

PREDICTORS OF AGGRESSIVE DISPOSITIONS RESULTING FROM BRIEF
EXPOSURE TO MEDIA VIOLENCE

Predictors of Aggressive Dispositions Resulting from Brief Exposure to Media Violence

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Abstract

Research has consistently shown that exposure to violent media content can have a considerable impact on the individual, increasing momentary aggressive dispositions and contributing to strengthen aggression-related cognitions. However, some studies claim that the association between exposure to media violence and subsequent aggression is tenuous or insubstantial. Through a mix of experimental and cross-sectional methodology, this study investigates whether exposure to a brief video containing instances of aggression can impact individual aggressive momentary dispositions, and whether frequent consumption of violent media and scores on locus of control can contribute to predicting aggressive inclinations. A total of 140 participants were randomly assigned to watching either a violent or non-violent clip before completing a word completion task designed to measure aggression and the aggression questionnaire. Data regarding participants' habitual consumption of violent media and scores on locus of control were collected through questionnaires. Analyses showed that participants who were exposed to the violent video scored higher on both the word completion task and the aggression questionnaire compared to participants who watched the non-violent clip. Results from multiple regression models indicated that frequent consumption of violent media and scores on locus of control can predict aggressive dispositions. Findings from this study suggest that brief exposure to media violence can determine a short-term increment in subsequent aggressive dispositions; that frequent consumption of violent media positively predicts aggressive inclinations; and that internal locus of control is a negative predictor of aggressive dispositions. Societal implications of media violence exposure are considered and discussed.

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Introduction

Violence portrayed in the media is considered to be a risk factor, capable of uniquely contributing to aggressive and antisocial behaviour (Plante & Anderson, 2017). Considered that the average media consumption per day is estimated to be 7.8 hours (Watson, 2022) and that instances of aggression can be found even in media content deemed popular with young children (Martins & Wilson, 2012), media violence may have a substantial effect on society when considered from a global perspective. Investigating the psychological dynamics underlying the exposure to violent media content might inform viable strategies to reduce the detrimental effects of media violence and its potential repercussions on juvenile misconduct (Han et al., 2020). The following review will discuss the evidence for the association between exposure to violent media content and subsequent aggressive dispositions in light of the theoretical frameworks advanced as an explanation for this link. Furthermore, factors that could determine different degrees of individual susceptibility to media violence will be considered and analysed.

As advanced by DeWall and colleagues (2011), aggression can be defined as a conduct that entails damage towards another individual who, conversely, is committed to intercepting that harm. Researchers propose aggression as a construct that unfolds along a spectrum extending from weak to intense, with the term violence indicating the extreme end of the range (Bushman & Anderson, 2001). Within this framework is embedded the definition of media violence, that is, any media depicting characters who purposely try to damage others (Anderson et al., 2003). It is worth specifying that, in accordance with this definition, researchers also deem content that is mildly aggressive, such as the famous cartoon mouse portrayed hitting the enemy cat, as violent media (Plante & Anderson, 2017).

On account of Bandura's learning theory of aggression (1978), which acknowledges the prospect of learning aggressive behaviour through its bare observation, a significant body

of research postulated a direct correlation between consumption of violent media and revealing aggressive dispositions (Black & Bevan, 1992; Bushman & Anderson, 2002; Coyne et al., 2008). Specifically, watching violence in the media could both intensify aggressive inclinations (Black & Bevan, 1992) and increase the proclivity to parallel conducts in real-life scenarios (Coyne et al., 2008). In addition, exposure to violent media would generate hostile expectations in the viewer, resulting in the assumption that potential disagreements will be handled aggressively by the counterpart (Bushman & Anderson, 2002). These findings seem to be in line with Zillmann's excitation-transfer theory (1971), which builds upon the arousal commonly elicited in the viewer by media violence. According to Zillmann's theory, a residual of such excitation would persist for a certain interval of time following the exposure to violent media content, amplifying the emotions that are experienced subsequently. Namely, if an anger-inducing event occurs shortly after the exposure to violent media, the anger felt by the individual would be magnified, increasing the probability of engaging in aggressive behaviour (Zillman, 1971). Building upon similar premises, Anderson and Bushman (2002) proposed the general aggression model, a comprehensive theoretical framework concerning the dynamics underlying human aggression. This model suggests that exposure to media violence can play a significant role in promoting access to aggressive scripts and facilitating an aggressive affective state, consequently increasing the likelihood to engage in aggressive behaviour (Anderson & Bushman, 2002). According to the general aggression model, being recently exposed to aggressive media content could be accountable for priming aggressive cognitions and intensifying current arousal, generating a substantial impact on the individual's present affective state which, in turn, would result in a short-term increment of aggression (Anderson & Bushman, 2002).

Besides looking at the immediate effects of violent media exposure on individual levels of aggression, considering the long-term effects of violent media usage might

contribute to acquiring a deeper understanding of the phenomenon. Evidence from longitudinal studies seems to provide further support in favour of a direct association between exposure to violent media content and displaying aggressive conducts (Gentile et al., 2011; Huesmann et al., 2003; Krahe & Möller, 2010). Specifically, Huesmann and colleagues (2003) investigated this relationship from childhood to adulthood in a 15-year longitudinal study. Their results revealed that being exposed to media violence between the age of 6 and 9 significantly correlated with higher levels of aggression displayed in early adulthood. By performing a longitudinal analysis of the data, the researchers suggested a clear direction of the relationship, highlighting that it is violent media exposure that intensifies levels of individual aggression and not vice versa. Furthermore, results also showed the persistence of this association even when controlling for the effects of several factors such as socioeconomic status, individuals' intellectual abilities, and parents' habits and characteristics. In addition to enhancing aggressive dispositions, longitudinal research also found repeated consumption of violent media genres to be a predictor of less prosocial behaviour in children (Gentile et al., 2011), and lower levels of empathy in adolescents (Krahe & Möller, 2010).

When considering the broad construct of aggression, less overt forms of aggressive behaviour often seem to be overlooked. As argued by Coyne and colleagues (2008), most individuals might express aggression in a more subtle way, undermining others' relationships and social status through gossiping and manipulation. This type of behaviour, termed relational aggression, appears to be common in workplaces, as research reveals that approximately one-third of adult Americans have experienced sabotage or humiliation at work (Namie, 2021). A consistent body of literature has focused on the effects of viewing relational aggression in the media, suggesting that exposure to this kind of content may be a contributing factor to the development of similar behavioural patterns (Coyne, 2016; Linder

& Werner, 2012; Martins & Weaver, 2019). In particular, longitudinal research conducted by Linder and Werner (2012) showed that, in absence of parental mediation, repeated exposure to relationally aggressive media would strengthen children's supportive normative beliefs concerning relational aggression, therefore increasing their propensity to act accordingly. This interpretation seems to be corroborated by a meta-analysis conducted by Martins and Weaver (2019) on the impact of media exposure on relational aggression. Besides acknowledging a positive association between viewing relational aggression in the media and subsequent relationally aggressive behaviour, Martins and Weaver (2019) contextualised the effects of exposure to relationally aggressive content within the paradigm proposed by the general aggression model (Anderson & Bushman, 2002). Repeated consumption of relationally aggressive media could shape normative beliefs and facilitate access to relationally aggressive schemas, increasing the likelihood for the individual to resort to such conduct in real-life contexts (Martins & Weaver, 2019).

Acknowledging different forms of aggression portrayed in the media led research to investigate the possibility of a cross-over effect. Specifically, Coyne and colleagues (2008) explored whether watching physical aggression in the media could also facilitate relational aggression and, in parallel, whether exposure to relationally aggressive media would also promote physical aggression. Participants were randomly assigned to three different conditions, one group was exposed to a clip containing instances of physical aggression, the second group watched a video containing examples of relational aggression, and the control group was assigned to a condition that entailed a non-aggressive clip. Subsequently, after having completed a puzzle completion task where a confederate purposely displayed antagonistic attitudes, participants partook in a competitive reaction time test that aimed to assess physical aggression and completed a questionnaire that intended to measure relational aggression. Results indicated the occurrence of a cross-over effect. Compared to the control

group, participants assigned to the physical aggression condition displayed higher levels of both physical and relational aggression following media exposure. Analogously, participants who were exposed to relationally aggressive media exhibited greater levels of both relational and physical aggression compared to the control group. As suggested by Coyne and colleagues (2008), exposure to media that portray physical or relational aggressive behaviour may facilitate subsequent generalised aggressive inclinations, regardless of the type of aggression witnessed by the watcher.

