 51–59. https://doi.org/10.1177/08982643211025383

Egger, M., Smith, G. D., Schneider, M., & Minder, C. E. (1997). Bias in meta-analysis detected by a simple, graphical test. *BMJ*, *315*(7109), 629–634. https://doi.org/10.1136/bmj.315.7109.629

Ferdig, R. E. (2009). Handbook of Research on Effective Electronic Gaming in Education. In *IGI Global eBooks*. https://doi.org/10.4018/978-1-59904-808-6

Ferguson, C. J., & Kilburn, J. C. (2009). The Public Health Risks of Media Violence: A Meta-Analytic Review. *The Journal of Pediatrics*, *154*(5), 759–763. https://doi.org/10.1016/j.jpeds.2008.11.033

Gentile, D. A., & Bushman, B. J. (2012). Reassessing media violence effects using a risk and resilience approach to understanding aggression. *Psychology of Popular Media Culture*, *1*(3), 138–151. https://doi.org/10.1037/a0028481

Gerbner, G., & Gross, L. (1976). Living with Television: The Violence Profile. *Journal of Communication*, *26*(2), 172–199. https://doi.org/10.1111/j.1460-2466.1976.tb01397.x

Hak, T., Van Rhee, H., & Suurmond, R. (2016). How to interpret results of Meta-Analysis. *Social Science Research Network*. https://doi.org/10.2139/ssrn.3241367

Hayes, S. A., Hope, D. A., & Heimberg, R. G. (2008). The pattern of subjective anxiety during In-Session exposures over the course of Cognitive-Behavioral therapy for clients with social anxiety disorder. *Behavior Therapy*, *39*(3), 286–299. https://doi.org/10.1016/j.beth.2007.09.001

Higgins, J. P. T., & Thompson, S. G. (2002). Quantifying heterogeneity in a meta-analysis. *Statistics in Medicine*, *21*(11), 1539–1558. https://doi.org/10.1002/sim.1186

Huesmann, L. R. (2007). The Impact of Electronic Media Violence: Scientific Theory and research. *Journal of Adolescent Health*, *41*(6), S6–S13. https://doi.org/10.1016/j.jadohealth.2007.09.005

Huesmann, L. R., & Eron, L. D. (2013). *Television and the aggressive child: A Cross-national Comparison*. Routledge.

Huesmann, L. R., & Kirwil, L. (2007). Why observing violence increases the risk of violent behavior in the observer. In D. G. Singer & J. L. Singer (Eds.), Handbook of Children and the Media (pp. 25-54). Sage Publications.

Huesmann, L. R., Moise-Titus, J., Podolski, C., & Eron, L. D. (2003). Longitudinal relations between children's exposure to TV violence and their aggressive and violent behavior in young adulthood: 1977-1992. *Developmental Psychology*, *39*(2), 201–221. https://doi.org/10.1037/0012-1649.39.2.201

Huesmann, L. R., & Taylor, L. D. (2006). The role of media violence in violent behavior. *Annual Review of Public Health*, *27*(1), 393–415. https://doi.org/10.1146/annurev.publhealth.26.021304.144640

Kashani, J. H., Deuser, W. E., & Reid, J. C. (1991). Aggression and Anxiety: A new look at an old notion. *Journal of the American Academy of Child and Adolescent Psychiatry*, *30*(2), 218–223. https://doi.org/10.1097/00004583-199103000-00009

Krahé, B. (2016). Violent Media Effects on Aggression: A Commentary from a Cross-Cultural Perspective. *Analyses of Social Issues and Public Policy*, *16*(1), 439–442. https://doi.org/10.1111/asap.12107

Krahé, B., Möller, I., Huesmann, L. R., Kirwil, L., Felber, J., & Berger, A. (2011). Desensitization to media violence: Links with habitual media violence exposure, aggressive cognitions, and aggressive behavior. *Journal of Personality and Social Psychology*, *100*(4), 630–646. https://doi.org/10.1037/a0021711

