Is aggression in children with behavioural and emotional difficulties associated with television viewing and video game playing? A systematic review

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Abstract

Background   Possible associations between television viewing and video game playing and children's aggression have become public health concerns. We did a systematic review of studies that examined such associations, focussing on children and young people with behavioural and emotional difficulties, who are thought to be more susceptible.

Methods   We did computer-assisted searches of health and social science databases, gateways, publications from relevant organizations and for grey literature; scanned bibliographies; hand-searched key journals; and corresponded with authors. We critically appraised all studies.

Results   A total of 12 studies: three experiments with children with behavioural and emotional difficulties found increased aggression after watching aggressive as opposed to low-aggressive content television programmes, one found the opposite and two no clear effect, one found such children no more likely than controls to imitate aggressive television characters. One case–control study and one survey found that children and young people with behavioural and emotional difficulties watched more television than controls; another did not. Two studies found that children and young people with behavioural and emotional difficulties viewed more hours of aggressive television programmes than controls. One study on video game use found that young people with behavioural and emotional difficulties viewed more minutes of violence and played longer than controls. In a qualitative study children with behavioural and emotional difficulties, but not their parents, did not associate watching television with aggression. All studies had significant methodological flaws. None was based on power calculations.

Conclusion   This systematic review found insufficient, contradictory and methodologically flawed evidence on the association between television viewing and video game playing and aggression in children and young people with behavioural and emotional difficulties. If public health advice is to be evidence-based, good quality research is needed.

Introduction

There is worldwide public health concern at increases in aggressive behaviours and acts of violence by children and young people (World Health Organization 2002). Health professionals sometimes give advice, including psycho-education about contributory environmental factors, on managing aggression in children and young people. Professional organizations, such as

Keywords

child, aggression, systematic review, television, video game

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the American Academy of Pediatrics (2000), have drawn attention to possible links between viewing violence within entertainment media, such as television and video games, and such behaviour.

Existing research has investigated the effects of passive viewing of violence in television programmes and films (Wood et al. 1991; Paik & Comstock 1994; Savage 2004) and the effects of newer, interactive media such as video games (Anderson & Bushman 2001; Bensley & van Eeewykyk 2001; Sherry 2001; Anderson 2004). In a recent review, Byron (Department for Children, Schools and Families & Department for Culture, Media and Sport 2008) discussed the inconclusive nature of research on associations between the violent content of video games and children’s aggressive behaviour and advised researchers to consider ‘at risk’ groups of children. Browne and Hamilton-Giachritsis (2005) argued that there is consistent evidence linking viewing and interacting with violent images in television, film and video games with aggression, but only in relation to young children and mainly in the short term. They proposed that there may be mediating factors, including mental health problems. Most previous systematic and meta-analytic reviews have only considered age and gender as possible mediating variables (Paik & Comstock 1994; Anderson & Bushman 2001; Bensley & van Eeewykyk 2001; Sherry 2001; Anderson 2004). Early research suggested that both aggressive content (Leyens et al. 1975; Dorr & Kovaric 1980; Huesmann et al. 1984) and amount of violent material watched (Gadow & Sprafkin 1993) were of relevance. We therefore undertook a systematic review to collate and determine the quality of research on associations between aggressive content and amount of television viewing or video games playing and aggression in children and young people with behavioural and emotional difficulties.

Methods

Terminology

Children and young people cover individuals aged 18 years or less. The term video games is used to cover a spectrum of products, also called electronic or computer games, played on different platforms (e.g. game consoles, computers, the Internet and mobile phones).

Aggression is a complex phenomenon, not clearly distinguished from violence, with many subtypes (Connor 2002; Anderson et al. 2003). We focused on overt or direct, other-directed aggression and its sub-categories (Fig. 1) because of its high validity and potentially significant life consequences (Connor 2002).

We use aggression as a synonym for a variety of terms including violence, behavioural problems, challenging behaviour, antisocial behaviour and social, emotional and behavioural problems. These terms are used in educational contexts (school and educational research) and health contexts (health care and health research).