Overall, the examined literature seems to converge on the idea that consumption of violent media can enhance aggressive inclinations (Black & Bevan, 1992; Bushman & Anderson, 2002; Coyne, 2016; Coyne et al., 2008; Gentile et al., 2011; Huesmann et al., 2003; Krahe & Möller, 2010). However, some research suggests that the association between exposure to media violence and subsequent aggression is tenuous or insubstantial (Adachi & Willoughby, 2011; Ferguson et al., 2008; Huston-Stein et al., 1981; Przybylski & Weinstein, 2019; Wiegman et al., 1992). Regarding the aggression portrayed in television programs, Huston-Stein and colleagues (1981) investigated the isolated effects of television violence and action on social behaviour of preschool children. Children were allocated to four different conditions which entailed watching a program that contained high action and high violence, a show that was high in action but low in violence, a low action and low violence program, or no television. After observing the children playing freely before and after media exposure, the researchers identified a slight increase in aggression in both groups of children assigned to the conditions that involved a high degree of action, suggesting that changes in aggression are associated with action content rather than violent content (Huston-Stein et al., 1981). Based on Zillmann's excitation theory (1971), Ferguson and Savage (2012) argued that significant differences reported by experimental research in which participants are shown

either violent or monotonous media content could be on account of the different degree of arousal evoked by the action contained in the video, rather than the violence per se.

When considering the relationship between violent media exposure and aggressive inclinations, the main focus of more recent research seems to be the usage of violent video games, with most of the literature indicating that violent video games content does not impact aggressive dispositions (Adachi & Willoughby, 2011; Ferguson et al., 2008; Przybylski & Weinstein, 2019). A possible explanation for these findings seems to be proposed by Adachi and Willoughby (2011), who examined the independent effect of video games competitiveness and violence on subsequent aggression. Results indicated that violent video game content was not the determinant of an increase in aggression, which was instead associated with the degree of competitiveness of the video game (Adachi & Willoughby, 2011). On these grounds, Adachi and Willoughby (2011) suggested that competition seems to be the video game element that has the most significant impact on subsequent aggression, regardless of the proportion of violent content. However, when contextualising evidence concerning violent video games usage within the broad scenario of media violence, it appears relevant to consider that video games are a particular form of media that involve the active participation of the player, a key characteristic that distinguishes video games from other types of media (Granic et al., 2014). As video games appear to entail specific components such as competitiveness (Adachi & Willoughby, 2011), which do not seem to be identifiable in other media sources such as movies or music, particular caution should be used in extending these findings to the general category of violent media.

Ultimately, a recent study conducted by Lee and colleagues (2021) on violent video games usage among South Korean adolescents, revealed that using distinct analytical procedures may determine divergent interpretations of the relationship between video games violence and aggressive behaviour. Specifically, Lee and colleagues (2021) found that testing

the cross-sectional effects of violent video games through contemporaneous fixed-effects models produced results that are in line with most of the literature, that is, exposure to violent media is associated with increased levels of aggression (Black & Bevan, 1992; Bushman & Anderson, 2002; Coyne et al., 2008). By contrast, using dynamic fixed-effects models to examine the delayed effects of violent video games at 6-month intervals, indicated that participants whose habitual game entailed violent content displayed decreased levels of aggression in the following six months (Lee et al., 2021). These findings seem to suggest that the same data set can lead to conflicting results depending on the parameters chosen concerning the time-related effects of video game playing, even when confounding variables are controlled for (Lee et al., 2021).

Given the inconsistencies found in the examined literature on the association between violent media exposure and subsequent aggressive tendencies, further investigation on the factors that determine different degrees of individual susceptibility to media violence might contribute to a deeper understanding of the phenomenon. Experimental research conducted by Han and colleagues (2020) suggests that long-term exposure to violent media content could play a role in the habitual activation of cognitive schemas associated with aggression. In light of the general aggression model (Anderson & Bushman, 2002), Han and colleagues (2020) suggest that a greater consumption of media violence would make aggressive scripts chronically accessible, priming the individual for proactive and reactive aggression. While, in the short-term, violent media is deemed accountable for the activation of such schemas, repeated exposure to media violence would strengthen these scripts, leading to durable changes in the individual's cognition and behavioural pattern (Han et al., 2020). These findings also seem to represent a viable explanation for the mechanisms underlying the association between exposure to violent media and displaying aggressive conducts advanced by longitudinal research (Gentile et al., 2011; Huesmann et al., 2003; Krahe & Möller, 2010).

Besides frequent exposure to aggressive media content, the literature suggests that certain individual characteristics might account for diverse cognitive and emotional reactions to media violence (Bushman & Geen, 1990). Specifically, research has shown that locus of control can impact beliefs and perceptions of media representations (Wober & Gunter, 1982). Therefore, as argued by Haridakis (2002), the individual's score on locus of control may be acknowledged as a factor that can regulate the effects of media violence on the watcher. Locus of control is defined as a personal attribute that indicates the degree of an individual's capacity to evaluate the after-effect connected with engaging in certain behaviours (Rotter, 1966). It ranges on a continuum that extends from internal to external, where external indicates the assumption that consequences of behaviour are ascribed to uncontrollable circumstances, while internal alludes to the confidence that events are contingent on personal conduct (Rotter, 1966). The literature suggests that aggressors would have high levels of external locus of control (Breet et al., 2010; Levy & Grumpel, 2020), whilst, conversely, having high scores on internal locus of control might promote behaviours that do not presuppose the use of violence (Ahlin, 2014).

Based on the existing literature, where some studies have demonstrated a positive correlation between exposure to violent media content and subsequent amplification of aggressive inclinations (Black & Bevan, 1992; Bushman & Anderson, 2002; Coyne et al., 2008; Han et al., 2020), while some others indicated a nonsignificant relationship between these variables (Adachi & Willoughby, 2011; Ferguson et al., 2008; Huston-Stein et al., 1981; Przybylski & Weinstein, 2019), this study intends to examine if brief exposure to media violence can increase subsequent aggressive dispositions. Furthermore, the present study aims to explore whether habitual consumption of violent media and scores on locus of control can be considered as unique contributors to predicting aggressive inclinations correlated with exposure to violent media content. On the grounds of the examined research,

the present study expects to find a difference in aggressive dispositions between participants who are exposed to a brief instance of violent media and participants who are exposed to a non-aggressive clip. In addition, building upon evidence provided by research concerning the role of locus of control as a mediator of the effects of media violence (Haridakis, 2002), and regarding a high degree of exposure to media violence as a predictor of aggression (Bushman & Anderson, 2002; Han et al., 2020), this study intends to investigate whether scores on locus of control and habitual violent media consumption can predict participants' scores on a task designed to measure aggressive dispositions resulting from exposure to media violence.

The present study therefore intends to test two hypotheses, the first is that there will be a difference in aggressive tendencies, as measured by scores on a word completion task (Anderson et al., 2003; Carnagey & Anderson, 2005) and on the aggression questionnaire (Buss & Perry, 1992), between participants who are exposed to violent versus non-violent videos. On a further level, the second hypothesis of this study is that habitual consumption of violent media and scores on locus of control will predict aggressive inclinations correlated with exposure to violent media content.

Methodology

Participants

A minimum of 128 participants was suggested by a power analysis using G* Power software regarding an independent samples t-test with a power of .8, an effect size of .5 (Cohen, 1992), and alpha level set at .05, two-tailed. Since also a standard multiple regression was run in the present study, a minimum of 128 participants seemed to satisfy also the conditions posed by Stevens (1996), which suggested that the minimum sample size for a multivariate analysis consists of 15 participants per predictor variable used in the model. In the present study, two predictor variables were used.

Based on the results of the power analysis, this study recruited 140 participants (47.9% males and 52.1% females) of age comprised between 18 and 81 years ($M = 37.64$, $SD = 14.44$) through a mix of convenience and snowball sampling methods. A concise overview of the study was posted on the researcher's social media accounts (Facebook, Instagram) together with a link that redirected potential participants to the initial page of the study. Participants were also proposed to share the possibility to engage in this study with acquaintances over 18.

Participants were randomly assigned to watch either a violent clip, or a non-violent video. There were 70 participants, of which 34 were males and 36 were females, in the violent clip condition and 70 participants, of which 33 were males and 37 were females, in the non-violent video condition.

Design

The present study is based on quantitative research and entails a combination of experimental and cross-sectional methodology. An experimental design, specifically a between-groups design, was used to test hypothesis 1, that is, to assess whether there is a difference in aggressive dispositions between participants who are exposed to a brief instance

of violent media and participants who are exposed to a non-aggressive clip. The independent variable consisted of brief exposure to media violence. The levels of the independent variable were represented by two conditions, the first involved watching a short video containing instances of aggression, while the second consisted of watching a short non-violent clip. Participants were randomly assigned to one of these conditions. The dependent variable was represented by levels of individual aggressive dispositions.