Lambert, J., Barnstable, G., Minter, E., Cooper, J., & McEwan, D. (2022). Taking a One-Week Break from Social Media Improves Well-Being, Depression, and Anxiety: A Randomized Controlled Trial. *Cyberpsychology, Behavior, and Social Networking*, *25*(5), 287–293. https://doi.org/10.1089/cyber.2021.0324

Lang, P. (1968). Fear reduction and fear behavior: Problems in treating a construct. In *American Psychological Association eBooks* (pp. 90–102). https://doi.org/10.1037/10546-004

Madan, A., Mrug, S., & Wright, R. A. (2013). The effects of media violence on anxiety in late Adolescence. *Journal of Youth and Adolescence*, *43*(1), 116–126. https://doi.org/10.1007/s10964-013-0017-3

Michael Borenstein et al. (2009), Introduction to Meta-Analysis, Chichester (UK): Wiley.

Mobbs, D., Adolphs, R., Fanselow, M. S., Barrett, L. F., LeDoux, J. E., Ressler, K. J., & Tye, K. M. (2019). Viewpoints: Approaches to defining and investigating fear. *Nature Neuroscience*, *22*(8), 1205–1216. https://doi.org/10.1038/s41593-019-0456-6

Morgan, M., & Shanahan, J. (1997). Two Decades of Cultivation Research: An Appraisal and Meta-Analysis. *Annals of the International Communication Association*, *20*(1), 1–45. https://doi.org/10.1080/23808985.1997.11678937

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T., Mulrow, C. D., Shamseer, L., Tetzlaff, J., Akl, E. A., Brennan, S., Chou, R., Glanville, J., Grimshaw, J., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, n71. https://doi.org/10.1136/bmj.n71

Rule, B. G., & Ferguson, T. J. (1986). The effects of media violence on attitudes, emotions, and cognitions. *Journal of Social Issues*, *42*(3), 29–50. https://doi.org/10.1111/j.1540-4560.1986.tb00241.x

Sarmet, M. M., & Pilati, R. (2016). The Effect of Digital games on Behavior: Analysis of the General Learning Model. *Temas Em Psicologia*, *24*(1), 33–45. https://doi.org/10.9788/tp2016.1-03

Shrum, L. J. (2012). Media consumption and perceptions of social reality: Effects and underlying processes. In M. B. Oliver & A. A. Raney (Eds.), Media and social life (pp. 3–41). Routledge

Singer, D. G. (2012). *Handbook of Children and the Media*. SAGE.

Sterne, J. a. C., Savović, J., Page, M. J., Elbers, R. G., Blencowe, N. S., Boutron, I., Cates, C. J., Cheng, H., Corbett, M., Eldridge, S., Emberson, J., Hernán, M. A., Hopewell, S., Hróbjartsson, A., Junqueira, D. R., Jüni, P., Kirkham, J. J., Lasserson, T. J., Li, T., . . . Higgins, J. P. T. (2019). RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ*, l4898. https://doi.org/10.1136/bmj.l4898

Violence in the media: Psychologists study potential harmful effects. (2013, November 1). *https://www.apa.org*. https://www.apa.org/topics/video-games/violence-harmful-effects

Wakshlag, J. J., Vial, V., & Tamborini, R. (1983). SELECTING CRIME DRAMA AND APPREHENSION ABOUT CRIME. *Human Communication Research*, *10*(2), 227–242. https://doi.org/10.1111/j.1468-2958.1983.tb00012.x

Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin*, *96*(3), 465–490. https://doi.org/10.1037/0033-2909.96.3.465

Weaver, J. B., & Wakshlag, J. J. (1986). Perceived vulnerability to crime, criminal victimization experience, and television viewing. *Journal of Broadcasting & Electronic Media*, *30*(2), 141–158. https://doi.org/10.1080/08838158609386616

Ybarra, M. L., Diener-West, M., Markow, D., Leaf, P. J., Hamburger, M. E., & Boxer, P. (2008). Linkages between internet and other media violence with seriously violent behavior by youth. *Pediatrics*, *122*(5), 929–937. https://doi.org/10.1542/peds.2007-3377

Yıldırım, M., Arslan, G., & Alkahtani, A. M. (2021). Do fear of COVID-19 and religious coping predict depression, anxiety, and stress among the Arab population during health crisis? *Death Studies*, *46*(9), 2070–2076. https://doi.org/10.1080/07481187.2021.1882617

Table 1

Included Studies and the Types of Media Used in These Studies.