Behavioural and emotional difficulties include conditions that fulfil psychiatric diagnostic criteria for behavioural and

Figure 1. Subtypes of direct/overt, other-directed aggression.
emotional disorders or disruptive behaviour disorders (International Classification of Diseases-10, World Health Organization 1992; Diagnostic and Statistical Manual-IV, American Psychiatric Association 2000) and national, legal, or organizational criteria for children and young people with social, emotional and behavioural special educational needs. Here, behavioural and emotional difficulties exclude other psychiatric conditions (e.g. psychoses, mental retardation/learning disability, pervasive developmental, eating and substance use disorders).

Inclusion and exclusion criteria

We included quantitative and qualitative studies investigating associations between aggressive content and amount of television viewing and video game playing and aggression in children and young people with behavioural and emotional difficulties (as defined above). Studies examining aggression-related phenomena (e.g. thoughts, feelings or mood) were excluded.

Search strategy


The following organizations’ publications were electronically searched: American Academy of Child and Adolescent Psychiatry, International Association of Child and Adolescent Psychiatry and Allied Disciplines, European Society of Child and Adolescent Psychiatry, Association for Child and Adolescent Mental Health, American Psychological Association, British Psychological Society, British Sociological Association, National Association for Special Education Needs and National Foundation for Educational Research. The following key journals were hand searched: Journal of Child Psychology and Psychiatry; and Allied Disciplines [vol. 1–47(5) minus vol. 35, 44(8)], Emotional and Behavioural Difficulties [vol. 1–11(1)], Journal of Special Education (vol. 14–25), Special Education (vol. 53–62), Special Education – Forward Trends (vol. 1–11), British Journal of Special Education [vol. 12–33(1) minus vol. 21, 22, 25], Communication Research (vol. 1–8, 21), Critical Studies in Mass Communication (vol. 12–16) and Critical Studies in Media Communication (vol. 17–22).

Unpublished studies were sought by using computer-assisted searches of Grey Net, International Journal of Grey Literature, Research Findings Register, National Electronic Library for Health, Conference Paper Index, Sociological Abstracts, Index to Theses and Dissertation Abstracts. A secondary search involved scanning reference lists and corresponding with authors.

Data extraction and quality assessment

We developed structured proforma for assessing eligibility, extracting relevant data and assessing the methodological quality of quantitative and qualitative studies based on general and specific guidelines. The proforma for quantitative studies included common quality criteria for quantitative studies and specific criteria for assessing validity in experimental studies, case–control studies, cohort studies and cross-sectional surveys (Table 1).

Two investigators independently reviewed all studies. Results were compared and discrepancies resolved by the third investigator. Following recommendations for systematic reviews (Alderson et al. 2005), we chose not to use a numerical quality scoring system, but to investigate any influence of methodological quality on study findings.

Results

Studies identified

Of the 50 identified abstracts, 48 full papers were obtained. Twelve studies met inclusion criteria (see Table 2). The main reasons for exclusion were that studies did not examine aggression per se (i.e. investigated cognitive, emotional, physiological or neurological responses to, or perceptions of the reality of, viewed material), or study samples inextricably mixed children and young people with behavioural and emotional difficulties and those with other conditions. Where papers reported studies on multiple but separable samples, we appraised sections related to participants with behavioural and emotional difficulties (Sprafkin & Gadow 1988). Three papers reported two separate studies each (Sprafkin & Gadow 1986; Gadow & Sprafkin 1987; Gadow et al. 1987). All studies were conducted in the USA except two in Germany (Hässler et al. 1993; Möller-Nehring et al. 1998).
Effects of television viewing on behaviour

Seven experimental studies investigated the immediate effects of viewing aggressive as opposed to low- or non-aggressive television programmes on the behaviour of children and young people with behavioural and emotional difficulties. They were conducted in school settings (field experiments) (Gadow et al. 1987; Gadow & Sprafkin 1987; Sprafkin et al. 1988) or experimentally constructed settings (laboratory-based experiments) (Walters & Willows 1968; Sprafkin & Gadow 1988). In relation to pre-school children with behavioural and emotional difficulties: one study found that viewing cartoons, regardless of their content, increased non-physical aggression but discouraged playful physical aggression and non-compliance (Gadow et al. 1987 study B). Another similar study, however, found no such effects (Gadow et al. 1987 study A).

