

**The Impact of the Media on Children and Young People with a
particular focus on computer games and the internet**

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Executive Summary

1. This report aims to provide a broad overview of the research literature concerned with the impact of the media on children and young people. It focuses primarily on computer games and the internet, although there is some discussion of research on 'older' media, particularly television. In line with the remit of the Byron Review, the report concentrates on harmful effects; although there is some consideration of beneficial effects as well.

2. Concerns about the harmful effects of the media on children and young people are rarely absent from the headlines, and have a very long history dating back well before electronic technology. These concerns reflect much more general anxieties about the future direction of society; and they can be inflamed and manipulated by those with much broader motivations. This climate of concern has affected the field of research, often making it difficult to arrive at a systematic and balanced evaluation of the issues.

3. When it comes to negative effects, research has explored many different types of effects. For example, while some of these relate to specific areas of media content, others relate to media use in general; while some are short-term and direct, others are longer-term and/or indirect; and while some relate to behaviour, others relate to attitudes or to emotional responses. It is vital to make distinctions between these different types of effects, although they are frequently confused in the public debate.

4. Recent developments in media technology, and in the nature of family life, have made it harder to prevent children being exposed to potential risks from media. However, some researchers argue that exposure to risk is a necessary part of healthy development; and that it will be impossible for children to learn about risks unless they experience them. Even so, it is important that risks are encountered in an informed way; and there is a crucial role for parents and schools here in helping children to deal with risk – both 'spectacular' but infrequent risks and more 'mundane' and pervasive ones.

5. The negative effects of media may be impossible to separate from their positive effects. Potential positive effects relate to learning and education, as well as processes such as social interaction, identity formation and cultural experience. Apparently 'inappropriate' content may also provide valuable opportunities for learning. In seeking to prevent negative effects, it is important to ensure that we do not also undermine or preclude the potential for positive effects.

6. There have been long-running and often heated debates among researchers on the issue of media effects. Research in the American psychological effects tradition has been seriously challenged on methodological and theoretical grounds, both by researchers in Media and Cultural Studies and by other

psychologists. Cultural Studies generally seeks to understand the role of the media in relation to a broader range of factors in young people's lives, rather than in terms of simple 'cause and effect'. It is genuinely difficult to find grounds for a consensus – or even a constructive dialogue – between these two competing perspectives.

7. Broadly speaking, the evidence about effects is weak and inconclusive – and this applies both to positive and negative effects. Of course, this does not in itself mean that such effects do not exist. However, it is fair to conclude that directly harmful effects are significantly less powerful and less frequent than they are often assumed to be, at least by some of the most vocal participants in the public debate.

8. Research on the harmful effects of computer games has focused primarily on the issue of violence. Here again, this research has been significantly disputed on methodological and theoretical grounds: it does not amount to a definitive or persuasive body of evidence. On the other hand, many claims have been made about the beneficial effects of computer games, particularly in respect of education; although here too, such claims are far from adequately supported by evidence. Research in this field needs to pay closer attention to the experience of game play; to the nature and function of fictional violence in our culture much more broadly; and to the rapidly changing nature of games themselves.

9. Research on the internet has been less fraught with methodological disputes. There are clear indications that young people do encounter sexually explicit content online; although evidence about the harmful effects of this is much less clear. Some young people experience unwanted contact, in the form of 'stranger danger' or bullying; although the link between such incidents and actual harm is tenuous. Some also encounter violent or hateful content; and while this undoubtedly causes harm to those at whom it is targeted, it is not clear how far it leads to actual violence – and indeed, it may provoke the opposite response. Meanwhile, there are many potential benefits of the internet, particularly in respect of learning; although research suggests that such benefits depend very much on the social and educational context in which the medium is used.

10. New questions and challenges are posed by emerging media forms such as social networking, user-generated content, online communities and social worlds, online gaming and peer-to-peer file-sharing. These developments provide significant new opportunities for learning, self-expression, social interaction and creativity. However, it is frequently hard to separate the potential benefits of these developments from the potential harm they might cause.

11. In addition to established concerns of the kind identified above, four key areas of risk can be identified in relation to these new online services:

- privacy: many of these developments blur the boundary between public and private, providing new opportunities for self-expression and communication but also placing the user at risk;
- trust and credibility: these new means of sharing information give rise to questions about the motivations and authority of those who produce it, and hence about its reliability;
- commercialism: new internet-based services provide significant opportunities for 'personalised' marketing and for gathering data about individual consumers, which may be less apparent than traditional forms of advertising;
- intellectual property: the ability to share content online has resulted in a growth of copyright theft, which affects both large companies and individual users.

While there is some emerging research on these issues, they need to be addressed much more systematically as young people's uses of these technologies change and evolve.

12. Ultimately, the research evidence on media effects does not in itself provide a sufficiently robust and unequivocal basis for regulatory policy. However, research does provide some very clear indications of potential harms and benefits, which might apply to some young people under some circumstances. The challenge in applying research to policy is to balance out these potential harms and potential benefits, while recognising that both are frequently overstated. It is important that children are protected, but not over-protected, to an extent that might prevent them from enjoying the potential benefits of media.

13. There is growing interest in the role of media literacy as a means of addressing many of the concerns raised in this report. To some degree, this is a matter of educating children about risk. Technological attempts to restrict young people's access to the internet (for example, through filtering software) have largely proven ineffective; and there has been a growing emphasis on more positive educational strategies.

14. However, media literacy should not be seen merely as an alternative to media regulation, but as part of a broader strategy involving government, parents, teachers and the media themselves. Ofcom's definition of media literacy as 'the ability to access, understand and create communications' suggests that it is more than simply a matter of technical 'know-how', but that it also involves the critical analysis and the creative production of media. As such, it should be regarded as a crucial means of enabling children to make the most of the positive opportunities that the media can provide.

Introduction

This report aims to provide a broad overview of the research literature concerned with the impact of the media on children and young people. While there is a particular focus on computer games and the internet, the research on these issues is set in the context of a broader account of research relating to 'older' media, particularly television. In line with the remit of the Byron Review, the main focus here is on negative effects – that is, on the potential harm to children. However, attempts to address negative effects – for example through various forms of regulation or intervention – may also have consequences for positive effects. This report therefore also seeks to address some of the research into the beneficial effects of these media.

Ofcom and other funders have recently sponsored a comprehensive review of research on harm and offence in media content; and an update of that review is currently in progress (Millwood Hargrave and Livingstone, 2006, 2007). Ofcom's review focuses on a broader range of media, and is not confined to children and young people. Meanwhile, other more or less definitive reviews specifically relating to games and the internet have also been produced in recent years. This report does not attempt to duplicate these, but rather to build upon them, and to provide a more general commentary on the field of research that will be accessible to the intelligent lay reader. This is not therefore a 'first hand' review of all available studies; although it does incorporate a more original review of emerging developments in the field.

This report seeks to be cautious and even-handed; but it does adopt a rather critical stance towards research, both about the negative effects of these media, and about positive ones. It must certainly prove frustrating to the general reader – and indeed to policy-makers seeking to develop an evidence-based approach - that research in the field appears so inconclusive, and so fraught with disputes and disagreements. My aim here is partly to explain why that should be the case, but also to suggest some ways of moving ahead.

The report begins by discussing the broader social and historical context of research on children and media (Section 1). It then moves on to outline a possible typology of media effects (Section 2), and to discuss the contribution of two main research traditions in the field (Section 3). Sections 4 and 5 review previous research on computer games and the internet respectively, while Section 6 considers new and emerging aspects of these phenomena, and their implications for young people. Finally, Section 7 considers the role of media literacy, both in schools and in the home.

Section 1

Media Effects: The Social and Historical Context

Concerns about the harmful effects of the media on children and young people are rarely absent from the headlines. Over the few weeks in which this report has been prepared, several such stories have been widely reported, of which the following are only a small sample:

A 13-year-old girl from Missouri, USA, who befriended a boy on a social networking site, was driven to suicide when the boy began criticising her; although it subsequently emerged that the 'boy' was in fact the mother of a former friend who lived nearby¹. While the mother could not be charged with any crime, she rapidly became the target for 'virtual vigilantism' herself².

Educators in South Korea have established the Jump Up Internet Rescue School, a network of 140 counselling centres for young addicts of online gaming and chatrooms. The centres offer rehabilitation, military-style obstacle courses and therapy workshops in pottery and drumming³.

A 45-year-old former Marine from upstate New York posed as his own imaginary 18-year-old son and began an online romance with a 17-year-old girl from West Virginia. His wife discovered the affair and told the girl, who subsequently befriended another man, a 22-year-old student, in the same online community. The jealous older man eventually gunned down the student, only to discover later that the 'girl' he had pursued was in the fact her own mother⁴.

Officials in the UK Revenue and Customs department lost two CDs containing personal details of all the families in the UK with a child under 16 claiming Child Benefit. The disks were said to contain information about birth dates, National Insurance numbers and, where relevant, bank details, of around 25 million individuals⁵.

A Dutch teenager was arrested, and four others questioned by police, for allegedly stealing virtual furniture from rooms in HabboHotel, a 3D virtual world: the furniture was allegedly worth 4000 euros, and had originally been bought with real money⁶.

Thousands of members of Facebook, another social networking site, signed a petition calling on the site to remove a new advertising program called Facebook

¹ http://stcharlesjournal.stltoday.com/news/sj2tn20071110-1111stc_pokin_1.ii1.txt

² http://www.nzherald.co.nz/section/story.cfm?c_id=5&objectid=10478668

³ <http://news.independent.co.uk/world/asia/article3177019.ece>

⁴ <http://observer.guardian.co.uk/magazine/story/0,,2210318,00.html>

⁵ http://news.bbc.co.uk/1/hi/uk_politics/7103566.stm

⁶ <http://news.bbc.co.uk/1/hi/technology/7094764.stm>

*Beacon, which can be used to track the spending habits of Facebook users on external websites: the site eventually agreed to suspend the use of the program*⁷.

*Declines in British children's reading scores on an international survey were blamed by some commentators on their increasing use of computer games, despite significant expenditure on new literacy initiatives in schools. Government ministers urged parents to work harder to promote the reading of books in the home*⁸.