Medium of media	Studies
News	Juárez et al. (2022)
Movie Clip	Madan et al. (2013)
Video Game	Teng et al. (2011)

Table 2

Combined Effect Size of the Included Studies in the Meta-Analysis.

Effect Size	Standard Error	Cl Lower limit	Cl Upper limit	Z- value	One-tailed p-value	Two-tailed p-value
0.36	0.02	0.29	0.43	22.18	0.000	0.000

Table 3

Heterogeneity Present Among the Included Studies in the Meta-Analysis.

Q	p_q	I^2	T^2	T
0.06	0.971	0.00%	0.00	0.00

Table 4

Egger Regression

	Estimate	SE	CI LL	CI UL
Intercept	0.27	0.08	-0.07	0.62
Slope	0.32	0.01	0.27	0.38

Table 5

Begg & Mazumdar's Rank Correlation Test

Δx-y	Kendall's Tau a	z- value	p- value
3	1.00	1.57	0.059

Figure 1.

PRISMA Flow Diagram: Trials Identified and Search Process.

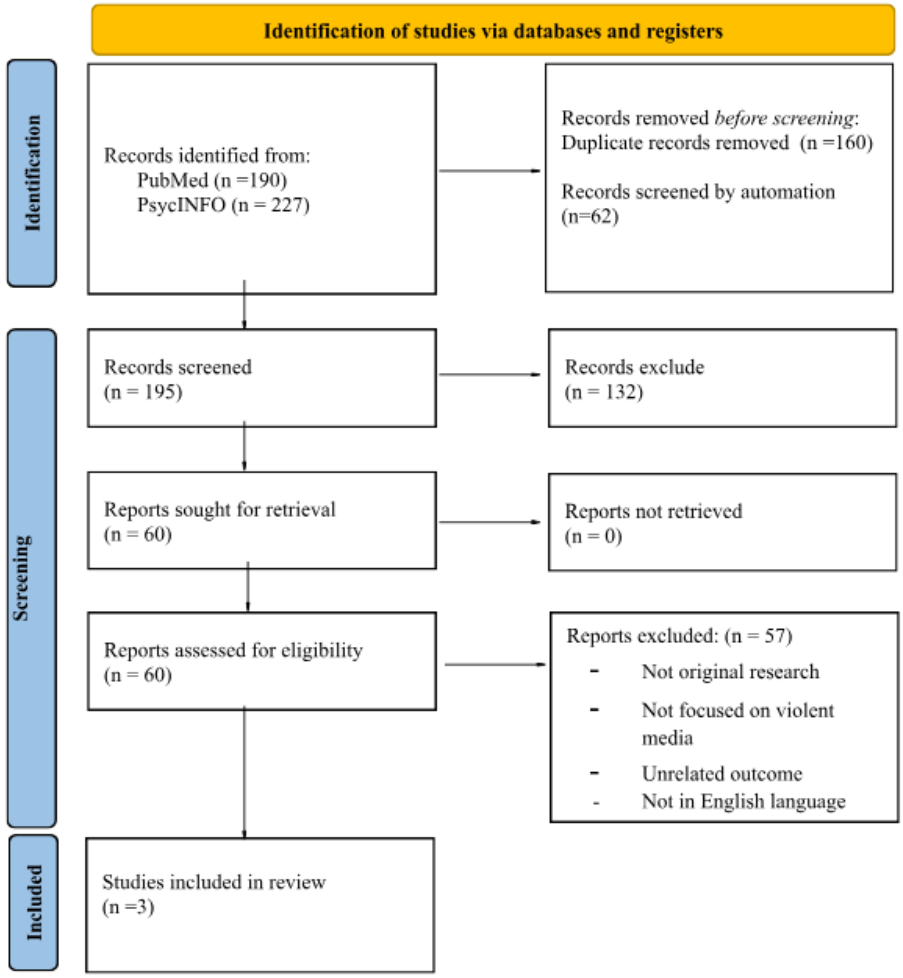


Figure 2

Forest Plot of Effect Sizes for Studies Included in the Meta-Analysis for the Outcome on Aggression Based Anxiety of Media Violence.

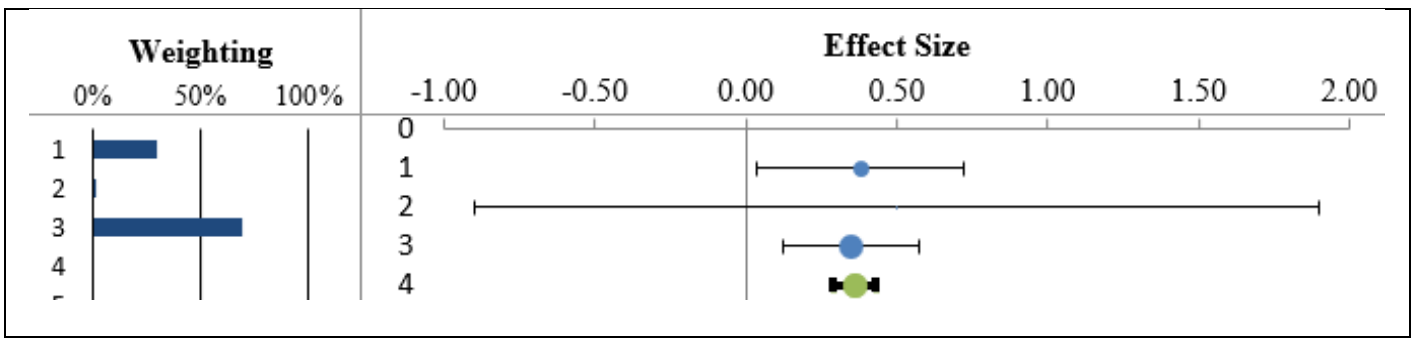


Figure 3

Funnel Plots for Analyzing Publication Bias

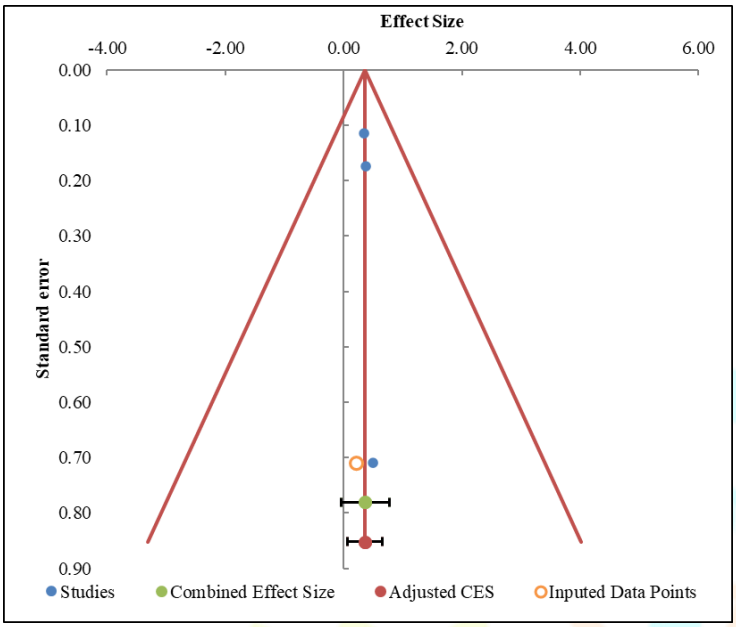


Figure 4

Risk of Bias Graph Presented as Percentages Across all Included Studies.