In relation to primary school children with behavioural and emotional difficulties, some studies found that watching aggressive cartoons increased physical aggression and appropriate social interaction (Gadow & Sprafkin 1987 study A) and non-compliance (Gadow & Sprafkin 1987 study B) post-viewing and induced more non-compliance than low-aggression cartoons (Gadow & Sprafkin 1987 study B). Watching low-aggression cartoons, however, decreased physical aggression post-viewing and induced lower levels of physical and non-physical aggression than watching aggressive cartoons (Gadow & Sprafkin 1988 study B). Contrastingly, Sprafkin and colleagues (1988) found that watching low-aggression cartoons increased physical and non-physical aggression post-viewing and induced more physical aggression than watching aggressive cartoons. Sprafkin and Gadow (1988) indicated that viewing aggressive, as opposed to low-aggression cartoons made children more willing to inflict harm against another child in situations in which there were no deterrents for such behaviour and no opportunities for peer retaliation. Walters and Willows (1968) found that primary school-aged children with behavioural and emotional difficulties were not more likely to imitate an aggressive television character compared with their peers without behavioural and emotional difficulties.

Amount and aggressive content of television viewing and video game playing

Compared with their peers without behavioural and emotional difficulties, primary school-aged children with behavioural and emotional difficulties, completing a child-report measure in a case–control study, reported viewing more hours of television on average per week (25.18 cf. 21.25, P < 0.01) and more hours of programmes with aggressive content ([cartoons (6.13 cf. 5.00, P < 0.05) and crime dramas (10.24 cf. 6.93, P < 0.001)]) (Sprafkin & Gadow 1986). Children with behavioural and emotional difficulties named significantly more crime dramas as favourites and maintained their preference for cartoons, unlike their peers without behavioural and emotional difficulties.