A cross-sectional methodology was used to test hypothesis 2, that is, to investigate whether frequent consumption of violent media and scores on locus of control can make a unique contribution to predicting aggressive dispositions associated with media violence exposure. The criterion variable was represented by aggression, while the predictor variables were represented by habitual consumption of violent media and scores on locus of control.

Materials

Aggression

To gain a more comprehensive appreciation of levels of aggression, this variable was measured using two distinct instruments: a word completion task designed to evaluate the effects of brief exposure to violent media on individual aggressive inclinations (Anderson et al., 2003; Carnagey & Anderson, 2005), and the aggression questionnaire (Cronbach $\alpha = .89$) (Buss & Perry, 1992), a self-report scale which aims to appraise the levels of aggressive dispositions.

Word Completion Task. Participants were presented with 20 words with missing letters and asked to fill in the blanks to create a complete word. Word fragments were selected from a list of items that have several correct completions (Anderson et al., 2003; Carnagey & Anderson, 2005). Each of these fragments can be completed with letters that generate words related to aggression, or neutral words. For instance, the fragment “*ki__*” might be completed as an aggression-related word such as “*kill*” or “*kick*”, or as a neutral

word such as “kite” or “kiss”. Participants’ responses were coded into two categories: aggressive words and non-aggressive words. Completions that could not be interpreted as existing words were considered as missing data and excluded from the analysis. Each word fragment completed as an aggression-related word corresponds to 1 point. Scores on this task range from 0 to 20, where a higher score indicates a higher level of aggressive dispositions (see Appendix D). This task was used in previous similar experimental research to assess individual levels of aggressive inclinations following exposure to violent media content (Anderson et al., 2003; Carnagey & Anderson, 2005).

Aggression Questionnaire. Participants were asked to complete the aggression questionnaire (Cronbach $\alpha = .89$) (Buss & Perry, 1992) a self-report scale which aims to assess aggressive dispositions. This questionnaire consists of indicating to which extent the 29 statements listed are characteristic of the individual. Answers were given on a 5-point Likert scale ranging from “*extremely uncharacteristic of me*” = 1 to “*extremely characteristic of me*” = 5. The total score ranges from 29 to 145, where a larger score indicates higher levels of aggression. Scores on items 7 and 18 are reversed so that “*extremely uncharacteristic of me*” = 5 and “*extremely characteristic of me*” = 1 (see Appendix E). This scale was found to be a reliable and valid self-report measure of aggression (Buss & Perry, 1992). The Cronbach’s alpha ($\alpha = .96$) suggested a high internal consistency for the scale with the sample of the present study.

Habitual Consumption of Violent Media

Habitual consumption of violent media was measured using a 12-items questionnaire that aims to assess the frequency of exposure to antisocial media content (Den Hamer et al., 2017). This questionnaire is part of the Content-based Media Exposure Scale 2 (C-ME2), devised by Den Hamer and colleagues (2017) with the purpose to measure exposure to both antisocial (Cronbach $\alpha = .89$) and prosocial (Cronbach $\alpha = .88$) media content. For the

purpose of this study, participants were presented with the 12-items of the antisocial media content questionnaire (Cronbach $\alpha = .89$), which aims to assess the frequency of their exposure to media instances of violence and aggression, including relational aggressive instances (Den Hamer et al., 2017). Answers were given on a 5-point Likert scale ranging from “*never*” = 1 to “*very often*” = 5. The total score ranges from 12 to 60, where 60 represents maximal exposure to aggressive media content (see Appendix F). This scale was found to be a valid and reliable measure suitable for all research designs (Den Hamer et al., 2017). The Cronbach’s alpha for the current sample indicated a high internal consistency for this scale ($\alpha = .94$).

Locus of Control

Scores on locus of control were assessed using a shortened locus of control scale (Cronbach $\alpha = .68$) (Lumpkin, 1985). The choice of this instrument was based on the practical issues with using the full Rotter scale (1966), which would have been excessively time-consuming for the participant in the context of the present study. Participants were asked to rate their agreement on six statements on a 5-point Likert scale ranging from “*strongly disagree*” to “*strongly agree*”. The total score ranges from 6 to 30, where a larger score indicates a more internal locus of control. This questionnaire consists of three internal items and three external items. Scores on the internal items range from “*strongly disagree*” = 1 to “*strongly agree*” = 5, while scores on the external items will be reversed so that “*strongly disagree*” = 5 and “*strongly agree*” = 1 (see Appendix G). This scale was reported to be a reliable and valid measure of locus of control and a suitable alternative in contexts where using the full scale is not feasible (Lumpkin, 1985). The Cronbach’s alpha ($\alpha = .88$) suggested a high internal consistency for the scale with the sample of the present study.

Experimental Stimuli

Participants were randomly assigned to watch either a short clip containing instances of aggression, or a non-violent clip. Randomisation was obtained through the service provided by Allocate Monster, an online free tool that automatically randomises participants to either one or the other condition of the study. The aggressive clip contained a scene from *A Clockwork Orange* (Kubrick, 1971), which portrayed a physical fight between two rival gangs of young men, and a scene from *Kill Bill: Volume 1* (Tarantino, 2003), which involved a physical fight between two women. This choice was made based on a previous study on aggression conducted by Coyne and colleagues (2008), which entailed presenting the participants with a video containing analogous movie scenes. The non-violent video consisted of a scene selected from *The Lake House* (Agresti, 2006), which showed a man and a woman dancing after having had a brief conversation. Considered that participation in this study was estimated to take no more than 15 minutes in total, the length of both clips was in the range of 3 minutes.

Procedure

Data collection for this study took place online using Google Forms. Although the experimental task and scales selected for the present study have been designed for analogous purposes and used in previous similar research (Anderson et al., 2003; Carnagey & Anderson, 2005; Den Hamer et al., 2017; Lumpkin, 1985), the chosen procedures were piloted with three participants to test the adequacy of the experimental stimuli (aggressive VS non-aggressive clip). The pilot study also confirmed that the word completion task selected to measure aggressive dispositions (Anderson et al., 2003; Carnagey & Anderson, 2005) produced usable data for the present study, ensuring that there was variability in scores. Data collected at this stage of the study were excluded from analysis.

Participants became aware of the possibility to engage with the study through the researcher's social media accounts (Facebook, Instagram). Within the post that advertised the study, participants found a link that redirected them to a Google Forms page where they could read the information concerning the study (see Appendix A), the researcher's contact details, and the consent form (see Appendix B). If the person intended to proceed with taking part in the study, they needed to tick the box "*I agree to participate in this study*" placed at the end of the digital consent form. At this point, the participant was allowed to click on the "*continue*" button placed at the end of the webpage to begin the study.

Participants were asked to indicate their gender and age before being randomly assigned to watch either a short clip containing instances of aggression, or a non-violent clip. After having watched the brief video, participants were asked to engage in the word completion task (Anderson et al., 2003; Carnagey & Anderson, 2005), and to complete the aggression questionnaire (Buss & Perry, 1992).

At this point, participants were asked to complete the 12-items questionnaire that aimed to assess the frequency of their exposure to media instances of violence and aggression (Den Hamer et al., 2017), and to rate their agreement on six statements that constituted a shortened version of the locus of control questionnaire (Lumpkin, 1985).

After having partaken in the study, either fully or partly, the participant was automatically provided with a debriefing sheet (see Appendix C) which included an explanation of the study, the contact details of the researcher and the academic supervisor, and details of helplines for receiving support in case the participant became distressed as a result of the involvement in this research.

Participation in this study was estimated to take no more than 15 minutes in total.

Ethical Considerations

This study was conducted in line with the ethical guidelines of the National College of Ireland and no major ethical issues were connected with participation. However, there was a small possibility that being assigned to the condition that involved watching a short clip containing instances of aggressive behaviour could represent a source of minor distress or discomfort for some of the participants. This possibility was communicated to the participants in the information sheet and in the consent form, where it was also explained that, in case of experiencing distress during their participation, participants had the right to immediately withdraw from the study without any consequence. Additionally, given the nature of this study, disclosing the purpose of the experimental task to the participants in advance could have represented a potential for them to be primed, resulting in a possible undermining of the validity of the results. The present study, therefore, used a minor level of deception to prevent the occurrence of this possibility. After having partaken, fully or partly, in the study, participants were provided with a debriefing sheet, which informed them about the true nature of the experimental task. The debriefing sheet included a full explanation of the study, the contact details of the researcher and the academic supervisor, and details of helplines for receiving support in case the participant became distressed as a result of the involvement in this research.