Concerns about the harmful effects of the media on young people have a very long history. Historians have traced the successive waves of anxiety that have regularly greeted the advent of new media and cultural forms across the centuries. In this respect, recent debates about computer games and the internet are merely the latest manifestations of a tradition that stretches back through concerns about video and television violence, so-called 'horror comics' and the influence of sex in the cinema, through to the 'penny dreadfuls' and 'penny gaffs' (popular literature and theatre) of the nineteenth century (Barker, 1984a; Springhall, 1998). Beyond this, it is worth recalling criticisms of the unhealthy habit of novel-reading and its particular dangers for women in the late eighteenth and early nineteenth century (Pearson, 1999); and, even further back, fears of the rise of vernacular languages after the invention of the printing press, and the concerns of the Greek philosopher Plato about the negative influence of the dramatic poets on the young people (and future leaders) of his ideal Republic.

These concerns occasionally reach the level of a 'moral panic', in which particular social groups and practices are publicly demonised – often on the basis of what are ultimately found to be quite spurious accusations. The campaign against so-called 'video nasties' in the 1980s, which subsequently reignited following the murder of the toddler James Bulger by two ten-year-olds in 1993, is one well-known British example (Barker, 1984b; Buckingham, 1996); while the shootings at Columbine High School in Colorado, USA, in 1999 predictably led to calls for the banning, not of guns, but of violent video games (Jenkins, 2006a). However, full-blown moral panics of this kind are relatively rare: indeed, the term 'moral panic' is sometimes used in rather misleading ways in this context (Cohen, 2002), not least if it is taken to imply that such concerns are merely irrational and superficial.

Nevertheless, there is a persistent atmosphere of public concern around the issue of media effects – a concern that in turn seems to reflect broader fears about the future direction of society. The focus of this concern is typically on moral issues, most obviously sex and violence; and historically its objects have frequently (though by no means exclusively) been working-class youth – typically boys in relation to violence and girls in relation to sex. Combining anxieties about the potential dangers of modern technology with worries about the moral welfare

⁷ http://news.independent.co.uk/sci_tech/article3191510.ece

⁸ http://news.independent.co.uk/education/education_news/article3204070.ece

of the young provides a very potent basis for public anxiety; and this anxiety can be inflamed and exploited by 'moral entrepreneurs' seeking to gain assent for arguments that might otherwise seem illiberal or unduly censorious (Jenkins, 1992).

The debate about media effects can also be of use to politicians who seek to appear tough: blaming the media can help deflect attention away from more deep-seated causes of social problems, which may be more difficult to address at a policy level. The debate about media violence is perhaps the classic instance of this process. This issue has a particularly high profile in the US, where there has been a constant succession of governmental inquiries and government-funded research efforts – although arguably these have had very little impact on policy (Rowland, 1983). For commentators in other countries, it seems quite obvious that the simplest way of reducing the high incidence of violence in the US would be to restrict the availability of lethal weapons; although this is an issue that governments have largely been unwilling or unable to address. In this context, 'talking tough' about media violence provides an easy way of being seen to act.

Of course, none of this is to say that there is no cause for concern, or that the media play a merely benign role in society. Nor is it to suggest that because some of these concerns appear to be perennial, new media do not present new issues. We have not necessarily seen it all before. However, it is important to be aware of the wider social and historical context of the debate; and, if possible, to detach the issue of media effects from some of the broader moral and political arguments with which it has become enmeshed. Perhaps particularly in the current context of rapid social and cultural change, it is vital that researchers and policy-makers look dispassionately at the issues, and take a careful and measured view. In particular, we need to understand the role of the media in the context of other potential influences, which may be significantly more powerful; we need to balance the potential risks of the media with the opportunities and potential benefits they provide; and we need to assess very carefully the likely effectiveness and the potential unintended consequences of any attempt at increasing regulation.

This is also important when it comes to assessing the evidence from research. Research is not a neutral scientific endeavour: it too is partly determined by the social and historical context in which it is conducted. Certainly in the area of media effects, the public anxieties I have outlined significantly determine the kinds of research that are funded, the kinds of questions that are addressed, and hence the kinds of evidence that are available. The earliest examples of media effects research (for example, the Payne Fund Studies on the effects of cinema published in the 1930s, or the early work on the effects of television in the late 1950s) were conducted largely in response to perceived public anxieties – or at least to anxieties articulated on behalf of the public by moral entrepreneurs of

various persuasions (Jowett et al., 1996; Lowery and de Fleur, 1983; Rowland, 1983).

Willard Rowland's book The Politics of Television Violence (1983) is particularly relevant in this context. Rowland traces the evolution of the debates around television violence in the US from the 1930s to the late 1970s; and he describes how different interest groups – both the broadcasting industry and government policy-makers – funded and subsequently used research in their attempts to define (or redefine) social issues for their own purposes. Rowland's key point is that the focus on the effects of television violence – and the small reprimands and marginal changes in regulation that resulted from it – enabled both government and the industry to deflect attention away from much broader concerns to do with the social and cultural functions of television, and indeed from the wider causes of violence in society. The perpetually inconclusive or qualified findings of effects research legitimised both parties' attempts to avoid fundamental changes in communications policy that might have upset the commercial status quo – while simultaneously allowing them to appear responsible, and as though they were 'doing something' in answer to public concern. Rowland also shows how researchers were complicit with this process, channelling their work into narrow and self-sustaining methodological agendas, while persistently claiming that further research was needed; and he argues that this was supported by the funding regimes and reward structures of academic institutions, which offered status and prestige for 'administrative' researchers whose work was deemed policy-relevant.

As Reeves and Wartella (1985) suggest, the history of research on children and the media has not been one of steady and consistent development, but rather of 'perpetual recurrence'. As new media forms and technologies have been introduced, the same basic questions about their effects have tended to recur. Thus, many of issues currently being explored in relation to the effects of computer games are the same as those that were addressed in relation to television in the 1960s, and indeed in relation to film thirty years previously. This represents a continuing problem when it comes to addressing new media such as computer games and the internet. On one level, we do need to be aware of the history of media research, and avoid 'reinventing the wheel'; yet we also need to avoid simply carrying over concerns from 'old' media without thinking through whether they are genuinely applicable, or fully recognising the new questions that new media might pose.

The history in the UK is rather different from that of the US. Public concerns about media effects are arguably less intense, or at least less intensely expressed; and moral pressure groups have generally been less influential here. The media systems themselves are obviously different, in that the UK has a much stronger public service tradition. The patterns of research funding have also been different: there has been less funding here from the media industries or from private foundations (which often bring their own moral agendas), and

more from government. Furthermore, as we shall see in Section 3, researchers in the UK and Europe are generally affiliated with different intellectual traditions from those that dominate communications research in the US. As a result, research in the UK has tended to explore different questions, to adopt different methods, and indeed to espouse different ideas of what counts as evidence or proof. This is particularly important because of the widespread tendency simply to import research findings from the US. Most of the research on media effects has been carried out in the US, and most British reviews of research tend to rely very heavily on US research, as though it were universally applicable.

My aim in this section has been to issue a kind of 'health warning' about media research, and indeed about reviews of research. Good research of any kind seeks to observe well-established standards of validity and reliability; it follows clearly defined methodological principles and procedures; and it bases its findings on a systematic and balanced evaluation of the data. Yet research does not take place in a vacuum: the issues that researchers address, the questions they ask, the methods they use, and the ways in which they present their conclusions to different audiences, all depend very much on broader social, political and economic imperatives. This is the case with all research, but it is perhaps particularly the case with media research, which throughout its history has consistently been invested with much more general anxieties and preoccupations. Simply summing up what 'research has shown' is thus a far from straightforward enterprise.

Section 2

Mapping Media Effects

The remit of the Byron Review is to address ‘the risks to children from exposure to potentially harmful or inappropriate material on the internet and in video games’. Several general points arise from this. Firstly, we need to acknowledge that there might be a range of potential risks here, beyond those that appear most obvious; and similarly that harm or what is deemed inappropriate may take many different forms. Secondly, we need to accept that some risks may be unavoidable, and even a valuable part of young people’s development: it may be necessary for children to encounter risks if they are to learn ways of dealing with them. Thirdly, we must recognise that risks and benefits may be difficult to separate; and that avoiding risks may also mean avoiding potential benefits. These three issues are considered in turn in this Section.

Defining Negative Effects

Looking across the research literature, one can see that a very wide range of potentially negative effects of media have been identified and discussed. These would include effects relating to:

- violent content – including imitation (in the form of aggression or anti-social behaviour), desensitisation and fear
- sexual content – including imitation (in the form of promiscuous or unsafe practices), arousal, and shock or disgust
- advertising – in relation to misleading claims, as well as consumerist or materialistic attitudes more broadly
- inappropriate or unwanted contact with others – for example in the form of ‘stranger danger’ or bullying
- health – for example to do with smoking, alcohol and drug-taking
- eating behaviour – in relation to both obesity and eating disorders
- general personality disorders, such as low self-esteem, ‘identity confusion’ or alienation
- physical effects of excessive use – for example RSI-type conditions and eyesight problems relating to computers
- the undermining of children’s imagination and free play
- the physical development of the brain, and disorders such as attention deficit and hyperactivity
- sleeping problems and other behavioural difficulties
- reduced time for family interaction, or relationships with peers
- reduced levels of educational achievement, or reading more specifically
- mistaken values, attitudes or beliefs – for example in relation to gender or ethnic stereotyping.

This is by no means an exhaustive list, and it is worth saying at the outset that some of these claims have been much more systematically investigated in research than others. While some of these effects relate to specific media, others apply more generally; and, as I have noted, many of the same concerns have been carried over from 'old' media into debates around new media, not always appropriately. For obvious reasons, the amount of research on new media is still quite limited; and (as we shall see in Sections 5 and 6), new media are raising new issues – for example around the targeting of children for commercial or sexual exploitation – that are very different from those raised by older media.

It is also important to note that these are quite different types of effects. Some relate to specific areas of media content (sex, violence or advertising, for example); while others seem to be about the activity of media use in general (for example, to do with effects on brain development, or physical effects). Some relate to what might be called the 'opportunity costs' of media use – that is, the notion that media use displaces other, potentially more valuable, activities such as physical exercise, school work, or family interaction. Others reflect much broader social concerns, or concerns about values – for example in relation to consumerism or stereotyping (and there are many other more generalised concerns that might have been added here). All of these things might be seen as risks to children, or indeed as potentially harmful, although only some of them relate to 'inappropriate' material.