In another case–control study, the scores of young people with behavioural and emotional difficulties indicated higher
<table>
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<tr>
<th>Study ID and type</th>
<th>Study participants: number; age; gender; ethnicity; IQ; main condition (criteria, number); associated conditions (criteria, number); Setting</th>
<th>TV/VG intervention/variable (number)</th>
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<tr>
<td>Gadow and colleagues (1987) (study A)</td>
<td>9; 3.2–5.1 years; 8 boys, 1 girl; all white; mean IQ = 115.1; ED (US Federal Register). Public school for ED children</td>
<td>Experimental: viewing high-aggression cartoons* in classroom (9) Control: viewing low-aggression cartoons* in classroom (9)</td>
<td>Observed behaviours 1, 2 classroom settings (structured activity, free play) – measured by the Code for Observing Social Activity</td>
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<td>Gadow and colleagues (1987) (study B)</td>
<td>14; 2.6–5.5 years; 12 boys, 2 girls; all white; mean IQ = 111.2; ED (US Federal Register). Public school for ED children</td>
<td>Experimental: viewing high-aggression cartoons* in classroom (14) Control: viewing low-aggression cartoons* in classroom (14)</td>
<td>Observed behaviours 1, 1 classroom setting (free play) – measured by the Code for Observing Social Activity</td>
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<tr>
<td>Gadow and Sprafkin (1987) (study A)</td>
<td>11; 8.6–12.1 years; 5 boys, 6 girls; 10 white, 1 black; mean IQ = 94.4; ED (US Federal Register).</td>
<td>Experimental: viewing high-aggression cartoons* in classroom (11) Control: viewing low-aggression cartoons* in classroom (11)</td>
<td>Observed behaviours 1, 2 school settings (lunchroom, recess) – measured by the Code for Observing Social Activity</td>
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<td>Gadow and Sprafkin (1987) (study B)</td>
<td>9; 5.7–8.3 years; 7 boys, 2 girls; all white; mean IQ = 93.6; ED (US Federal Register); infantile autism (DSM III, 1). Public school for ED children</td>
<td>Experimental: viewing high-aggression cartoons* in classroom (9) Control: viewing low-aggression cartoons* in classroom (9)</td>
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<td>Sprafkin and colleagues (1988)</td>
<td>26; 6–9 years; 20 boys, 6 girls; white : black : Hispanic = 70% : 20% : 10%; mean IQ = 89.5; ED (US Federal Register). Public school for ED children</td>
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<td>Observed behaviours 1, 2 school settings (lunchroom, recess) – measured by the Code for Observing Social Activity</td>
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<td>Sprafkin and Gadow (1988)</td>
<td>15; 5–10 years; 14 boys, 1 girl; white : black : Hispanic = 92% : 5% : 3% (aggregated data for ED and learning disabled); mean IQ = 97; ED (US Federal Register). University research site; participants recruited from short-term residential treatment centre</td>
<td>Experimental viewing high-aggression cartoons* in experimentally constructed viewing room (no number specified) Control: viewing low-aggression cartoons* in experimentally constructed viewing room (no number specified)</td>
<td>Aggression – measured by the Help-Hurt Game (number of seconds of pressing the Help or the Hurt button meaning helping to win a game or hurting a fictitious, but believed to be real, child) in experimentally constructed game room</td>
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<td>Walters and Willows (1968)</td>
<td>24; 7 years 4 months–11 years 10 months; all boys; no data for ethnicity; IQ = 82–136; ED (character disorder, behaviour disorder, personality disorder as reported in hospital records). University research site; participants recruited from short-term residential treatment centre.</td>
<td>Experimental 1: viewing in experimentally constructed viewing room a film depicting an adult female model acting aggressively in relation to play materials in experimental room (24) Experimental 2: viewing in experimentally constructed viewing room a film depicting an adult female model acting non-aggressively in relation to play materials in experimental room (24)</td>
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<td>Study ID and type</td>
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<td>Sprafkin and Gadow (1986) 42; 7.5–13 years; all boys; no data for ethnicity; mean IQ = 89.9; ED (US Federal Register). Public school for ED children 42; 7.5–13 years; all boys; no data for ethnicity; mean IQ = 11.82; non-ED. Regular school</td>
<td>Amount (number of hours per week) and content (programme type) of TV viewing – measured by the Television Diary (child-report): children selected the TV programmes watched during 2 time blocks [evening (8:00–11:00 PM) every day of the week and after school (3:00–7:00 PM) Monday–Friday] from the programmes listed on the Diary [6 types of programmes (crime drama, non-crime drama, situation comedy, carbon, soap opera and news/documentary) based on programme description in TV Guide]. TV viewing estimates derived by summing the duration of the selected programmes.</td>
<td>School type attendance</td>
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<td>Kronenberger and colleagues (2005) 27; 13–17 years; 21 boys, 6 girls; 11 white, 13 African American, 3 mixed; mean IQ = 96.7; DBD-AF (DSM-IV): CD (23), ODD (4); ADHD (DSM-IV; 15), DD (DSM-IV; 6), SAD (DSM-IV; 5), EAD (DSM-IV; 2). University research site; participants recruited from schools, clinics, community organizations 27; 13–17 years; 21 boys, 6 girls; 11 white, 14 African American, 2 mixed; mean IQ = 98.8; no DSM-IV diagnosis, no contact with a mental health professional for treatment of a behavioural/emotional problem within the past 3 years. University research site; participants recruited from schools, clinics, community organizations</td>
<td>Amount (number of minutes/h per day every week) and violent content (defined as injury (i.e. depiction of a person being injured) and graphic injury (i.e. depiction of an injury showing blood loss of body parts or similar graphic physical damage) of TV viewing and VG playing – measured by the Media Exposure Measure (adolescent- and parent-report). Estimates of exposure to violence derived from number of minutes of viewing injury and graphic injury in TV programmes/VG viewed/played each day of the past week; number of hours per week over past year of TV viewing/VG playing multiplied by proportion of viewing injury and graphic injury in TV programmes/VG viewed/played over past year.</td>
<td>Diagnostic category – measured by diagnostic instruments (Kiddie-SADS and Adolescent Symptom Inventory-4)</td>
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### Cross-sectional surveys