Results

Descriptive Statistics

The sample consisted of 140 participants (47.9% males and 52.1% females) aged between 18 and 81 years ($M = 37.64$, $SD = 14.44$). In the violent clip condition (VC) there were 70 participants, of which 34 were males and 36 were females, and in the non-violent video condition (NVC) there were 70 participants, of which 33 were males and 37 were females.

To investigate potential differences in the demographic profile of the two experimental groups that could possibly alter the reliability of the results, analyses were conducted on gender, age, and habitual consumption of violent media (See Appendix H for evidence of data).

Gender

A chi square test for independence (with Yates' Continuity Correction) indicated no significant difference in gender between participants in the VC and participants in the NVC, $\chi^2(1, n = 140) = .14, p = 1, phi = -.01$.

Age

Preliminary inspection of absolute Z scores for skewness and kurtosis were conducted. The absolute Z score for skewness was above 3.29, indicating violation of the assumption of normality (Kim, 2013). A Mann Whitney U test indicated no statistical difference in age between participants in the VC ($Md = 34, n = 70$) and participants in the NVC ($Md = 36.50, n = 70$), $U = 2381, z = -.29, p = .774$.

Consumption of Violent Media

Absolute Z scores for skewness and kurtosis were below 3.29, suggesting that data were normally distributed (Kim, 2013). An independent samples t -test was run to compare scores for habitual consumption of violent media between participants in the VC and participants in the NVC. There was a significant difference in scores, with participants in the

VC ($M = 41.77, SD = 10.74$) scoring significantly higher than participants in the NVC ($M = 30.44, SD = 8.15$), $t(138) = -7.03, p < .001$ two tailed. The magnitude of differences in the means (mean difference = -11.33 , 95% CI [$-14.51, -8.14$]) was large (Cohen's $d = 1.19$).

Of 140 participants, only 126 completed in full the word completion task designed to evaluate the effects of exposure to violent media on individual aggressive inclinations.

Descriptive statistics for total scores on the word completion task, aggression questionnaire, habitual consumption of violent media, and locus of control are presented in the Table 1 below.

Table 1

Descriptive Statistics for Total Scores on the Word Completion Task, Aggression Questionnaire, Habitual Consumption of Violent Media, and Locus of Control

Variable	<i>N</i>	<i>M</i> [95% CI]	<i>SD</i>	Range
Word Completion Task	126	9.63 [8.22, 11.04]	7.99	0-20
Aggression Questionnaire	140	66.94 [63.18, 70.71]	22.52	32-119
Habitual Consumption of Violent media	140	36.11 [34.26, 37.96]	11.07	12-56
Locus of Control	140	19.48 [18.49, 20.47]	5.93	7-30

Inferential Statistics

Hypothesis 1

Preliminary analyses of the distribution of scores on the word completion task revealed violation of the assumption of normality since absolute *Z* scores for kurtosis were above 3.29 (Kim, 2013). A Mann Whitney U test was conducted to compare scores on the word completion task between participants in the VC and participants in the NVC. A

significant difference in scores on the word completion task was found, with participants in the VC ($Md = 20$, $n = 62$) scoring significantly higher than participants in the NVC ($Md = 1$, $n = 64$), $U = 3838$, $z = 9.22$, $p < .001$. The effect size was large ($r = .82$). (See Appendix H for evidence of data).

An independent samples t-test was used to compare scores on the aggression questionnaire between participants in the VC and participants in the NVC. Preliminary analyses of the distribution of scores on the aggression questionnaire indicated that the data were normally distributed since absolute Z scores for skewness and kurtosis were below 3.29 (Kim, 2013). There was a significant difference in scores, with participants in the VC ($M = 79.47$, $SD = 18.20$) scoring significantly higher than participants in the NVC ($M = 54.41$, $SD = 19.29$), $t(138) = -7.90$, $p < .001$ two tailed. The magnitude of differences in the means (mean difference = -25.06 , 95% CI [-31.32 , -18.79]) was large (Cohen's $d = 1.34$). (See Appendix H for evidence of data).

Hypothesis 2

A standard multiple regression was performed to determine how well levels of aggressive dispositions, as measured by scores on the word completion task, could be explained by habitual consumption of violent media and scores on locus of control. The correlations between the predictor variables were assessed and r values ranged from $-.54$ to $-.83$. Tests for multicollinearity also indicated that all Tolerance and VIF values were in an acceptable range. These results indicated that the assumption of multicollinearity was not violated and that the data were suitable for examination through multiple regression analysis.

The two predictors explained 75.9% of variance in aggressive dispositions as measured by scores on the word completion task ($F(2,123) = 193.72$, $p < .001$). Both the predictors included in the model were found to uniquely predict levels of aggressive dispositions as measured by scores on the word completion task to a statistically significant

degree. Habitual consumption of violent media was found to be a positive predictor of aggressive dispositions as measured by scores on the word completion task ($\beta = .32, p < .001$). Internal locus of control, which was also the strongest predictor in the model, was found to be a negative predictor of aggressive dispositions as measured by scores on the word completion task ($\beta = -.66, p < .001$). (See Table 2 below for full details). (See Appendix H for evidence of data).

Table 2

Multiple Regression Model Predicting Aggressive Dispositions as Measured by Scores on the Word Completion Task

Variable	R^2	B	SE	β	t	p
Model	.76*					
Habitual Consumption of						
Violent Media		.23	.04	.32	6.04	< .001
Locus of Control		-.89	.07	-.66	-12.55	< .001

Note: Statistical significance: * $p < .001$

A further standard multiple regression was performed to investigate how well levels of aggressive dispositions as measured by scores on the aggression questionnaire could be explained by habitual consumption of violent media and scores on locus of control. The correlations between the predictor variables were assessed and r values ranged from $-.54$ and $-.71$. Tests for multicollinearity also revealed that all Tolerance and VIF values were in an acceptable range. These results indicated that the assumption of multicollinearity was not violated and that the data were suitable for examination through multiple regression analysis.

The two predictors explained 58% of variance in aggressive dispositions as measured by scores on the aggression questionnaire ($F(2, 137) = 94.79, p < .001$). Both the predictors included in the model were found to uniquely predict levels of aggressive dispositions as

measured by scores on the aggression questionnaire to a statistically significant degree.

Habitual consumption of violent media was found to be a positive predictor of aggressive dispositions as measured by scores on the aggression questionnaire ($\beta = .32, p < .001$).

Internal locus of control, which was also the strongest predictor in the model, was found to be a negative predictor of aggressive dispositions as measured by scores on the aggression questionnaire ($\beta = -.54, p < .001$). (See Table 3 below for full details). (See Appendix H for evidence of data).

Table 3

Multiple Regression Model Predicting Aggressive Dispositions as Measured by Scores on the Aggression Questionnaire

Variable	R^2	B	SE	β	t	p
Model	.58*					
Habitual Consumption of Violent Media		.65	.13	.32	4.90	< .001
Locus of Control		-2.05	.25	-.54	-8.21	< .001

Note: Statistical significance: * $p < .001$

Discussion

The aim of the present study was to examine whether brief exposure to media violence can determine a subsequent increase in aggressive dispositions. On a further level, the current study intended to explore whether habitual consumption of violent media and scores on locus of control can be considered as unique contributors to predicting aggressive inclinations correlated with exposure to violent media content. The results indicate that participants who were exposed to a video containing instances of aggressive behaviour displayed an increase in aggressive tendencies, as measured by scores on a word completion task (Anderson et al., 2003; Carnagey & Anderson, 2005) and on the aggression questionnaire (Buss & Perry, 1992), compared to participants who were exposed to a non-aggressive clip. Furthermore, the results suggest that habitual consumption of violent media and scores on locus of control make a unique contribution to explaining aggressive individual dispositions.