While there is clearly a danger here of generating an endless litany of the evils wrought by the media, it is important to recognise that different types of potential effects are frequently confused or conflated, often in quite contradictory ways. This is perhaps clearest in the case of debates about media violence. Researchers in this field have explored a very wide range of potential effects of media violence, and generated some very different theories to explain how these occur. A short list of such theories would include:

- imitation: people identify with attractive 'role models' they encounter in the media, and learn specific patterns of aggressive behaviour from them
- arousal: people are emotionally and/or physiologically aroused by media in general, and this increased level of excitement can lead to aggressive behaviour
- desensitisation: repeated exposure to media violence dulls people's responses to the effects of violence in real life, and thus leads them to regard it as acceptable
- catharsis: viewing violence can reduce or even 'purge' aggressive tendencies or psychological tensions that people already possess
- cultivation: the media portray violence in systematically distorted ways (for example in terms of its frequency, or who perpetrates it), which leads people to have distorted beliefs about the real world.

Again, this list is not exhaustive (for a useful compendium of different perspectives, see Weaver and Carter, 2006). Even so, just in this one area, we find a range of competing and potentially contradictory hypotheses. Different theories propose different mechanisms through which such effects might be assumed to occur; and behind this, there are potentially quite different ideas of what would count as 'violent' or 'aggressive' in the first place.

In broad terms, it would be helpful to distinguish here between three potential types of negative effects. We could illustrate these with examples relating to the effects of sexual content:

- behavioural: exposure to sexual content might lead people to copy what they see, to seek out situations in which they might be able to copy it, or alternatively to avoid it
- attitudinal: such exposure might lead people to develop particular beliefs, for example about the situations in which sexual activity is appropriate or morally acceptable, or about the desirable behaviour of men and women
- emotional: people might obviously become aroused (appropriately or not) by sexual content, but they might equally be shocked, disgusted or even traumatised.

These three types of effects are clearly not mutually exclusive. They might well reinforce each other, although equally they might contradict each other. For example, emotional effects (or responses) might have behavioural consequences. Disgust at sexual images might lead one to avoid potential sexual encounters; just as feelings of fear aroused by media violence might lead people to avoid conflict in real life.

In addition, it is important to make other types of distinctions among potential media effects. These would include:

- short-term and long-term: some types of effects might build up over a long period, last a long time, and be hard to displace; while others might be more immediately intense, but might fade more quickly
- individual or social: some types of effects might apply primarily to individuals, while others might apply more to particular social groups than others (for example, men more than women), or function on a more general societal level
- direct or indirect: some effects might be direct and of a 'stimulus-response' variety, while others might work through other factors (such as the family) rather than immediately on the individual.

These different hypotheses and approaches also translate into different research methodologies. For example, in the case of violence, laboratory experiments are typically concerned with measuring relatively short-term effects on behaviour. They do not in themselves provide sufficient evidence about long-term effects –

for example, that watching violence at one point will result in violent behaviour at some later point. Researchers concerned with the impact of violence on attitudes or beliefs are more inclined to use surveys in which people report their own media use – although these often have difficulty in identifying the specific contribution of the media to the formation of such beliefs. Researchers looking at shorter-term emotional responses may sometimes employ physiological measures (such as tracking brain activity), although these typically provide very little evidence about the meanings people attribute to the media, or the reasons why they respond in the way they do.

These distinctions are important, not least because different types and mechanisms of effect are so frequently confused in the public debate, and in some cases in research itself.

Are Risks Avoidable or Necessary?

The second general issue that needs to be addressed here concerns the functions of risk. Risk may be impossible to avoid; but even if one can avoid it, is there a sense in which it could be seen as necessary or even positively beneficial, particularly for young people?

Over the past thirty years, developments in media technology have steadily undermined the potential for centralised control by national governments. Video, for example, made it significantly easier to copy and circulate material than was previously the case with moving images. It also made it possible to view such material, not in a public space to which access could be controlled, but in the private space of the home; and to do so at a time chosen by the viewer, not by a centralised scheduler working according to ideas about what is appropriate for children to watch. In this respect, video effectively shifted responsibility for control from the public sphere to the private sphere - from the state to the individual; and, despite the best efforts of the industry, it also made the circulation of media increasingly difficult to police. Despite the very heavy penalties that can be imposed upon those who supply it, research suggests that a large majority of children have seen material on video which they should not legally have been able to obtain (Buckingham, 1996).

This question of control is further accentuated by the advent of digital technology. Digital technology makes it possible, not only for material to be easily copied and circulated, but also for it to be sent across national boundaries. At present, the internet is the ultimate decentralised medium: in principle, anyone who is able to use the technology can 'publish' anything they like, and anyone else can get access to it - although in fact it is increasingly becoming a commercial medium, in which users are required to pay for content, either directly or indirectly through advertising. Access to the internet via mobile devices further increases the potential for unregulated or unsupervised access.

New media also create particular dilemmas for parents, and to a large extent undermine their ability to control what their children see. Growing numbers of children have access to media technology in their bedrooms, and at an ever younger age (Livingstone, 2002). Evidence suggests that filtering devices for the internet are less than effective, and that young people can easily learn to bypass them (see Section 5). Many children are much more skilled in using these technologies than their parents, and many parents do not realise what their children are doing. Surveys suggest that however much parents may seek to control their children's access to the internet, it is likely that children will encounter potentially harmful or offensive material, often without parents knowing about it (e.g. Livingstone and Bober, 2005).

Yet even if these risks prove to be unavoidable, should we assume that they are necessarily harmful? Some research suggests that taking risks is a key dimension of young people's development. Of course, there are significant individual differences here: psychological research typically classifies a minority of young people as 'sensation seekers' (e.g. Arnett, 1994) – and it is likely that those who are keen to take risks in other areas of life are also likely to want to do so when it comes to media use. Lightfoot (1997) argues that risk-taking among adolescents has many 'play-like' qualities: like play, it offers opportunities for constructing identity, forming group relationships and defining one's place in the world. In some instances, risk-taking offers opportunities for 'self-transcendent challenge', for demonstrating autonomy and adjusting to adult responsibilities; and as such, it can serve important developmental goals. As Lightfoot suggests, this may explain why some young people continue to take risks despite the fact that they are well-informed about them.

However, this argument applies in different ways depending on children's age: while a certain degree of risk might be seen as appropriate for teenagers, it is unlikely to be seen in the same way for younger children – although there are certainly significant social and cultural differences in attitudes on this point. Indeed, one of the shared conclusions of the government's recent Primary Review, chaired by Professor Robin Alexander, and of the Children's Society's Good Childhood review was that children in the UK live significantly more sheltered lives than children in other countries, and that this may represent a constraint both on their freedom and on their healthy development. The implication here is that children are unlikely to learn to cope with risk if they never encounter it.

This can equally be applied to media. Our research on children's emotional responses to television (Buckingham, 1996) suggested that children develop a whole range of coping strategies to deal with media content that they find disturbing or upsetting. These range from straightforward avoidance (simply refusing to watch, or - more ambivalently - hiding behind the sofa) to forms of psychological monitoring (self-consciously preparing oneself, or attempting to

'think happy thoughts'). While these strategies are clearly carried over from responses to stressful situations in real life, children also develop forms of 'media literacy' which enable them to cope specifically with media experiences. They use their understanding of generic conventions, or of the ways in which television programmes or films are produced, in order to reassure themselves that what they are watching is fictional – although this is obviously impossible with factual material such as news, which many children in our research found significantly more upsetting. Of course, some of these coping strategies were more effective than others; and for some, the potential pleasures to be gained (for example, from watching horror films) were not ultimately worth the effort.

Recent research for the pan-European 'MediaAppro' project (see Burn and Cranmer, 2007) has made a useful distinction here between 'mundane' and 'spectacular' risks. Spectacular risks relating to stranger danger or bullying are relatively well-known; and this project found that quite a high proportion of children had been informed in schools about the dangers of giving out personal information online. By contrast, there are more mundane risks to do with the legal status of certain activities (such as downloading music), the role of commercial companies online, and questions about trust and credibility, that are much less frequently discussed, yet which are much more pervasive. As Burn and Cranmer suggest, emphasizing spectacular risks that occur very infrequently – as in the case of the stories described at the start of Section 1 - can discourage children from venturing on to the internet, and hence from accessing the benefits that it can offer; while mundane risks can be addressed effectively through education. (These questions will be considered further in Section 6 of this report in relation to new and emerging uses of the internet.)

The point here, therefore, is not that anything goes, but simply that children cannot learn about risks unless they experience them. As far as possible, it is obviously important to encounter risks knowingly and in an informed way. There is a key role for parents here, both in deciding when it is appropriate for children to learn about risks, and in helping them to deal with them. Yet this is likely to be a highly situated judgment, that depends very much upon the context and the characteristics of the children involved, rather than on any universal rules about development.

Beneficial Effects

The third general issue that needs to be addressed here is to do with the potentially positive effects of media on children. While nobody would deny the need to protect children from negative or harmful effects, it is possible that in doing so one may also prevent them from experiencing a range of positive consequences. Indeed, in some circumstances negative and positive effects may be impossible to separate.

For the reasons I have identified, research on children and media has been very much preoccupied with the search for negative effects. Nevertheless, a range of potentially positive effects can also be proposed, as follows:

- learning – in relation to specific educational content or health messages, as well as general knowledge
- language – language acquisition, and the development of skills in reading and written communication (for example, via the internet)
- development of cognitive skills – for example, skills in spatial awareness, hypothesis testing or strategic thinking (for example, in computer games)
- development of pro-social behaviour and moral values – tolerance, co-operation, and so on
- awareness of social issues – for example, knowledge of current affairs, social problems or other cultures
- social interaction – the role of the media as a basis for discussion within the peer group or family, as well as interaction through the media (for example, via the internet)
- civic participation – the media as a means of promoting social awareness, volunteer activities and political action
- creativity and self-expression – the use of the media as a means of creating and distributing one's own media products
- cultural value – as with books or other cultural forms, media offer the satisfactions of narrative, of pleasurable images, and of meaningful representations of the real world
- identity development – like reading, media may help to develop imagination, empathy and a sense of one's personal tastes and values
- entertainment and relaxation
- developing the ability to sustain attention – for example through concentration on a computer game
- the encouragement of creative activities – play, 'make and do' activities, hobbies, reading, and so on.