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<td>Möller-Nehring and colleagues (1998)</td>
<td>235; mean age = 11.4 years; no data for gender, ethnicity and IQ; CD, hyperkinetic CD, MDCE (ICD-10)</td>
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<td>324; mean age = 9.5 years; no data for gender, ethnicity and IQ; no psychiatric diagnosis (ICD-10)</td>
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<td></td>
<td>517; mean age = 11.7 years; no data for gender, ethnicity and IQ; other psychiatric diagnosis (ICD-10). Child psychiatry outpatient/inpatient clinic</td>
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<td>Hässler and colleagues (1993)</td>
<td>25; 5–19 years; no data for gender, ethnicity and IQ; CD, HD, MDCE (ICD-10)</td>
<td>Amount (number of hours per day) of TV viewing – measured by child and parent questionnaires</td>
<td>Diagnostic category – measured by diagnostic instruments</td>
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<td>34; 5–19 years; no data for gender, ethnicity and IQ; other psychiatric diagnosis (ICD-10). Child psychiatry and neurology inpatient clinic</td>
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<td>Views of behavioural effects of TV viewing – data collected through child and parent questionnaires</td>
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### Qualitative studies

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<tr>
<td>Lowdermilk (2004)</td>
<td>6; primary school-aged; no data for gender, ethnicity and IQ; ED (US Individuals with Disabilities Education Act Amendments of 1997, verification of diagnosis by the school campus administrator); MPD (no specified criteria; 1). Special education school</td>
<td>TV consumption – data collected through face-to-face interviews; TV characters’ behaviour – data collected through viewing and coding of TV programmes</td>
<td>Observed behaviours, school settings – data collected through direct observation</td>
<td>Views of influence of TV consumption on students’ behaviour – data collected through face-to-face interviews with students and teachers</td>
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</table>

TV, television; VG, video game; IQ, intelligence quotient; ED, emotional disturbance/disorder; ICD, International Classification of Diseases; DSM, Diagnostic and Statistical Manual of Mental Disorders; DBD-AF, disruptive behaviour disorder with aggressive features; CD, conduct disorder; ODD, oppositional defiant disorder; ADHD, attention-deficit/hyperactivity disorder; DD, dysthymic disorder; AD, anxiety disorder; SD, somatization disorder; EAD, eating disorder; HD, hyperkinetic disorder; MDCE, mixed disorder of conduct and emotions; MPD, multiple personality disorder.

*The cartoon programmes were content analysed for the presence of physical aggression (e.g. hitting, pushing, fighting), non-physical aggression (i.e. verbal [e.g. verbal threats, name-calling], object [e.g. damaging an object] and symbolic [e.g. making threatening gestures]), immature behaviour (e.g. sulking, showing off), altruism (i.e. specific acts of helping, sharing or cooperating), appropriate social interaction and activity level.†Classroom behaviours: negative (i.e. protested by playmate) physical aggression (e.g. hitting, pushing, fighting), playful (i.e. received approvingly by playmate) physical aggression, non-physical aggression (i.e. verbal [e.g. verbal threats, name-calling], object [e.g. damaging an object] and symbolic [e.g. making threatening gestures]), non-compliance (e.g. failure to comply with adult request, breaking a rule), immature behaviour (e.g. sulking, showing off) and socially appropriate behaviour (e.g. cooperative play, helping another child).
exposure to violence in television programmes (parent-report) and video games (young person- and parent-report) compared with peers without behavioural and emotional difficulties (Kronenberger et al. 2005). Young people with behavioural and emotional difficulties exposed to more television violence were also likely to be exposed to more video game violence. The amount of television watched by young people with behavioural and emotional difficulties (young person- and parent-report) did not differ significantly from that watched by their peers without behavioural and emotional difficulties (average of 2–3 h per day over a year). Young people with behavioural and emotional difficulties reported more minutes of video game playing per day, over a year, than their peers without behavioural and emotional difficulties (30–60 cf. 10–15, \( P < 0.02 \)).

A parent survey indicated that children and young people with behavioural and emotional difficulties watched television for more hours a day, on average, than those with other or no psychiatric diagnoses (3.4 cf. 2.2 cf. 1.8, \( P < 0.00005 \)) (Möller-Nehring et al. 1998). A parent and child survey (primary and secondary school-aged children and young people) in the same context, however, found no such difference (Hässler et al. 1993).

**Views of children and young people and their parents/carers**

Hässler and colleagues (1993) found that parents of children and young people with behavioural and emotional difficulties thought symptoms such as aggression and anxiety were caused by watching television. Their children did not and also did not perceive themselves as aggressive. Children with or without behavioural and emotional difficulties, especially those who watched mainly action films, thrillers and horror films, associated watching television with insomnia, nightmares, restlessness and headaches.