The literature has shown conflicting findings regarding the existence of a correlation between exposure to violent media content and subsequent amplification of aggressive inclinations. Some studies seem to converge on the idea that consumption of violent media can enhance aggressive inclinations (Black & Bevan, 1992; Bushman & Anderson, 2002; Coyne, 2016; Coyne et al., 2008; Gentile et al., 2011; Huesmann et al., 2003; Krahe & Möller, 2010), while some others suggest that the association between exposure to media violence and subsequent aggression is tenuous or insubstantial (Adachi & Willoughby, 2011; Ferguson et al., 2008; Huston-Stein et al., 1981; Przybylski & Weinstein, 2019; Wiegman et al., 1992). In attempt to clarify the inconsistencies found in the examined literature on the association between violent media exposure and subsequent aggressive tendencies, the factors that might account for different degrees of individual susceptibility to media violence were investigated. In particular, frequent exposure to aggressive media content has been

suggested to play a role in the habitual activation of cognitive schemas associated with aggression, leading to durable changes in the individual's cognition and behavioural pattern (Han et al., 2020). Besides, it has been argued that individual characteristics such as locus of control can impact beliefs and perceptions of media representations (Wober & Gunter, 1982), regulating the effects of media violence on the watcher (Haridakis, 2002). On the bases of the examined literature, two hypotheses were developed to fulfil the objectives of this study. The first (H1), was that there would be a difference in aggressive tendencies between participants who are exposed to violent versus non-violent videos, while the second (H2) was that habitual consumption of violent media and scores on locus of control can predict aggressive inclinations correlated with exposure to violent media content.

Building upon the existing literature, this study hypothesised (H1) that there would be a difference in aggressive inclinations between participants who are exposed to violent versus non-violent videos. Prior analyses on gender, age, and habitual consumption of violent media were conducted to explore potential differences in the demographic profile of the two experimental groups. No statistical difference was found in relation to gender and age, however, an independent samples t-test indicated that participants assigned to the violent video condition reported a higher consumption of violent media. Aggression was measured through two different tools, a word completion task designed to evaluate the effects of exposure to violent media on individual aggressive inclinations (Anderson et al., 2003; Carnagey & Anderson, 2005), and the aggression questionnaire (Buss & Perry, 1992), a self-report scale which aims to assess the levels of aggressive dispositions. A Mann Whitney U test revealed that participants who watched a violent video scored significantly higher on the word completion task than participants who were exposed to a non-violent clip, meaning that participants who were assigned to the violent clip condition were more likely to complete the word fragments with letters that generated aggression-related terms. Analogously, an

independent-samples t-test indicated that participants exposed to a violent clip scored significantly higher on the aggression questionnaire than participants who watched a non-violent video. This means that levels of aggression, as measured by the aggression questionnaire, of participants assigned to the violent condition were significantly higher than those of participants assigned to the non-violent condition. These findings support H1, since the scores on both the experimental task and the self-report measure indicate a difference in aggressive inclinations between participants who were exposed to violent versus non-violent videos. Specifically, the results indicate that participants who watched a violent clip displayed significantly higher levels of aggressive dispositions than participants who watched a non-violent video.

These results are in line with previous experimental research that favours the existence of a positive association between exposure to violent media and subsequent aggressive dispositions (Anderson et al., 2003; Arriaga et al., 2015; Bushman & Anderson, 2002; Coyne et al., 2008; Gentile et al., 2017). A possible explanation for these findings seems to be offered by the general aggression model devised by Anderson and Bushman (2002). According to this model, recent exposure to violent media can prime aggressive cognitions which, by impacting the individual's present affective state, might translate into a short-term increase of aggression (Anderson & Bushman, 2002). An alternative explanation for the mechanisms underlying an increment of aggression following violent media exposure seems to be proposed by Ferguson and Savage (2012), who, building upon Zillmann's excitation theory (1971), suggested that the increase in aggressive inclinations could be due to the arousal evoked by the action, rather than the violence, contained in the video. However, it seems implausible for this interpretation to find support in the context of the present study given the nature of the instruments selected to measure aggression. As observed by Berkowitz (1984), media representations can generate conceptions that are semantically

associated with the portrayed occurrence. In this study, the word completion task used to assess levels of aggression appears to be sensitive to priming effect, therefore, when completing the task, the participant would be influenced by the violent material of the video, rather than the action component. Such perspective seems to be consistent with prior analogous experimental research conducted by Bushman (1998), which found that exposure to violent media content stimulates cognitive structures linked to aggression, facilitating the access to aggressive lexicon for individuals who watched a violent video compared to those who watched a non-violent clip. Additionally, it has been argued that exposure to violent stimuli also affects the availability of aggressive concepts in memory (Bushman, 1998), which seems to explain not only higher scores on the aggression questionnaire, but also higher habitual consumption of violent media reported by participants assigned to the violent video condition. Future research should take into account that the effects of priming might extend to the phases of the study that follow the experimental tasks, possibly affecting participants' responses on questionnaires that aim to measure additional variables that are conceptually related to the media content to which the participant was exposed.

With regard to H2, two standard multiple regression models were created to determine whether habitual consumption of violent media and scores on locus of control could predict aggressive dispositions as measured, respectively, by scores on the word completion task, and by scores on the aggression questionnaire. Both models were significant and, in support of H2, the two predictors were found to uniquely predict levels of aggressive dispositions to a statistically significant degree. Specifically, habitual consumption of violent media was found to be a positive predictor of aggressive inclinations, meaning that repeated exposure to violent media content can account for individual aggressive dispositions. As for locus of control, it was found that, besides being the strongest predictor in both models, internal locus

of control is a negative predictor of aggressive inclinations. This means that holding the belief that events are contingent on personal conduct can mitigate aggressive dispositions.

These results are in line with previous studies that identified media violence exposure (Han et al., 2020) and scores on locus of control (Ahlin, 2014; Haridakis, 2002) as predictors of aggression. In relation to the habitual consumption of violent media, prior experimental research conducted by Han and colleagues (2020) suggested that individuals who are habitually exposed to media violence display increased aggressive tendencies compared to those who consume a lower degree of violent media content. These findings also seem to be corroborated by longitudinal research, which demonstrated a positive association between long-term exposure to violent media and a subsequent intensification of levels of individual aggression (Gentile et al., 2011; Huesmann et al., 2003; Krahe & Möller, 2010). A viable explanation as to why violent media exposure can be considered as a predictor of aggressive dispositions seems to be proposed by the general aggression model (Anderson & Bushman, 2002). According to this model, greater consumption of violent media can contribute to making aggressive schemas chronically accessible, predisposing the individual to aggressive thoughts and behaviours (Anderson & Bushman, 2002). With regards to the role of locus of control as a predictor of aggressive tendencies, findings of the current study are consistent with the existing literature, which suggests that aggressors would have an external locus of control (Breet et al., 2010; Levy & Grumpel, 2020), meaning that they are more likely to assume that the consequences of their behaviour are ascribed to uncontrollable circumstances. In parallel, research advanced that having an internal locus of control, which corresponds to the belief that the after-effect of certain actions depends on personal conduct, would facilitate non-aggressive behaviours (Ahlin, 2014). On these bases, it could be assumed that having an internal locus of control might mitigate the susceptibility of the individual to the effects of violent media content. To the researcher's knowledge, few studies investigated the role of

locus of control in regulating the effects of media violence on the watcher. Since individual characteristics can impact beliefs and perceptions of media portrayals (Wober & Gunter, 1982), locus of control could be held as a factor that can modulate the effects of media violence on the watcher (Haridakis, 2002). Further research is needed to better investigate and clarify the specific role of locus of control in mediating the effects of violent media on individual aggressive dispositions.

When interpreting the results of the current study, it should be noted that participants were recruited through a mix of convenience and snowballing sampling techniques. Due to the unknown sampling frame and non-random selection of the sample, the sampling method employed in this study might have introduced inherent bias, which makes it improbable for the sample to be a true representation of the general population (Etikan et al., 2016). This ultimately limits the confidence of extending the results of this study to the general population. A further limitation of this study is that the priming effect generated by the experimental stimuli seems to have extended to the study phases that followed the experimental tasks, namely, to the questionnaire designed to assess the habitual consumption of violent media. Participants' responses to this questionnaire seem to have been impacted by the content of the video to which they were exposed, as participants who were assigned to the violent video condition reported a significantly higher consumption of violent media compared to participants that were exposed to a non-violent clip. This might have altered the total habitual consumption of violent media reported by the sample in its entirety. To resolve this limitation, future research might consider assessing habitual exposure to violent media prior to the experimental manipulation, and by administering the full Content-based Media Exposure Scale 2 (C-ME2) (Den Hamer et al., 2017), which measures consumption of both antisocial and prosocial media. By using the full scale, participants would be exposed not only to concepts that are semantically related to aggression, but also to items that are

conceptually associated to prosocial behaviour. The balance between exposure to both antisocial and prosocial language and concepts could, potentially, limit the occurrence of a priming effect in the experimental manipulation.