Compared with the list of potential negative effects above, several of these appear rather more nebulous: for example, what I have labelled 'entertainment and relaxation' or 'cultural value' are hardly best defined as 'effects' of the media, and they would certainly prove difficult to measure. One of the problems here is that we often seem unable to identify the beneficial aspects of what children do in their leisure time without constantly relating this back to some kind of educational benefit: children are often defined here, not as 'beings', with their own identities and experiences, but as 'becomings', to be judged solely in terms of their progress towards some imagined goal of mature adulthood (Lee, 2001). This can make it harder to justify children's right to pleasure, entertainment and relaxation, although few would dispute the importance of such things for adults.

Most of the research in this field has also focused on outcomes in terms of learning – primarily in relation to explicitly educational media, and to a lesser

extent in relation to more general entertainment media. This may also reflect the fact that such effects are more easily measurable; although the process of measuring educational outcomes is often itself somewhat reductive. Broader arguments about the cultural and entertainment value of media have been made in relation to children's television in particular (see the recent review for Ofcom by Davies, 2007), although claims for beneficial 'effects' in this respect are difficult to prove – just as they would be if one were to attempt to measure the same effects in relation to reading books, for example. (Indeed, it is notable in this respect that arguments about negative effects are hardly ever applied to another potentially influential medium – literature – because prevailing cultural assumptions focus so strongly on its benefits.)

As I have suggested, apparently negative or 'inappropriate' content may also have positive effects, or at least create positive opportunities for learning. Our research on children's responses to sexual content (Buckingham and Bragg, 2004), for example, found that children were frequently encountering material that some would deem unsuitable. In some instances, children struggled to understand what they saw; while in others they were quite offended or even disgusted. Nevertheless, the children in this study strongly defended their right to have access to such material; and the study provided good evidence that they used it positively, both as a source of information and in the process of actively developing their own values and beliefs. Furthermore, they were by no means as vulnerable (or indeed as innocent) as some critics might like to believe: they critically evaluated what they saw, both in the light of their own 'media literacy' and in comparison with their experience of the real world. Here again, children developed strategies for coping with what some would see as 'inappropriate' material, with consequences that can be seen as broadly positive.

The following sections of the report will assess the value of the evidence on some of these points about positive effects; although in some respects, this is just as limited and equivocal as the evidence on negative effects. Perhaps the most appropriate conclusion at this point would be to say that some of these effects – both positive and negative - might apply to some children in some circumstances; and indeed that some types of media content may be beneficial for some children and simultaneously harmful for others. The issue then becomes one of balancing these potential harms and benefits; and this is a decision that depends very much upon the context, and in most instances is probably not best made in the abstract.

Section 3

Research Traditions and Debates

Unfortunately, it is very rare for research to tell a simple story. Researchers frequently disagree about fundamental issues to do with focus, method and theory – about how the key questions are to be framed, what might count as an answer, and what the implications of these answers might be in terms of what should be done. Such disagreements are common in many areas, but they are particularly acute in research on media effects.

Historically, there has been a clear distinction between researchers in the psychological effects tradition, and those in the fields of Media and Cultural Studies, which are broadly sociological in orientation. To some extent, this maps on to a distinction between US researchers (or those influenced by US-based approaches) and European researchers. However, the situation is a little more complex than this. It is important to recognise that much of the psychological effects research is based on a particular form of psychology: it generally espouses variants of behaviourism, and rarely engages with what is termed 'cultural psychology'. Psychologists in the UK and in Europe are generally much more circumspect about media effects than psychologists in the US, and some are strongly critical of the US approach. There are also several leading Cultural Studies academics in the US who are equally forthright in their criticisms.

There are fundamental differences between these two broad traditions, which are not just a question of different areas of interest, or simply to do with methodology. On the contrary, they reflect very basic theoretical and indeed political differences. As a result, the debates in this area have been highly polarised, and often somewhat less than constructive. At the risk of merely contributing to this polarisation, it is important to sum up some of the key differences at this point.

Effects Research

Essentially, researchers in the psychological effects tradition are seeking evidence of a more or less direct causal relationship between exposure to media and particular consequences in terms of audiences' behaviour or attitudes. A classic behaviourist perspective (which is sometimes misleadingly termed 'social learning theory') conceives of this process in terms of stimulus and response – of which the most obvious example would be imitation. More sophisticated exponents of this approach posit the existence of 'intervening variables' that come between the stimulus and the response, and thereby mediate any potential effects; and there is also some recognition here of individual differences in response. Even so, the basic 'cause-and-effect' model continues to apply.

This research tends to work with a broadly positivist approach. It generates hypotheses about the social world that are then tested empirically through the

application of scientific or mathematical methods, and thereby verified or falsified. It is assumed that we can measure aspects of media content quantitatively; that we can do the same with audience responses; and that we can then correlate these in order to gain some measure of media effects. Potential variables in the process can be isolated and controlled, or accounted for statistically; and any potential influence of the scientist on the design or interpretation of the study can be eliminated or minimised. These approaches claim to provide predictability, objectivity and a basis for generalisation; and the findings of such research can be statistically aggregated by a technique known as meta-analysis.

Within the history of communications research in the United States, the use of such methods has served as a form of what Thomas Kuhn (1962) calls 'normal science'. That is, they permit a 'business as usual' approach in which established rules and procedures are followed by all, and fundamental theoretical challenges are simply ignored. Thus, most media effects researchers tend to display a considerable degree of certainty about their findings. The effects of media violence, for example, are seen as incontrovertibly proven: there is (or should be) no room for dispute on the matter. Unfortunately, many other researchers from different research traditions have persistently disputed such claims; although effects researchers have attempted to deal with this largely by refusing to engage in debate.

Criticisms of Effects Research

So what criticisms have been made of such research? Again, at the risk of oversimplification, it is possible to sum these up as follows:

1. The evidence of effects is actually equivocal and contradictory, even on its own terms.

Critics of effects research point out that journals tend only to publish studies that show positive results (in this case, studies that prove negative effects). The sizes of effects in such studies are frequently small, and the levels of statistical significance are often marginal; although far-reaching claims are often made on the basis of what amounts to quite flimsy evidence. Critics argue that studies often contradict each other, and hence cannot be meaningfully aggregated. For example, in the case of media violence, proof of desensitisation would contradict an argument about arousal; and so studies in these two domains cannot be seen to reinforce each other. The most telling criticisms of this kind are often made by fellow psychologists (e.g. Cumberbatch, 2004; Freedman, 2002).

2. There are significant problems with the methods used in effects research.

The two key methods that have been used in this work, laboratory experiments and surveys, have significant and well-known limitations when it comes to proving causal relationships between phenomena in real life. The key problem

with laboratory experiments is to do with their artificiality, or lack of what is termed 'ecological validity'. Critics argue that what happens in the context of a laboratory, where one is seeking to maximise potential effects in order to make them observable, cannot be generalised to the real world, where a whole range of other factors may be in play. The stimulus material used in such experiments is often unrepresentative of media that would be encountered in real life, as are the measures of response. Administering a (fake) electric shock to an unknown individual in the context of a laboratory following exposure to a random collection of violent incidents on film, and without any of the usual constraints that tend to inhibit aggressive behaviour, cannot be seen to prove that media cause violence. At best, laboratory experiments can be seen as an indication of what might possibly happen, rather than as evidence of what actually does happen in real life.

Questionnaire surveys have different limitations. One of the key problems here is that of self-reporting. Respondents are typically asked to provide estimates of their media use, and to agree or disagree with a series of statements about how they might behave in hypothetical situations; and there are all sorts of reasons why such responses might prove unreliable. A further significant difficulty is that of the confusion between correlation and causality. For example, it might be possible to show that people who (claim to) watch a lot of violent television programmes also (claim to) behave aggressively in real life. But this does not in itself prove that violent television causes aggression: it might equally be the case that people who are predisposed towards aggression actively seek out violent television, or indeed that there are other factors (so-called 'third variables') that explain both types of behaviour. A few studies have attempted to overcome these problems by using 'panels' of people who are studied at two points in time, thereby enabling researchers to assess (for example) whether exposure to media at point A results in aggressive behaviour at point B. Yet the problem remains that it is impossible to isolate all the potential variables that might be in play, simply because we do not know what they all are.

Many effects researchers recognise these limitations, although they tend to suggest that the weaknesses of one method can be compensated for by using others, and that the findings can be combined. By contrast, critics would argue that no amount of aggregation will make a difference: adding together a lot of bad research does not make it good. A more pragmatic response would be to suggest that we need to be realistic about what it is possible to prove in the first place. Livingstone and Helsper (2006), for example, suggest that – for all sorts of ethical and logistical reasons - we will never have the 'ideal experiment' that would offer definitive proof of media effects. While there is some truth in this assertion, it tends to evade some of the more difficult issues at stake here. I would argue that in fact the most significant debates around media effects are not merely methodological but also theoretical, and ultimately political.

3. The notion of 'effects' is itself simplistic and theoretically inadequate.

The term 'effects' clearly implies a cause-and-effect relationship; and beyond that, it is frequently associated with an essentially behaviourist account of human action. This is a theoretical approach that some effects research continues to employ, although (as I have noted) much of it also seeks to specify 'intervening variables' that mediate between the stimulus and the response. However, critics of effects research seek to challenge the basic theoretical assumptions of this approach.

The criticisms here are partly about how we understand the nature of the 'stimulus' – in other words, what we assume about the meaning of media. Effects research typically presumes that media texts (such as television programmes) have singular meanings that will be the same for all who encounter them, and that those meanings can be straightforwardly quantified. Yet as Barker (2001) has argued, it is false to assume – as effects researchers typically do - that 'violence' (for example) has a fixed meaning irrespective of the ways in which it is represented, who commits it and who is victimised, the motivations for their actions, and so on. Research suggests that there are many different types of 'media violence'; and that different people perceive different things to be 'violent' in the first place, not least as a result of their different experiences of violence in real life (Morrison et al., 1999). The broader argument here is that meaning involves interpretation: it cannot be fixed or defined statistically in the ways that positivist approaches tend to assume.