Lowdermilk’s (2004) qualitative study found a difference between the antisocial classroom behaviours of primary school children with behavioural and emotional difficulties on one hand and the content, and children’s interpretation of the content, of their favourite television programmes on the other. These children stated they preferred television programmes rated as positive and family-friendly and did not perceive their classroom behaviours, which were assessed as predominantly physically and verbally aggressive, as the result of imitating television characters. In contrast, their teachers believed that watching television negatively affected students’ behaviour, although they were unable to give examples of this influence.

**Quality assessment**

**Quantitative studies: general criteria**

All quantitative studies except one (Möller-Nehring et al. 1998) had relatively small sample sizes (between 9 and 84, mean = 34.1). No power calculations or confidence intervals for study findings were specified, therefore, it was not possible to exclude Type II errors in any of these studies. The validity of outcome/variable measures was unclear in all studies. Only two studies (Walters & Willows 1968; Sprafkin & Gadov 1986) provided data on reliability of outcome and/or variable measures. Most studies did not use random sampling, creating possible selection bias. Participants generally attended a particular school, class (Sprafkin & Gadov 1986, 1988; Gadow & Sprafkin 1987; Gadov et al. 1987; Sprafkin et al. 1988) or hospital ward (Walters & Willows 1968) or were self-selected (Kronenberger et al. 2005). In studies conducted in educational contexts (Sprafkin & Gadov 1986, 1988; Gadov & Sprafkin 1987; Gadov et al. 1987; Sprafkin et al. 1988) children within each school may have been studied more than once, using similar methods (part of same research programme).

Possible biasing factors taken into account, but not found to be significant, were different levels of attention paid to aggressive and control cartoons (Gadow et al. 1987 study B; Sprafkin et al. 1988), the behavioural state of participants prior to viewing cartoons (Gadow & Sprafkin 1987 study B; Sprafkin et al. 1988) and the order of presentation of aggressive and control cartoons (Gadow & Sprafkin 1987 study B). Attempts to limit recall bias in the observational studies included using multiple ways of measuring exposure to television and video game violence (e.g. over the previous week and past year) (Kronenberger et al. 2005) and multiple respondents (children and young people and parents) (Hässler et al. 1993; Kronenberger et al. 2005).

**Experimental studies**

All experimental studies defined inclusion criteria, except for one (Walters & Willows 1968) that failed to adequately describe criteria for ‘emotional disturbance’. None defined exclusion criteria (Walters & Willows 1968; Gadov & Sprafkin 1987; Gadov et al. 1987; Sprafkin & Gadov 1988; Sprafkin et al. 1988). In all experiments, outcome evaluators were ‘blind’ to the programme viewed but in one study (Walters & Willows 1968) it was unclear whether they were ‘blind’ to participants’ condition (i.e. with or without behavioural and emotional difficulties). Authors did not clearly describe attrition or measures to counteract attrition. The laboratory-based experiments randomly allocated...
participants to groups matched by gender, age and IQ, but the exact randomization procedure was not described (Walters & Willows 1968; Sprafkin & Gadow 1988).

Case–control studies

The case–control study groups were matched by age, gender and IQ (Kronenberger et al. 2005) or age and gender alone (Sprafkin & Gadow 1986); however, it was unclear whether cases were representative of the target population and whether valid sampling strategies were used in both these studies. It was unclear whether there were systematic differences between respondents and non-respondents in the cross-sectional surveys and whether efforts were made to maximise response rates (Hässler et al. 1993; Möller-Nehring et al. 1998).

Quantitative studies: overall

In summary, methodological problems with the quantitative studies included them being possibly underpowered, using non-validated measures, whose reliability was not reported and inadequately addressing possible biasing variables. Findings of studies conducted within so specific an educational context (Sprafkin & Gadow 1986, 1988; Gadow & Sprafkin 1987; Gadow et al. 1987; Sprafkin et al. 1988), specific health contexts (Walters & Willows 1968; Hässler et al. 1993; Möller-Nehring et al. 1998; Kronenberger et al. 2005) and laboratory-based experiments (Walters & Willows 1968; Sprafkin & Gadow 1988) may have limited generalizability to children and young people with behavioural and emotional difficulties seen in mental health services worldwide.