Contrary to most prior research, which had generally recruited participants from college students (Anderson et al., 2003; Adachi & Willoughby, 2011; Bushman, 1998; Bushman & Anderson, 2002; Coyne et al., 2008; Han et al., 2020), this study aimed to collect data from the general population. As a consequence, the age range of participants in this study was broad, spanning from 18 to 81 years old, with a mean age of 37.64 years. This is in contrast with previous studies, which focused on younger adults (Adachi & Willoughby, 2011; Han et al., 2020), adolescents (Gabbadini et al., 2014; Przybylski & Weinstein, 2019), and children (Coker et al., 2015; Huston-Stein et al., 1981). Additionally, this study had the advantage of utilising two different instruments to measure aggression: an experimental task (Anderson et al., 2003; Carnagey & Anderson, 2005) and a self-report scale (Buss & Perry, 1992). Relying solely on a self-report measure might have made the data vulnerable to biases such as social desirability bias, which could have impacted the reliability of the results. Conversely, relying solely on an experimental task may have posed the risk of having a considerable amount of missing data, thereby rendering the variable unusable.

Findings from the current study further support the notion that exposure to violent media content might play a role in the development of aggressive and antisocial behaviour (Plante & Anderson, 2017), a phenomenon that carries significant societal implications. Given that the average daily media consumption per capita is estimated to be above 7 hours (Watson, 2022), and instances of aggression are present even in media content designed for children (Martins & Wilson, 2012), media violence exposure may have significant implications on society when viewed from a global perspective. As suggested by the general aggression model (Anderson & Bushman, 2002), exposure to media violence has the

potential to promote the formation of aggressive cognitive patterns, which are then stored in the individual's memory. Violent media content can activate these associative patterns, making aggressive thoughts more easily accessible in the short-term. With repeated exposure over time, media violence can strengthen aggressive scripts and make them chronically accessible, resulting in alterations in the individual's cognition and ultimately contributing to the development of aggressive behaviour (Anderson & Bushman, 2002). When considering the construct of aggression, it is essential to remember that any behaviour that results in harm to another individual can be classified as aggressive (DeWall et al., 2011). Therefore, this definition does not exclude less overt forms of aggressive conducts such as humiliation, sabotage, gossiping, and manipulation, which can damage the social status and relationships of others (Coyne et al., 2008). According to the general aggression model (Anderson & Bushman, 2002), it is possible that even such behaviours, which are reported to be prevalent in workplaces (Namie, 2021), could be facilitated by repeated consumption of aggressive media content.

Besides, the literature suggests that violent media consumption might also contribute to less ethical decision making (Gabbiadini et al., 2014; Gubler et al., 2018). On this matter, Gubler and colleagues (2018) advanced the existence of a positive association between consumption of violent media and engaging in unethical behaviour in business settings. Amplified hostility levels resulting from violent media usage can increase dispositions to economically damage others, due to the increased propensity of the individual to lie and cheat (Gubler et al., 2018). Similarly, evidence from Gabbiadini and colleagues (2014) revealed that individuals who played a violent video game were more predisposed to cheat on a subsequent task compared to participants who played a non-violent video game. On the bases offered by the literature, it could be assumed that exposure to media violence generally impacts individuals' dispositions, with implications that might extend beyond a mere increase

in propensity to physical and verbal aggression. However, in discussing potential implications of violent media on society, it is crucial to be cautious when interpreting real-world scenarios through the lens of findings from laboratory studies. It is vital to take into account that, regardless of the degree of external validity of the experimental measure used to assess aggression, the psychological dynamics in real-life situations may differ substantially from those observed in laboratory settings (Anderson & Bushman, 1997).

Conclusions

The relationship between media violence and aggression has been long investigated through a combination of cross-sectional (Cho et al., 2017; Coker et al., 2015), experimental (Bushman & Anderson, 2002; Coyne et al., 2008; Han et al., 2020) and longitudinal (Gentile et al., 2011; Huesmann et al., 2003; Krahe & Möller, 2010) research. Overall, a significant body of literature appears to support the notion of a positive association between exposure to violent media content and a subsequent increase in aggressive inclinations. The results of the current study provide support to this stance. Furthermore, findings of this study indicate that repeated consumption of media violence and individuals' scores on locus of control also contribute to the explanation of aggressive tendencies. It is important to remember that aggression is a multifaceted construct that can manifest in various ways, encompassing not only overt forms such as physical and verbal aggression, but also more nuanced expressions that involve activities like manipulation and gossiping. Such a complexity might lead to less overt forms of aggression being overlooked or undetected, particularly when considering the societal impact of media violence exposure. Being sensitive to individual, contextual, and situational factors, aggression necessitates to be investigated in light of a comprehensive framework such as the general aggression model (Anderson & Bushman, 2002), which recognises media violence as a factor that can impact individual aggression in the short-term and acknowledges repeated exposure to violent media as an important contributor to shaping

an aggressive personality. The results of the present study can be interpreted in accordance with this framework and provide further support to the model, suggesting the importance of both media violence exposure and individual characteristics in explaining aggression.

However, on the account of the differences between the psychological mechanisms that operate in actual real-life scenarios and those that occur in controlled laboratory settings, findings from any laboratory study should be regarded as more of a general direction than as an inflexible rule.

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Appendices

Appendix A

This appendix consists of the participant information leaflet. Through this document, participants were informed about the nature of the study and what participation involved. This leaflet also stated that participation in this study was voluntary, and participants had the right to withdraw from the tasks at any time without penalty.

PARTICIPANT INFORMATION LEAFLET

Predictors of Aggressive Dispositions Resulting from Brief Exposure to Media Violence

You are being invited to partake in a research study. Before giving your consent, please dedicate some time to read this document, which explains the purpose of this research and what it would involve for you. Should you have any questions about the present study, please feel free to contact me using the details provided at the end of this document.

About me and my study:

My name is Federica Silvana Cola, and I am a final year student in the BA in Psychology programme at National College of Ireland. As part of our degree, we must conduct an independent research project. My study intends to assess whether exposure to a brief video would impact individual dispositions. Additionally, my study aims to explore whether habitual consumption of media and scores on locus of control (i.e. perceived control over the events in our lives) can explain inclinations correlated with media exposure.

What you will be asked to do:

If you decide to take part in this research, you will be asked to watch a short video and then engage in a word completion task. After this, you will be asked to complete two brief

online questionnaires concerning your personal dispositions and your habitual media consumption, and then rate your agreement on six short statements. Participation in this study is estimated to take no more than 15 minutes in total.

Inclusion criteria:

To participate in this research, you must be over 18 and have a good understanding of English.

Do you have to participate?

Your participation is completely voluntary, you have the right to withdraw from the questionnaires and the tasks by exiting the browser at any time without penalty or consequence. However, please consider that once you have submitted your answers, it will not be possible to withdraw your data from the study because the questionnaires and tasks are anonymous and individual responses cannot be identified. This is to protect your right to anonymity and confidentiality.

Are there any benefits deriving from your participation?

There are no direct benefits to you for taking part in this research. However, the data collected will help to better understand the dynamics underlying the relationship between media violence and human aggression.

Are there any risks connected with participating in this study?

There is a small possibility that the behaviours portrayed in the clip that you will watch may cause minor distress for some participants. If you find yourself experiencing this,

please feel free to withdraw from participation by exiting the browser. Contact details of Irish helplines for receiving support will be also indicated at the end of the study.

Anonymity and confidentiality:

Your answers to the questionnaires and tasks used in this study will be completely anonymous. No unnecessary data will be collected, and you will not be requested to share any identifying information at any point of the study. All data collected will be treated in the strictest confidence and stored securely within an encrypted file on my computer. My academic supervisor will be the only extraneous person allowed to access the data. In compliance with the NCI data retention policy, data will be retained for 5 years before their complete erasure. Please be aware that the anonymous data generated by this study will be archived within an encrypted file in the researcher's computer for potential secondary data analysis.

What will happen with the results?

The results of this study will be presented and discussed in my final year thesis, which will be submitted to the National College of Ireland. The results of this study may also be presented at conferences and submitted to an academic journal for publication.

Should you have further questions or be interested in receiving the results of this study, please do not hesitate to contact me or my academic supervisor using the details at the end of this document.

Federica Silvana Cola

Final year student in the BA in Psychology programme at National College of Ireland.

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Appendix B

This appendix consists of the digital consent form provided to the participant before taking part in the study.