Critics of effects research also challenge assumptions about the nature of the 'response'. They argue that effects researchers implicitly conceive of media audiences as passive and ignorant victims of media influence. Specific sections of the audience are effectively stigmatised as helpless dupes – for example in the pathological category of the 'heavy viewer'. This applies to children in particular, where the use of some versions of developmental psychology tends to define children primarily in terms of what they lack – that is, the rationality that is presumed to characterise mature adulthood. Children are thereby defined in terms of what they cannot do, rather than what they can; and in the process, researchers typically fail to see issues from children's own perspectives (Buckingham, 2000).

4. Effects research tends to sustain a conservative political agenda.

Behind many of these objections – and to some extent motivating them – is a broader political argument. Effects research is frequently informed by a conservative moral or political agenda; and indeed, some of it has been funded by organisations with very clearly defined motivations of this kind. This is most self-evidently the case in research about the effects of sexual content, where researchers' moral beliefs are apparent in taken-for-granted assumptions about 'promiscuity' or 'healthy' sexual behaviour (see Bragg and Buckingham, 2002). As I have noted above (Section 1), arguments about media effects have often served to distract attention away from broader social problems; and one could

argue that – as in the case of violence - the media are frequently used by politicians as a scapegoat.

The concern here is partly that such research helps to sustain a moral consensus in which deviant or marginal tastes and views are suppressed. However, it is also argued that effects research sanctions simplistic and misleading responses to complex social problems. Rather than looking at a particular social phenomenon such as violence and then seeking to explain it, effects research starts with media and then seeks to trace evidence of their effects on individuals. In this respect, it appears to be asking the questions the wrong way round (Gauntlett, 1998). Millwood Hargrave and Livingstone (2006) in their review for Ofcom, put this very effectively:

Society does not ask, for example, whether parents have ‘an effect’ on their children or whether friends are positive or negative in their effects. Yet it persistently asks (and expects researchers to ask) such questions of the media, as if a single answer could be forthcoming. Nor, when it has shown that parents do have an influence on children do we conclude that this implies children are passive ‘cultural dopes’, or that parental influence is to be understood as a ‘hypodermic syringe’, as [is] so often stated of media effects. Nor, on the other hand, when research shows that parental influence can be harmful to children, do we jump to the conclusion that children should be brought up without parents; rather, we seek to mediate or, on occasion, to regulate (p. 47).

As this comment implies, a more holistic account of the role of the media in children’s lives would enable us to move beyond simplistic ideas of media effects; but it would not necessarily remove any grounds for intervention, or indeed for regulation.

Seeking Common Ground?

Effects researchers rarely respond to such criticisms: there is a sense in which doing so would disturb the basic theoretical assumptions on which scientific ‘business as usual’ is based. Likewise, their attitude towards research that adopts a different approach is generally to pretend that it does not exist. On the rare occasions when they do respond, they tend to suggest that such critics are merely the hired hands of the media industries; or to accuse them of believing that media have no effects at all.

In fact, there are some more significant objections that might be made to the kinds of audience research that are typically seen as an alternative to effects studies. Audience research within Media and Cultural Studies tends to rely on qualitative methods, such as focus group interviews and observation. While this does permit in-depth exploration of people’s uses and interpretations of media,

such studies are bound to use small samples, which means that they cannot be claimed as representative. Interviews, however in-depth, are also subject to the limitations of self-reporting that were noted above in relation to surveys; although such research often tends to take what people say in such contexts at face value. Such studies also take place in unique circumstances: they cannot be replicated in the manner of a laboratory experiment or a questionnaire. The methods of analysis such researchers employ depend heavily on interpretation, and are rarely open to inspection. From a positivist point of view, such research is often sorely lacking in objectivity, reliability and validity. Although qualitative research can certainly achieve these things, it does not seek to do so in the same way as a laboratory experiment, for example.

The more fundamental problem, however, is that researchers in Media and Cultural Studies are generally not looking to find 'effects' – and particularly effects at the level of the individual. Clearly, there would be little point in studying media at all if one did not believe that they were in some way significant. Critics of effects research might challenge the notion of effects, but they are bound to accept some idea that media influence people, even if this is seen to be a complex, diverse and unpredictable process. Most Cultural Studies researchers would probably subscribe to general arguments about the longer-term social or cultural effects of media. Familiar notions in this field like agenda-setting, defining reality, or ideology tend to imply that media have 'effects' – even if one might reject some of the ways in which these have been empirically investigated (for example, in so-called 'cultivation theory'). Furthermore, while Cultural Studies researchers tend to be very critical of the arguments around media violence in particular, they often fall back on arguments about effects when it comes to other issues, such as gender stereotyping. In some cases, they also seem more willing to accept arguments about positive effects, even when the evidence for these is no more persuasive than it is for negative effects.

So would it be realistic to seek some common ground between these two warring camps? To say the least, this would be a difficult task, perhaps particularly when it comes to the focus of this review. Effects researchers have signally failed to engage with any of the substantive criticisms of their approach – and these criticisms are far from being merely academic quibbles. On the other hand, most Cultural Studies researchers have not set out to investigate questions about effects in the first place: they are doing something different. Trying to find common ground here would be rather like bringing together experts on evolution in the same room with a group of creationists and expecting them to agree. The two groups are unlikely to find grounds for a constructive dialogue, let alone arrive at a consensus.

This creates particular problems in the context of a review such as this. It is not at all unreasonable to ask what the research tells us about the effects of media on children. Yet unfortunately, this is a request that seems impossible to satisfy. Many apparently definitive reviews of such research already exist; yet (as we

shall see in the following sections of this report) they typically reach very different conclusions about the weight of evidence, even when reviewing exactly the same studies. Effects researchers tend to claim that ‘thousands’ of studies have all proven a connection between media violence and aggressive behaviour. Yet in fact such studies have explored different types of connection, using different criteria for what might count as proof, and are sometimes quite contradictory; and (as we have seen) the theoretical and methodological basis of a lot of this research has been strongly contested. Other equally comprehensive reviews of the same issue conclude that the evidence is currently far from adequate to make a definitive judgment. In this situation, it would seem fairly futile to attempt to summarise ‘what research has shown’.

In their Ofcom review, Millwood Hargrave and Livingstone (2006: 35) seek to construct some common ground by suggesting that the evidence points to ‘modest harmful effects for certain groups’ – albeit that these effects are not as significant as the many other causes of violence (for example). However, their review considers mainstream effects research alongside research that adopts a very different approach, in a way which is quite problematic. These contrasting types of research cannot simply be added together to create a sum total, as though they were all equivalent.

In my own view, the evidence of harmful effects is generally less than persuasive – although that is not to say that there are no such effects. Equally, the evidence of beneficial effects is far from convincing either – although again that does not mean that such effects may not exist. The ‘ideal experiment’ is unlikely to happen; but even if it did, it is unlikely that all involved would accept it (or indeed accept that it should be an experiment in the first place). So in the absence of agreed criteria about what might count as definitive proof, does research actually tell us anything? In my view, research should help us to define and explore issues in a more systematic and rigorous way than is generally possible in public debate; it can hopefully alert us to potential risks that might not have been foreseen; and it can offer evidence of potential harms and benefits, which ultimately need to be weighed in the balance. In this field in particular, research can provide a valuable means of consulting with children and representing their perspectives in debates that are often conducted on their behalf but nevertheless ‘over their heads’. Ultimately, however, research in this field does not generate findings that can simply be translated into policy. The development of policy should make use of research, but it requires other kinds of judgment as well.

Section 4

Computer Games

The general polarisation in research on media effects described above is certainly apparent in the field of computer games. On the one hand, psychological effects researchers tend to present a 'cut and dried' argument about the harmful effects of games, particularly in terms of aggression. On the other, there are many critics (both psychologists and those working from a broad Cultural Studies perspective) who dispute such arguments; and some who make claims about the positive effects of games. Here again, the former are largely based in the United States, while the latter are largely based in Europe; although in fact there are some leading advocates of the 'positive effects' argument based in the US as well. Here too, we find the kind of impasse identified above. Effects researchers tend simply to ignore their critics; while Cultural Studies researchers tend not to address questions about effects in their own research.

In one review of research on computer games, Egenfeldt-Nielsen and Smith (2004) describe this as a distinction between 'active media' and 'active user' approaches. The 'active media' approach is identified with a broadly behaviourist argument: researchers in this field generally seek evidence of direct harmful effects, using laboratory experiments and (to a lesser extent) correlational surveys. Such work is typically based on theories of psychological arousal or social learning theory, of the kind frequently applied in relation to the effects of television (described in Section 2). By contrast, the 'active user' approach is social scientific in orientation. This research seeks to situate the use of games in the context of wider social and cultural factors, and to assume that players are active and sophisticated in their responses to games. It tends to be based on the textual analysis of games (using approaches drawn from literary theory or Film Studies), and/or qualitative, ethnographic accounts of players and gaming communities. Virtually none of the research conducted within the field of 'Game Studies' (for example, under the auspices of the international Digital Games Research Association, DIGRA) engages directly with questions about harmful effects – although, as we shall see, some of it makes quite problematic claims about beneficial effects. Equally, none of the effects research engages directly with questions about meaning and representation that have been developed within the fields of Media and Cultural Studies over the past several decades.

It is also worth noting that, while US psychologists tend to be quite unequivocal in arguing for harmful effects (e.g. Anderson, 2004; Grossman and deGaetano, 1999), psychologists based in the UK are much more cautious and circumspect when reviewing the same evidence (e.g. Griffiths, 1999; Gunter, 1998; Cumberbatch, 2004). As we shall see, social scientists in the UK and Europe are significantly more critical (e.g. Boyle and Hibberd, 2004; Egenfeldt-Nielsen and Smith, 2004; Goldstein, 2001).

Negative Effects

The leading exponent of effects research in this field is probably Craig Anderson of the Department of Psychology at Iowa State University, USA. His recent 'meta-analysis' of research on the effects of violent video games on aggression (Anderson, 2004) gives a clear indication of his approach. The article begins with a long listing of recent incidents of alleged copycat violence attributed to computer games, although no evidence of the role of games in these cases is provided. Anderson tolerates no uncertainty about the findings of previous media effects research, arguing that 'the scientific debate over whether media violence has an effect is over, and should have been over by 1975' (ibid: 114). Anderson seeks to build on this research by proffering his 'General Aggression Model', which appears to combine the whole range of psychological explanations of media effects into a mutually reinforcing spiral of violence.