Qualitative study

Lowdermilk (2004) used convenience sampling and sample size was not justified. Potential bias related to the researcher’s views and roles were not critically examined. No attempts were made to establish the validity or reliability of findings (e.g. through triangulation). Insufficient original data were included to allow differences between evidence and interpretation to be distinguished.

Discussion

This systematic review focused on collating and determining the quality of existing evidence on any association between the aggressive content and amount of television viewing and video game playing and aggression in children and young people with behavioural and emotional difficulties. We identified only 12 studies, none of which were randomized controlled trials. Critical appraisal indicated that all studies had significant flaws and thus, overall, the quality of evidence is poor.

Summarizing findings, in relation to video game playing, only one case–control study of 27 self-selected, non-randomly recruited aggressive 13–17-year-olds (Kronenberger et al. 2005) was identified. This study found that young people with behavioural and emotional difficulties viewed statistically significantly more minutes of violence than non-aggressive peers, matched by age, gender and IQ; however, the study measure was not validated and this limits the quality of this evidence.

When considering whether children and young people with behavioural and emotional difficulties watched more television than those with other psychiatric disorders or no disorder, we found studies from health and educational contexts. The evidence is equivocal (Sprafkin & Gadow 1986; Hässler et al. 1993; Möller-Nehring et al. 1998; Kronenberger et al. 2005).

The evidence on any association between watching aggressive content in television programmes is contradictory. Two observational studies found statistically significant evidence that children and young people with behavioural and emotional difficulties watched more hours of programmes with aggressive content, as reported by children (Sprafkin & Gadow 1986) and parents (Kronenberger et al. 2005), but neither study measure was validated. Contrastingly, the views of children and young people with behavioural and emotional difficulties did not indicate a preference for aggressive television content and did not support an association between television viewing and aggression (Hässler et al. 1993; Lowdermilk 2004), although parental views did (Hässler et al. 1993). It is also important to note that the number of television channels and programme content have changed significantly since the majority of these studies were undertaken, limiting their current generalizability.

Our findings cohere with the last (non-systematic) review focussing on children and young people with behavioural and emotional difficulties (Gadow & Sprafkin 1993), i.e. that there is insufficient and contradictory research evidence supporting relation to any association between aggression seen on television and subsequent aggressive behaviour. These findings contrast with meta-analyses of research on the general population (children and young people and adults), which have found such an association (Wood et al. 1991; Paik & Comstock 1994).

As previously noted by Jordan (2006), we found no existing standard measure of television viewing/ video game playing. Many measures used in the studies we identified were not tested.
for validity or reliability. Both issues undermine the quality and comparability of existing evidence.

Our systematic review had some limitations: we had no access to PsycEXTRA (a gray literature database of the American Psychological Association), hand searching was limited to available local library issues, and full data for one unpublished study (Kelly E., Sprafkin J. & Gadow D. unpublished manuscript) could not be obtained (confirmed by authors).

Overall, there are only a few, methodologically flawed studies in this area. There is therefore a need for rigorous qualitative and quantitative research, especially adequately powered studies, and the development of valid and reliable measures. The need for accuracy and completeness in the reporting of studies is also key. We recognize, however, that the complexity of investigating aggression and amount and content of media consumption seems almost limitless. The methodological challenges of designing and conducting studies on any association are significant and compounded, when considering children and young people with behavioural and emotional difficulties, by ethical deliberations associated with a dually vulnerable population. Individual practitioners and professional bodies should take both the paucity of evidence and the difficulties of doing such research into account when advising families or the public.

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References


Key messages

• There are no randomized, controlled trials on any association between the aggressive content and amount of television watched or video games played and aggression in children and young people with behavioural and emotional difficulties.
• The quality and findings of the 12 studies identified by this systematic review do not enable the giving of evidence-based advice about the effects of watching aggression on television or in video games on the behaviour of children and young people with behavioural and emotional difficulties.
• Undertaking research in this area is complex and difficult, especially as there are no regularly used valid and reliable measures.
• Good quality quantitative and qualitative research will need to be completed if we are to have an evidence base that justifies telling children and young people with behavioural and emotional difficulties that they should watch less aggression on television or in the video games they play.