CONSENT TO TAKE PART IN RESEARCH

Predictors of Aggressive Dispositions Resulting from Brief Exposure to Media Violence

- I declare that I am over 18 and that I voluntarily agree to take part in this research study.
- I understand that even if I agree to participate now, I can withdraw from questionnaires and tasks at any time without any consequence.
- I understand that once I have submitted my answers, it will not be possible to withdraw my data from the study because the questionnaires and tasks are anonymous and individual responses cannot be identified.
- The purpose and the nature of this study have been explained to me in writing and I was given the opportunity to ask questions about the present research.
- I understand that participation involves watching a short video and engaging in a word completion task. I understand that participation also involves completing two brief online questionnaires concerning my personal dispositions and my habitual media consumption, and then rating my agreement on six short statements.
- I understand that I will not benefit directly from taking part in this study.

- I understand that the short clip I will watch might portray behaviours that may cause minor distress. If this causes me discomfort, I understand that I can immediately withdraw my participation without any consequence.
- I understand that all the data that I will provide for this study are anonymous and will be treated in the strictest confidence.
- I understand that the data will be retained for 5 years before their complete erasure in compliance with the NCI data retention policy.
- I understand that the anonymous data generated by this study will be archived within an encrypted file in the researcher's computer for potential secondary data analysis.
- I have received contact details of Irish helplines for receiving support if needed. I also received contact details of the researcher and the academic supervisor in case I want to obtain further information and clarification regarding the study.
- I understand that the method proposed for this research project has been approved in principle by the Departmental Ethics Committee, which means that the Committee does not have concerns about the procedure itself as detailed by the student. It is, however, the above-named student's responsibility to adhere to ethical guidelines in their dealings with participants and the collection and handling of data.
- I understand that by ticking the box at the end of this form I am giving my informed consent to take part in the present study.

Appendix C

This appendix consists of the debriefing sheet that was available for the participant to read immediately after having completed, fully or partly, the study.

STUDY DEBRIEF INFORMATION

Predictors of Aggressive Dispositions Resulting from Brief Exposure to Media Violence

Thank you for taking part in this research! The study has been designed to explore whether our levels of aggression are predicted by how regularly we consume violent media, and by and scores for “locus of control” which relates to the degree to which we feel we have control over the events in our lives. I also wanted to investigate whether exposure to a brief video containing instances of aggression would impact individual aggressive dispositions. Previous research has shown that individuals who were exposed to violent media content exhibited higher levels of aggressive inclinations immediately after exposure compared to participants who were exposed to non-violent media.

In the first part of the online study you were asked to watch a brief video clip – you were randomly assigned to watch either a video clip containing violent content, or a clip that contained non-violent content. You then were asked to complete a task which asked you to fill in the blank letters for a series of words. The aim of this task was to measure levels of individual aggressive dispositions. This task has been used in previous scientific research, and is based on the premise that individuals with a higher aggressive inclination might be more likely to complete the word to form an “aggressive term” (e.g. completing “B E H _ _ D” as “BEHEAD”) rather than a “non-aggressive term” (e.g. completing B E H _ _ D” as “BEHIND”).

Your answers on the questionnaire that you completed after the word completion task reflected your momentary aggressive dispositions, which might have been influenced by

watching violent media content. This tool has been used in previous scientific research and it is based on the fact that exposure to aggressive media content is likely to enhance our current aggressive inclinations. Together with scores on the word completion task, they help to investigate whether watching aggression in the media can affect our subsequent levels of aggression.

In the second part of the study you were asked to answer a questionnaire regarding how often you are exposed to violent media, and to rate your agreement on six statements that aimed to measure the extent to which you feel you have control over life events. Your answers on these questionnaires help to define if regular consumption of aggressive media and the degree of perceived control that we have over our lives can explain our levels of aggression.

In case you have further questions, or if you are interested in receiving the results of this study, feel free to contact me or my academic supervisor using the details at the end of this document.

In addition, I would like to provide you with contact details of Irish helplines for receiving support if needed. Confidential messaging support service is provided by Crisis Volunteers, available 24/7 for anonymous conversations via text (text 3TS to 50808 to begin a conversation). Confidential support is also offered by Samaritans volunteers, who can be reached 24/7 through the free phone line 116123.

Thank you for dedicating your time to my research project, your participation is extremely appreciated.

Federica Silvana Cola

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Appendix D

This appendix consists of the items selected for the word completion task and their relative coding. This task was designed to measure the effects of brief exposure to violent media on individual aggressive inclinations (Anderson et al., 2003; Carnagey & Anderson, 2005).

Participants were presented with the 20 word fragments listed below. Each of these fragments could be completed with letters that generate words related to aggression, or neutral words. For instance, the fragment “*ki _ _*” might be completed as an aggression-related word such as “*kill*” or “*kick*”, or as a neutral word such as “*kite*” or “*kiss*”.

Participants’ responses were coded into two categories: aggressive words and non-aggressive words. Completions that could not be interpreted as existing words were considered as missing data and excluded from the analysis. Each word fragment completed as an aggression-related word corresponds to 1 point. Scores on this task range from 0 to 20. A higher score on the word completion task indicates a higher level of aggressive dispositions.

Word fragment	Non -aggressive word(s)	Aggressive word(s)
B E H _ _ D	Behind	Behead
_ N _ U R E	Endure Ensure Insure Unsure	Injure
M U _ _ E R	Muster Mutter	Mugger Murder
S P E A _	Speak	Spear
E X P L O _ E	Explore	Explode

W __ M	Warm Worm Whim Whom	Wham
K I __	Kite Kiss Kilt King Kids Kind Kiwi Kink Kilo	Kill Kick
H _ R _	Hare Hire Hard Here Hers Hero Horn Hark	Hurt Harm Hurl
C H O _ E	Chore Chose	Choke
A T T _ _ _	Attach Attics	Attack

	Attire Attend Attune	
S H O _ T	Short	Shoot Shout
R _ P _ _ T	Repeat Report Repent	Rapist
B _ R N	Born Barn	Burn
P _ _ S O N	Person	Prison Poison
A N G _ _	Angel Angle	Anger Angry
S M _ _ E	Smile Smoke	Smite
H A _ _	Have Hale Haze Hare Hake	Hate
C _ T	Cat Cot	Cut
S L _ P	Slip Slop	Slap

R_P E	Rope Ripe	Rape
-------	--------------	------

Appendix E

This appendix consists of the aggression questionnaire (Buss & Perry, 1992) and its relative scoring. Scores on items 7 and 18 are reversed.

		Extremely uncharacteristic of me	Somewhat uncharacteristic of me	Neither uncharacteristic nor characteristic of me	Somewhat characteristic of me	Extremely characteristic of me
1	Once in a while I can't control the urge to strike another person.	1	2	3	4	5
2	Given enough provocation, I may hit another person.	1	2	3	4	5
3	If somebody hits me, I hit back.	1	2	3	4	5
4	I get into fights a little more than the average person.	1	2	3	4	5
5	If I have to resort to violence to protect my rights, I will.	1	2	3	4	5
6	There are people who pushed me so far that we came to blows.	1	2	3	4	5
7	I can think of no good reason for ever hitting a person.	5	4	3	2	1
8	I have threatened people I know.	1	2	3	4	5
9	I have become so mad that I have broken things.	1	2	3	4	5
10	I tell my friends openly when I disagree with them.	1	2	3	4	5

11	I often find myself disagreeing with people.	1	2	3	4	5
12	When people annoy me, I may tell them what I think of them.	1	2	3	4	5
13	I can't help getting into arguments when people disagree with me.	1	2	3	4	5
14	My friends say that I'm somewhat argumentative.	1	2	3	4	5
15	I flare up quickly but get over it quickly.	1	2	3	4	5
16	When frustrated, I let my irritation show.	1	2	3	4	5
17	I sometimes feel like a powder keg ready to explode.	1	2	3	4	5
18	I am an even-tempered person.	5	4	3	2	1
19	Some of my friends think I'm a hothead.	1	2	3	4	5
20	Sometimes I fly off the handle for no good reason.	1	2	3	4	5
21	I have trouble controlling my temper.	1	2	3	4	5
22	I am sometimes eaten up with jealousy.	1	2	3	4	5
23	At times I feel I have gotten a raw deal out of life.	1	2	3	4	5

24	Other people always seem to get the breaks.	1	2	3	4	5
25	I wonder why sometimes I feel so bitter about things.	1	2	3	4	5
26	I know that "friends" talk about me behind my back.	1	2	3	4	5
27	I am suspicious of overly friendly strangers.	1	2	3	4	5
28	I sometimes feel that people are laughing at me behind my back.	1	2	3	4	5
29	When people are especially nice, I wonder what they want.	1	2	3	4	5

Appendix F

This appendix consists of the 12-items questionnaire designed to assess habitual exposure to media that portray behaviours related to violence and aggression (Den Hamer et al., 2017) and its relative scoring.