Anderson's meta-analysis claims to show that exposure to violent games is significantly linked to increases in real-life aggressive behaviour, and that this link is a causal one. He combines the findings from previous experimental and survey studies, although he tends to favour the former, excluding those he deems methodologically flawed; and he claims that methodologically stronger studies also show higher effect sizes. Anderson's position on the question of effects is unequivocal, and appears to allow no room for dialogue. Critics of the research are dismissed without being named: 'video game industry representatives and their "experts" have criticized the existing violent video game research literature, much as the tobacco industry found "experts" to criticize all research on the possible causal links between smoking and lung cancer' (ibid: 115).

In fact, the findings Anderson discusses are rather more limited than he claims. The studies reviewed are all vulnerable to the general methodological criticisms discussed earlier in this report – particularly as regards the lack of 'ecological validity' of laboratory experiments. Most of the studies involve play periods of around 15 minutes only, and the measures of aggressive behaviour are diverse and sometimes bizarre. Even more significantly, as Cumberbatch (2004) points out, Anderson's 'best estimate' of the effect size here is $r = 0.26$, which translates to 6.8% of the variance in aggression being accounted for by video games – a relatively small figure that is itself partly based on statistics from unpublished dissertations.

There is a fairly small body of work in this tradition, focusing primarily on effects in terms of arousal and desensitisation (which, as noted above, would seem at least partly contradictory). Other studies suggest that game players are less likely to display 'helping' behaviour and empathetic responses. As Ferguson (2005) notes, there is a publication bias in the field, whereby studies making strong claims about negative effects (even on the basis of relatively weak evidence) are more likely to be published than those making claims about positive effects, at least in the US journals. In most cases, the effects that have been identified are

short-term, and apply primarily to younger children. While Anderson's meta-analysis does not address age differences, Kirsch (2003) seeks to build on his approach by aligning it with theories of adolescent cognitive development. According to Kirsch, the emotional mood-swings and depression that characterise adolescence, together with hormonal influences, may lead early adolescents in particular to seek out risky, sensation-producing activities. Kirsch hypothesises that in this context gaming is likely to increase the tendency towards aggressive behaviour, particularly in this age group – although he fails to present any evidence to support this, and it would be equally possible to argue that the vicarious forms of risk at stake in computer games might in fact serve as a kind of 'safety valve' (the catharsis theory).

Critiques of Effects Research

British and European reviews of research in this field have tended to be directly critical of the approach espoused by Anderson and his colleagues. Jeffrey Goldstein (2001), for example, dismisses correlational surveys on the basis that they fail to provide evidence of any causal relationship between game-play and behaviour. He also comprehensively condemns laboratory experiments, on three principal grounds. He argues that playing games in an experimental setting is unrealistic, in the sense that the player is required to play, and often plays an untypical game only for a short period; and in this respect, such studies do not really measure 'play' at all. Secondly, he suggests that the 'violence' in games is simulated, and occurs in a context that players clearly recognise as fictional; and in this sense, it is not really 'violence'. Finally, the measures of aggression used in such studies are very diverse and frequently absurd, and fail to distinguish between aggressive play and aggressive behaviour; and as such, the studies do not really measure aggression either.

Similar criticisms are made in several other reviews. Mark Griffiths (1999) is rather more cautious, but he too fails to find convincing evidence of effects on aggression. The only exception to this is in studies with very young children, where aggression is measured in a 'free play' setting; although Griffiths implies that this might be a consequence of the method chosen. He also notes that some research has tended to confound measures of aggression and measures of arousal: subjects may be equally aroused by games that are competitive, but not aggressive. According to Griffiths, the majority of games are not in fact violent, and research needs to take greater account of the diversity of games available.

Raymond Boyle and Matthew Hibberd (2005), in a review for the UK Home Office, also find the case for a direct causal link between game violence and aggression unproven. They note that the body of research on the issue is comparatively small, and somewhat contradictory; that definitions of 'violence' have been diverse and inconsistent; and that there have been difficulties in isolating single causal variables. Simon Egenfeldt-Nielsen and Jonas Heide

Smith (2004) are equally unconvinced, both in relation to research on violence and on other issues such as effects on self-esteem and academic performance. Finally, it should be noted that these criticisms of the effects literature are not confined to European researchers. Similar points have been made by North American researchers, including Freedman (2001), Jones (2003) and Bensley and van Eenwyk (2001) – the latter in a review supported by the US National Institute of Health.

Although these reviews significantly challenge the evidence provided by psychological effects researchers, they provide very little by way of contrary evidence. Both Griffiths (1999) and Bensley and van Eenwyk (2001) make reference to the possibility of cathartic effects – that is, that playing games might contribute to reducing aggressive drives – but the evidence here is no more convincing. Ultimately, the issue of ‘violence’ needs to be seen in a broader context. One recent study surveyed 698 teenage boys in Switzerland, exploring the relationship between their experience of violence in their own lives and their use of violent videogames (Kassis, 2007). It found that ‘an interconnection between virtual violence in computer games and real violence in everyday life can only be expected when the socialisation of adolescent boys is determined by violence’; although it ultimately concluded that ‘a causal/clear interconnection between violent computer games and affinity to violence couldn’t be clearly detected’. Boyle and Hibberd (2005) make a good case for a more ‘contextual’ approach, that would situate the use of media in relation to other social and cultural factors, and look beyond short-term effects; but the fact remains that there is very little research that has convincingly achieved this. The Danish researcher Carsten Jessen (1999), who has conducted a series of small-scale longitudinal studies of children’s computer play, is perhaps one exception; but here again, the research largely fails (and perhaps strategically refuses) to deal with questions of ‘effects’. It is entirely reasonable to conclude that phenomena such as aggression are caused by a range of factors, and that the interaction among those factors is likely to be complex – and hence that the use of computer games should not be studied in isolation. However, as yet there is little research that has convincingly followed through on this approach.

Positive Effects

Meanwhile, there are several studies that have focused on the beneficial effects of computer games. Clearly, effective game play can be a cognitively demanding activity: while some games rely primarily on quick reactions (of the ‘point and click’ variety), others involve complex processes of planning, strategising, hypothesis testing and evaluation. In order to ‘level up’, players need to process information fairly rapidly, assess likely courses of action, make multifaceted judgments, and develop new skills. Some researchers argue that the challenge of playing complex computer games has significant positive effects: these include the development of cognitive skills (for example in spatial perception or strategic

thinking) and computer-related aptitudes (for example in manipulating interfaces), as well as more general benefits in terms of learning and motivation (Taylor, 2006).

In some instances, these arguments provide the basis for a much broader critique of traditional approaches to learning in schools (e.g. Gee, 2003; Prensky, 2006). This work is frankly very limited in its empirical base – Gee bases his arguments solely on his own game play and that of his six-year-old son, while Prensky's claims about the beneficial effects of games are little more than anecdotal (see Buckingham, 2007). In other cases, though, such arguments have informed more specific recommendations for using games as educational resources (Kirriemuir and MacFarlane, 2004; Mitchell and Savill-Smith, 2004). Here, it is argued that the 'affordances' of games – for example, in providing instant feedback, in requiring 'active' learning, or in simulating particular types of real-world activities – can make them especially well suited to some kinds of educational tasks. Even so, these reviews recognise that such benefits are only likely to be realised in fairly controlled educational settings; and they are bound to acknowledge the difficulties that are entailed in using games in real classrooms. From a rather different viewpoint, some media educators have argued that games are worthy of study and analysis like other cultural texts; and this work has shown positive gains in terms of developing students' understanding of game design, as well as broader concepts related to narrative, play and representation (Buckingham and Burn, 2007). This research suggests that the cultural understandings young people develop through studying games may be carried over to their understanding of other narrative forms (Burn and Durran, 2007).

Durkin and Barber (2002) provide a more broad-ranging analysis of the potentially positive consequences of computer gaming, based on a large US survey. They find that on measures such as family closeness, involvement in activity, positive school engagement, positive mental health, and strong friendships, moderate game-players scored more highly than peers who did not play computer games; and that high users of games scored no worse than non-users. These findings are correlations, and do not indicate any causal relationships; although these authors suggest that such factors may be mutually reinforcing, and that choosing to play computer games – at least in moderation - is 'one manifestation of an active and well-adjusted lifestyle'.

Ultimately, however, the research on the beneficial effects of games is no more convincing than the work on harmful effects. There is little persuasive evidence that any of the positive skills learned during the course of game play – or indeed any broader dispositions towards learning – transfer across to non-game contexts. Game players may become exceptionally skilful in solving problems in games – or indeed exceptionally skilful in dispatching their enemies – but there is little evidence that they are any better at doing so in real life than people who do not play games.

From Research to Policy

Ultimately, the scope of research on the effects of computer games is extremely limited. While the work on negative effects concentrates almost exclusively on violence, the work on positive effects is largely concerned with educational benefits. The only other issue to have generated significant research is that of addiction. Of course, the term 'addiction' is generally pejorative (we rarely talk about 'reading addiction', for example) – although it is worth noting that gamers themselves often use the term 'addictive' in praising their favourite games. Griffiths (2007) argues that, while some extreme cases of videogame addiction may indeed exist, it is rarely appropriate to apply the term 'addiction' in this context (and he makes a similar argument elsewhere with regards to 'internet addiction': see Widyanto and Griffiths, 2007). As Durkin and Barber (2002) point out, the majority of young game players only play for relatively short periods (averaging less than an hour a day); and in their estimate, less than one per cent could meaningfully be described as 'addicted'. More broadly, and despite repeated claims, there is no especially convincing evidence that playing computer games results in reduced educational achievement, or that it undermines healthy social relationships or family life.

In many respects, it is quite unfortunate that there has been such a degree of polarisation in the field. In principle, the detailed insights available from the textual analysis of games could help to address questions about the experience of play that the effects literature has largely neglected. For example, Anderson and his colleagues appear to assume that findings from research on the effects of television can simply be extended to the field of games; and in the process, they tend to neglect the nature of play. For example, it could be hypothesised that playing a violent character in a game would be more likely to result in heightened aggression than simply watching such a character in a TV show; although one could equally argue that the experience could be more cathartic. Researchers in Game Studies have provided very interesting theories of the relations between players and avatars (e.g. Burn and Schott, 2004; Dovey and Kennedy, 2006); but the effects literature is signally lacking in any theory that might explain the interactive experience of play. In this latter respect, the small-scale qualitative study by Cragg et al. (2007) for the British Board of Film Classification is particularly interesting. This study found that most gamers saw 'violence' (in the sense of eliminating enemies) merely as a means to progress in the game, rather than as an end to be savoured in itself; that they were more concerned with avoiding being shot than with inflicting damage on others; and that they were very clear about the differences between games and real life. This would suggest that research in the field needs to pay much closer attention to the experience of play than has been the case in the past; and more broadly, that it needs to address the different forms and functions of symbolic representations of 'violence' in such material – representations that of course have a very long history in Western culture.