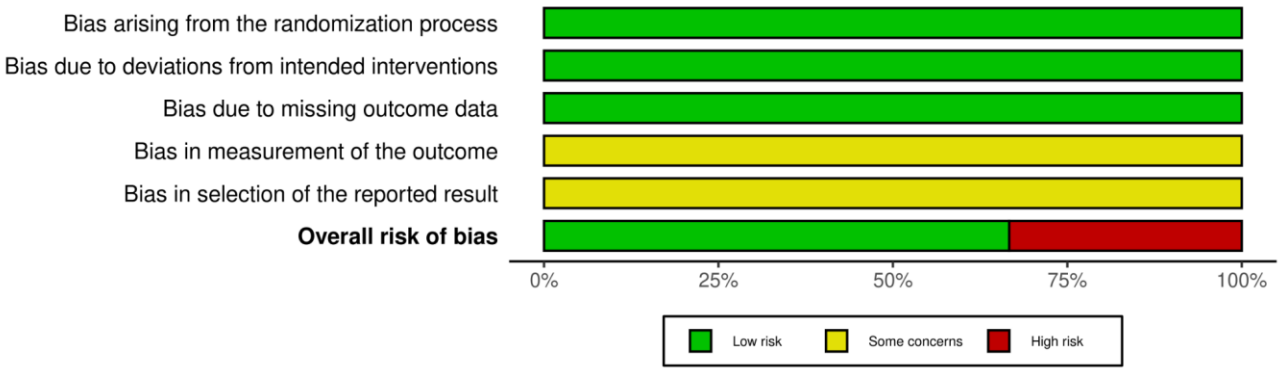
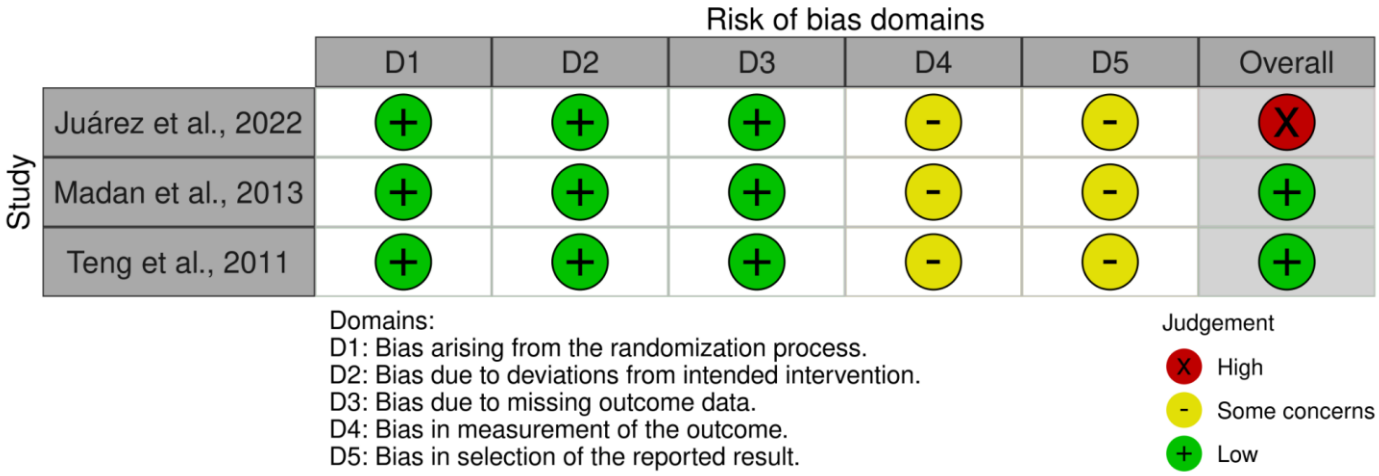


Figure 5

Risk of Bias Summary for Each Included Study.



Appendix A