		Never	Hardly ever	Sometimes	Often	Very often
	How often do you watch (on the Internet/TV/games/mobile phone/DVD) ...					
1	... people who fight?	1	2	3	4	5
2	... people who openly talk about sex?	1	2	3	4	5
3	... people who use drugs?	1	2	3	4	5
4	... people who destroy someone else's belongings?	1	2	3	4	5
5	... people who shoot at another person?	1	2	3	4	5
6	... people who make a fool of someone else?	1	2	3	4	5
7	... people who drink a lot of alcohol?	1	2	3	4	5
8	... people who make fun of another person?	1	2	3	4	5
9	... people who are having sex?	1	2	3	4	5
10	... people who say negative things about another person behind their back?	1	2	3	4	5
11	... people who make someone trip and fall for fun?	1	2	3	4	5
12	... people who steal?	1	2	3	4	5

Appendix G

This appendix consists of the shortened version of the locus of control questionnaire (Lumpkin, 1985) and its relative scoring. Scores on external items (B, C, F) are reversed.

		Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
A	When I make plans, I am almost certain that I can make them work.	1	2	3	4	5
B	Many of the unhappy things in people's lives are partially due to bad luck.	5	4	3	2	1
C	Getting a good job depends mainly on being in the right place at the right time.	5	4	3	2	1
D	What happens to me is my own doing.	1	2	3	4	5
E	Getting people to do the right things depends upon ability; luck has nothing to do with it.	1	2	3	4	5
F	Many times, I feel that I have little influence over the things that happen to me.	5	4	3	2	1

Internal items: A, D, E

External items: B, C, F

Calculation of absolute Z scores for skewness and kurtosis for continuous variables.

	Absolute Z scores for skewness	Absolute Z scores for kurtosis
Age	$0.837 : 0.205 = 4.082$	$0.279 : 0.407 = 0.685$
Total Word Completion Task	$0.166 : 0.216 = 0.768$	$1.550 : 0.428 = 3.621$
Total Aggression Questionnaire	$0.125 : 0.205 = 0.609$	$1.178 : 0.402 = 2.894$
Total Consumption of Violent Media	$0.337 : 0.205 = 1.643$	$0.710 : 0.407 = 1.744$
Total Locus of Control	$0.136 : 0.205 = 0.663$	$0.972 : 0.407 = 2.388$

Evidence of chi square analysis used to investigate potential difference in gender between participants in the violent video condition and participants in the non-violent video condition.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,029 ^a	1	,866		
Continuity Correction ^b	,000	1	1,000		
Likelihood Ratio	,029	1	,866		
Fisher's Exact Test				1,000	,500
Linear-by-Linear Association	,028	1	,866		
N of Valid Cases	140				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 33.50.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	-,014	,866
	Cramer's V	,014	,866
N of Valid Cases		140	

Evidence of Mann Whitney U test used to investigate potential difference in age between participants in the violent video condition and participants in the non-violent video condition.

```
*Nonparametric Tests: Independent Samples.
NPTESTS
/INDEPENDENT TEST (Age) GROUP (Condition) MANN_WHITNEY
/MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE
/CRITERIA ALPHA=0.05 CILEVEL=95.
```

Nonparametric Tests

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig. ^{a,b}	Decision
1	The distribution of Age is the same across categories of Condition.	Independent-Samples Mann-Whitney U Test	,774	Retain the null hypothesis.

- a. The significance level is .050.
- b. Asymptotic significance is displayed.

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Age * Condition	140	100,0%	0	0,0%	140	100,0%

Report

Age		
Condition	N	Median
NonViolent condition	70	36,50
Violent condition	70	34,00
Total	140	35,00

Evidence of independent samples t-test used to compare scores for habitual consumption of violent media between participants in the violent video condition and participants in the non-violent video condition.

Group Statistics					
	Condition	N	Mean	Std. Deviation	Std. Error Mean
Total_CVM	NonViolent condition	70	30,44	8,148	,974
	Violent condition	70	41,77	10,736	1,283

Independent Samples Test										
		Levene's Test for Equality of Variances			t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Total_CVM	Equal variances assumed	4,953	,028	-7,033	138	,000	-11,329	1,611	-14,514	-8,143
	Equal variances not assumed			-7,033	128,690	,000	-11,329	1,611	-14,516	-8,141

Independent Samples Effect Sizes					
		Standardizer ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
Total_CVM	Cohen's d	9,530	-1,189	-1,547	-,827
	Hedges' correction	9,582	-1,182	-1,538	-,823
	Glass's delta	10,736	-1,055	-1,427	-,677

a. The denominator used in estimating the effect sizes. Cohen's d uses the pooled standard deviation. Hedges' correction uses the pooled standard deviation, plus a correction factor. Glass's delta uses the sample standard deviation of the control group.

Evidence of Mann Whitney U test used to compare scores on the word completion task between participants in the violent video condition and participants in the non-violent video condition.

*Nonparametric Tests: Independent Samples.

NPTESTS

/INDEPENDENT TEST (Total_WCT) GROUP (Condition) MANN_WHITNEY
 /MISSING SCOPE=ANALYSIS USERMISSING=EXCLUDE
 /CRITERIA ALPHA=0.05 CILEVEL=95.

Nonparametric Tests

Hypothesis Test Summary				
	Null Hypothesis	Test	Sig. ^{a,b}	Decision
1	The distribution of Total_WCT is the same across categories of Condition.	Independent-Samples Mann-Whitney U Test	,000	Reject the null hypothesis.

a. The significance level is .050.

b. Asymptotic significance is displayed.

Means

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Total_WCT * Condition	126	90,0%	14	10,0%	140	100,0%

Report

Total_WCT		
Condition	N	Median
NonViolent condition	64	1,00
Violent condition	62	20,00
Total	126	8,00

Evidence of independent samples t-test used to compare scores on the aggression questionnaire between participants in the violent video condition and participants in the non-violent video condition.

Group Statistics

Condition		N	Mean	Std. Deviation	Std. Error Mean
Total_AGQ	NonViolent condition	70	54,41	19,291	2,306
	Violent condition	70	79,47	18,202	2,176

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Total_AGQ	Equal variances assumed	,371	,544	-7,904	138	,000	-25,057	3,170	-31,325	-18,789
	Equal variances not assumed			-7,904	137,536	,000	-25,057	3,170	-31,326	-18,789

Independent Samples Effect Sizes

		Standardizera	Point Estimate	95% Confidence Interval	
				Lower	Upper
Total_AGQ	Cohen's d	18,754	-1,336	-1,701	-,967
	Hedges' correction	18,857	-1,329	-1,692	-,962
	Glass's delta	18,202	-1,377	-1,776	-,970

a. The denominator used in estimating the effect sizes. Cohen's d uses the pooled standard deviation. Hedges' correction uses the pooled standard deviation, plus a correction factor. Glass's delta uses the sample standard deviation of the control group.

Evidence of multiple regression analysis used to determine how well scores on the word completion task could be explained by habitual consumption of violent media and scores on locus of control.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,871 ^a	,759	,755	3,953

a. Predictors: (Constant), Total_LOC, Total_CVM

b. Dependent Variable: Total_WCT

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6053,612	2	3026,806	193,717	,000 ^b
	Residual	1921,856	123	15,625		
	Total	7975,468	125			

a. Dependent Variable: Total_WCT

b. Predictors: (Constant), Total_LOC, Total_CVM

Coefficients^a

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	18,647	2,432		7,667	,000	13,832	23,461					
Total_CVM	,229	,038	,317	6,039	,000	,154	,304	,671	,478	,267	,711	1,406
Total_LOC	-,887	,071	-,659	-12,551	,000	-1,027	-,747	-,829	-,749	-,556	,711	1,406

Dependent Variable: Total_WCT

Evidence of multiple regression analysis used to determine how well scores on the aggression questionnaire could be explained by habitual consumption of violent media and scores on locus of control.

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,762 ^a	,580	,574	14,694

a. Predictors: (Constant), Total_LOC, Total_CVM

b. Dependent Variable: Total_AGQ

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40932,939	2	20466,470	94,789	,000 ^b
	Residual	29580,603	137	215,917		
	Total	70513,543	139			

a. Dependent Variable: Total_AGQ

b. Predictors: (Constant), Total_LOC, Total_CVM

Coefficients^a

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	83,152	8,574		9,698	,000	66,198	100,107					
Total_CVM	,655	,134	,322	4,904	,000	,391	,919	,612	,386	,271	,711	1,406
Total_LOC	-2,046	,249	-,539	-8,212	,000	-2,539	-1,554	-,712	-,574	-,454	,711	1,406

Dependent Variable: Total_AGQ