Ultimately, it is fair to conclude that the research in this field is a long way from providing a sufficiently robust and unequivocal basis for regulatory policy. The evidence for both negative and positive effects is limited and unreliable – although, yet again, it should be emphasised that the fact that such effects have not been convincingly identified does not in itself mean that they do not occur.

It may be that further research will provide more useful indications for policy. Both Boyle and Hibberd (2005) and Egenfeldt-Nielsen and Smith (2004) point to the need for more detailed research on particular categories of ‘high-risk’ users, who might be seen as predisposed towards aggressive behaviour. As the latter review asks, ‘Are there combinations of types of games, types of personalities and situations which might have the potential to have adverse effects – in other words, are there types of games which might cause damage to certain types of people in certain circumstances?’ This would seem to be a sensible question, although it remains hard to see where it might lead in terms of policy. After all, there are some ‘high-risk’ individuals who take their cues from religious texts in order to justify catastrophically violent acts; but this is not in itself deemed to be a sufficient reason to ban or censor such texts.

It is worth observing that the industry itself has made efforts to consult the research community in order to guide regulatory policy. The Interactive Software Federation of Europe (the industry’s European umbrella association) has begun an annual conference, inviting academics to address key questions, including those of effects and addiction, in the context of the development of the self-regulation system PEGI (Pan-European Game Information). The general message from the invited academics has tended to reject psychological effects research, bearing out the tendency to this view amongst European academics identified above. In the light of the unresolved research debates, ISFE has gone on to make the kinds of judgments that also face policy-makers. In effect, it has weighed the arguments about risk against those for benefits, emphasising a need for classificatory regulation to inform parents and consumers, but also a need for education through and about games (ISFE, 2007).

Meanwhile, as several reviews in this field point out, the nature of games is changing rapidly. Games are converging with other media, their visual qualities are improving significantly, and the demographic composition of the market is broadening. The advent of online games, in which players typically play collaboratively with others in complex and extensive ‘game worlds’, also poses new questions for research and for policy (see Section 6). These developments have significant implications for regulation, not least because games can no longer be seen as self-contained ‘texts’ like films: age-based classifications are relatively meaningless in the case of online games, where the game is at least partly created by its players, and where the real identities of players may be impossible to ascertain in the first place.

In this rapidly changing context, I would concur with the conclusions of the Home Office review on violent games conducted by Boyle and Hibberd (2005). These authors argue that, in the absence of definitive research, the focus of attention should be on developing forms of media literacy that promote a critical understanding both of games specifically and of the broader cultural landscape: this would include educational initiatives (aimed both parents and children), as well as developing more systematic and informative classification and labelling of games. This issue is taken up in more detail in section 7 of this report.

Section 5

The Internet

As in the case of earlier media, the advent of the internet has been greeted with an uneasy mixture of hopes and fears. On the one hand, there have been visionary claims about the power of this medium to release children's creativity and desire to learn, and to generate new forms of culture and community. Yet on the other, there has been growing concern about the availability of sexual and violent material, and about the risks to children's safety posed by online communication. Nevertheless, the debate in this field has not been quite as contentious as in the case of computer games. Even those who are most alarmed by the dangers of internet pornography and paedophilia would not be inclined to dismiss the many benefits the medium can offer. Unlike games enthusiasts, advocates of the internet do not have to contend with a widespread (some would say elitist) perception of the medium as a form of trashy popular culture.

In broad terms, there are several characteristics of the internet that might be seen to increase its potential for harm to children. These would include: the ease of access for users; the abundance of material available; its ubiquity and affordability; the interactivity of the medium, and the potential for individual users to share material; the degree of anonymity that users can enjoy; and the lack of 'gate-keepers' or authorities that might restrict access. However, these are also the characteristics that are often seen as crucial to the benefits of the medium, in terms of facilitating learning, communication, or civic participation (Bentivegna, 2002). Several of the concerns that arise in relation to the internet have been carried over from older media, and might be seen to apply in other everyday contexts; although the internet does provide contexts in which people may say and do things that they would not face-to-face. While we need to be wary of overstatement, it is clear that there are some new dangers here for children, and indeed for adults as well: in particular, while giving out personal information is necessary for a whole range of commercial and non-commercial transactions, it also places the individual at risk in generally unprecedented ways.

There is a growing body of research on children's and young people's use of the internet. Here again, it is possible to identify different research traditions; although the situation is by no means as polarised as it is in the case of games. Mainstream communications research has generally avoided the experimental approaches employed in relation to games, tending instead to use large-scale questionnaire surveys to map patterns in access and use (e.g. Center for the Digital Future, 2007; Lenhart et al., 2001; Livingstone and Bober, 2005; Mitchell et al., 2003). Given the rapid pace of technological and cultural change, such studies often have a fairly limited shelf-life, and need to be frequently updated. Furthermore, a great deal of this work is essentially descriptive. For example, when it comes to potentially harmful or offensive material (such as pornography or 'hate sites'), we do know a fair amount – at least from self-report data – about

whether children are likely to have encountered such material, and in very broad terms how they feel about it. However, we know relatively little from this research about how they interpret this material, and almost nothing about its effects, for example on children's attitudes or behaviour.

By contrast, researchers in Media and Cultural Studies have tended to rely on smaller-scale qualitative research. The focus here has been on how families or specific groups of children interact online, and make sense of what they encounter (e.g. Buckingham and Willett, 2006; Facer et al., 2003; Holloway and Valentine, 2003; Weber and Dixon, 2007). The questions here focus on issues such as identity construction, peer culture and play; and on the social or domestic contexts in which the internet is used. While these issues might be considered in terms of effects – is peer group interaction online more positive than offline? how does the internet affect the quality of family life? – these researchers tend to avoid addressing such issues in this way. Here again, the emphasis is on taking a holistic view: rather than thinking in terms of cause-and-effect, it is argued that we need to situate children's uses of the internet within a broader social and cultural context, in which multiple factors are in play. This approach tends to emphasise children's agency and autonomy (as with the 'active user' approach to games research); and at times can come close to a rather celebratory account. Even so, the two approaches I have identified are by no means mutually exclusive, and some of the best research in the field manages to combine them.

Pornography

There is a fairly substantial body of research on the effects of pornography in older media. Many of the concerns – and indeed many of the problems – of that research have been carried over to studies of the internet. One initial difficulty here is in defining pornography: the boundaries between pornography and erotica or other sexually explicit material are clearly debatable. What some regard as sex education or as health information is condemned by others as pornography. Campaigns against pornography may well be inclined to overstate the amount of pornography that is available, or to represent it as more 'extreme' or violent than it actually is. Nevertheless, the internet has undoubtedly made it significantly easier to distribute and obtain pornography; and indeed more likely that people will encounter it without actively seeking to do so. We do not have reliable evidence, but it would seem uncontroversial to claim that the internet has made it more likely that children will be exposed to pornographic or sexually explicit material.

The more difficult question is about the consequences of this. It is important to distinguish here between harm and offence. Ofcom's reviews (Millwood Hargrave and Livingstone, 2006, 2007) suggest that around half of the children sampled in a range of research studies are not especially bothered by such material, and

that a minority (particularly boys and older children) actively seek it out. Nevertheless, a sizeable minority do not like it, and do not wish to see it (ECPAT, 2005). Children will typically report that they are distressed, disgusted, offended or bothered by sexually explicit material. However, these terms tend to vary between studies, and are typically derived from multiple-choice questionnaires: there is very little research that explores children's own responses in any detail. Our research (Buckingham and Bragg, 2004) looking at young people's responses to sexual content in television and other media suggests that such responses are often much more ambivalent and complex than questionnaire studies tend to imply.

Even so, evidence of offence (typically a short-term emotional reaction) is not the same as evidence of harm. In this latter area, research on pornography encounters similar problems to research on media violence. This is a highly contested field, in which much broader moral and political interests are at stake. Psychological research on the effects of pornography on adults tends to conclude that it leads to desensitization and callous attitudes towards women, which in turn provide justification for rape. Some effects researchers argue that 'non-violent erotica' does not have such effects (e.g. Donnerstein et al., 1987), although others suggest that they apply whether or not it contains violence (e.g. Itzin, 1992). On the other hand, many researchers have disputed such claims, arguing that the evidence for harmful effects is inadequate. The grounds for criticism here are similar to those that have arisen in relation to the violence research, particularly to do with the lack of 'ecological validity' of laboratory experiments (Boyle, 2000; Bragg and Buckingham, 2002; Segal, 1993). Meanwhile, others claim that pornography has positive benefits for both women and men (Sandy, 2001).

Not least for ethical reasons, there has been very little research on the effects of pornography on children and young people. Indeed, a major review of the field by the US National Research Council (Thornburgh and Lin, 2002) found a lack of scientific consensus on the effects of sexually explicit material on children, despite the authors' strong preference for regulatory measures. Recent studies have found associations, for example between the use of pornography and depression, or lower levels of bonding with caregivers (Ybarra and Mitchell, 2005) or 'recreational' attitudes towards sex (Peter and Valkenberg, 2006). Others have found that college students with 'anti-social' tendencies were more likely to respond to unsolicited offers of online pornography (Shim et al., 2007). However, all these studies rest on correlations: they do not provide evidence of any causal relationship between online pornography and young people's attitudes or behaviour.

Child pornography is a rather different matter, not least because it is illegal. There is little doubt that the internet has led to a significant increase in the production and distribution of child pornography (Taylor and Quayle, 2003). The definition of child pornography is fairly clear, although here too there is some

debate about the more widespread use of sexualised images of children, for example in advertising or in art photography (Higonnet, 1998). Most people convicted of the sexual abuse of children use child pornography, sometimes in the course of 'grooming' children for the abuse itself (ECPAT, 2005; O'Connell, 2003), although they may also use other images of children as well. On the other hand, by no means all users of child pornography commit physical abuse; although in this case, the images themselves record acts of real abuse, and users of such images are therefore effectively sanctioning this abuse. There is a considerable need for more research on this area, although it lies some way beyond the remit of this review.

Unwanted Contact

This leads into a further area of risk, which is that of unwanted contact. The main focus of concern here is on so-called 'stranger danger' – that is, the possibility of threatening contact from unknown adults, particularly paedophiles. Such concerns about the internet need to be situated in the broader context of growing anxieties about risks to children offline. Parents' fears of the likelihood of their children being abducted and abused by unknown strangers have risen significantly in recent years, perhaps partly inflamed by the high-profile reporting of rare but nevertheless disturbing cases (Valentine, 2004). While the actual incidence of attacks and abductions has not significantly increased, parents are now much more keen to confine their children to the home – and to furnish them with media and technology that will make the child's bedroom a more attractive alternative to the apparent dangers of the outside world. Ironically, in doing so they have created the possibility that 'stranger danger' will now be imported into the apparent safety of the family home.

Studies report that many children have had contact online with people whom they do not know; although there has been little research looking in any detail at the nature of such contact, or at how children respond (Millwood Hargrave and Livingstone, 2006, 2007). Of course, it is possible that such online contact may be a very positive thing, for example if it allows children to discuss concerns that cannot be shared with people offline, or if it brings them into contact with others from very different cultural backgrounds. In some cases, online contacts do lead to face-to-face meetings, although most of this contact is with people of a similar age; and it would be quite wrong to imply that much of it is any more dangerous than contacts that young people might make in any other setting. Of course, it would be naïve to deny that the internet has provided paedophiles with new opportunities for contact with children; and these risks may have increased with the advent of mobile platforms (O'Connell, 2003). Yet as Livingstone (2003: 157) puts it, 'the link between risks, incidents and actual harm is genuinely tenuous: not all risks taken result in worrying incidents, not all worrying incidents result in actual or lasting harm'.

As with all media, changes in technology go hand-in-hand with changes in social use. Only a few years ago, anxiety about online encounters with strangers focused on children's use of chatrooms. Recent research suggests that chatroom use is declining, while use of Instant Messaging is widespread, suggesting that children prefer to communicate with friends rather than strangers (Mediapro, 2006). At the same time, new opportunities to meet strangers online have appeared, such as via online games; though these encounters are less likely to lead to actual meetings, and more likely to be confined to the context of play in a fictional world (Burn and Cranmer, 2007). Some of these issues are dealt with in more detail in Section 6.

Some research suggests that teaching about online risks means that children are less likely to become victims (Berson et al., 2002). However, other research suggests that the majority of children are already very well aware of the potential risks here, and yet this does not tend to prevent them from making such contacts (Millwood Hargrave and Livingstone, 2007). This would suggest (in line with our earlier discussion), that some young people may actively seek out risk in this context, for example by various forms of 'flirting'; and this may be particularly the case for children who are, for example, less satisfied with their offline lives (Livingstone and Helsper, 2007). At the same time, there is also a danger that the figure of the predatory paedophile (whether online or offline) has become a kind of contemporary 'bogeyman', and that such warnings are somehow seen as irrelevant to children's own lives (Burn and Willett, 2004). As this implies, there is a need for education about such risks that goes well beyond one-dimensional warnings of the 'just say no' variety (Berson et al., 2002); and as we shall see in the following section, notions of risk and privacy are becoming increasingly complex in the online environment.

A rather different kind of unwanted contact is that of bullying. Again, there is evidence that a significant number of children have experienced online bullying (ECPAT, 2005). The internet clearly permits bullying to occur more secretly, and yet to be distributed more widely (for example through the copying and forwarding of images). However, the fact remains that many more children are bullied offline than online (Millwood Hargrave and Livingstone, 2007); and there is no evidence that the internet has led to an increase in bullying, however distressing it may be. How online bullying might support offline bullying – and the new combinations of techniques that might emerge – remains an issue for further research.

Violence Online

As with pornography, there is little doubt that the internet has made it significantly easier to distribute material that incites violence of various kinds. Such material would include 'hate sites', as well as material that appears to encourage or celebrate forms of self-harm. Surveys suggest that a significant minority of

children have seen such material, and while they generally dislike it, few of them find it particularly disturbing (Millwood Hargrave and Livingstone, 2007). Here again, however, there is relatively little detailed evidence about how children interpret such material, and even less about its potential effects.

In the case of 'hate sites', much of the research has tended to focus on the analysis of content. Tynes (2006) provides an overview of the range of persuasive techniques used on sites produced by white supremacist, anti-Semitic and neo-Nazi groups in the US, which range from out-and-out aggression to more devious forms of persuasion. Such material is certainly offensive, and harmful in the sense that it attacks members of specific ethnic groups. But while it might be seen to create a general climate in which racism becomes acceptable, there is little evidence that it directly encourages racism – or indeed racist violence – among individuals who might not otherwise be disposed to accept it. Some have argued that such sites may be relatively ineffective as recruitment tools, at least among adults (Chaudhry, 2000); although other studies suggest that this depends on the directness and narrative content of the messages (Lee and Leets, 2002). One French study suggested that such material may have the reverse effect, of encouraging critical attitudes towards racism among young people (Bevort and Breda, 2001). The legal implications of this situation are complex: at least some such sites could be prosecuted in the UK under laws on incitement to racial hatred, although in the US, the First Amendment is likely to offer protection. Meanwhile, there have been several educational projects that attempt to alert children to biases and distortions in such material.

A related phenomenon is that of 'extreme' self-help sites related to topics such as eating disorders and suicide. Sites that positively celebrate forms of self-harm, or provide advice on how to carry it out more effectively, are certainly disturbing, and have in the past been deleted or blocked by service providers. Some research suggests that such sites may normalise self-harming behaviour (Whitlock et al., 2006); although others have argued that they can offer useful support that might not be available elsewhere, and that 'giving voice' to such issues is preferable to silencing them (Polak, 2007). Here again, the question that is raised by such sites is whether they result in an increase in harmful behaviour, or simply shift it in a different direction; and this is a question on which there is no definitive evidence.

The Benefits of the Internet

As with games, discussion of the potential risks of the internet needs to be balanced against an understanding of its potential benefits. Claims about the positive effects of the internet tend to focus on the value of instant access to information, and its role in creating new forms of communication and community. This is seen to have particular consequences, for example in building or renewing civic participation, in generating tolerance and global understanding, in

providing new opportunities for creative expression, and in overcoming social isolation. Popular accounts make much of the new skills and knowledge that are being developed by the so-called 'digital generation', and of the liberating potential of the medium for young people (e.g. Tapscott, 1998). Such accounts tend to present the internet as an enormous power for social good: it is seen to offer great possibilities for self-expression, creativity and learning, and to bring about greater openness, tolerance and trust.

Academic commentary has frequently sought to puncture some of the more inflated claims that are made about the benefits of the internet, and the forms of technological determinism that tend to characterise them (e.g. Buckingham, 2006; Herring, 2008). Ultimately, while the technologically-empowered 'cyberkids' of the popular imagination may indeed exist, they are certainly in a minority, and are untypical of young people as a whole. Research suggests that the majority of young people are not interested in technology in its own right, but simply in what they can do with it. There is relatively little evidence of young people using the internet to develop global connections: in most cases, it appears to be used primarily as a means of reinforcing local networks among peers. As Warschauer (2003) points out, the potential for multimedia production – which requires the latest computers and software, and high bandwidth – is actually quite inaccessible to all but the wealthy middle-classes. Research also suggests that young people may be much less fluent or technologically 'literate' in their use of the internet than is often assumed: observational studies suggest that young people often encounter considerable difficulties in using search engines, for example – although this is not to suggest that they are necessarily any less competent than adults in this respect (Livingstone and Bober, 2005; Schofield and Davidson, 2002).

As with games, the benefits of the internet for young people are predominantly framed in terms of education. Yet here again, evidence of the educational value of the internet is somewhat equivocal. Arguments about the value of instant access to a wealth of information are typically countered with evidence about the proliferation of plagiarism and 'cut-and-paste' approaches to academic work (Howard, 2007). The evidence that technology in itself will serve as a means of raising educational achievement in schools – or indeed that it is worth the money that is spent on it - is far from persuasive (Buckingham, 2007). As in the case of games, it is clear that the educational benefits of the internet are not automatic or guaranteed: rather, they derive from the ways in which it is used. In relation to schools, the educational value of the medium depends very much on the classroom strategies that teachers employ; while in the home, the role of parental support is crucial. As this implies, the benefits of the medium do not follow automatically from simply gaining access: rather, they depend very much on the skills and competencies that are developed by users.

Despite these necessary qualifications, it would be quite wrong to underestimate the very significant benefits that the internet can offer young people, in terms of

learning, communication, creativity and social relationships. The accessibility, global reach, simplicity and flexibility of the medium – and indeed the vast extent of material that it brings together – does offer significant opportunities for supporting learning, for pursuing entertainment and leisure interests, and for creating new democratic forms of communication and cultural expression. While some choose to remain outside the digital world, those who do have access to it tend to regard it as an enormously positive phenomenon, and indeed as a necessity of modern life; and they feel that children who do not use it are at a significant disadvantage, educationally, socially and culturally. While this is predictably less of an issue for younger children, by the time they reach the teenage years, the internet comes to equal television and mobile phones as a ‘must have’ medium for young people (Ofcom, 2007).

From Research to Policy

There is certainly evidence of specific kinds of harm and offence that can arise from young people’s use of the internet. While the evidence on the harm resulting from ‘mainstream’ pornography is fairly limited, there is no doubt that many of the other phenomena considered here can be considered directly harmful or at least offensive. Whether they are more harmful than equivalent phenomena offline – for example, whether online bullying is more dangerous than offline bullying – could be a matter for debate.

At the same time, there are a great many claims about the benefits of the internet, particularly in respect of its educational value for children and young people. Many of these claims are inflated, and in several cases the evidence from research is somewhat limited. Nevertheless, it would be foolish to deny that the internet has considerable potential to benefit children, even if the realisation of that potential depends very much on the circumstances in which the medium is used.

Here again, the obvious difficulty that arises when seeking to apply research to policy is that of balancing these potential risks and benefits, while recognising that both are frequently overstated. Furthermore, while particular forms of regulation may be considered desirable, these also raise significant legal and technical issues. In respect of the former, the arguments for ‘free speech’ cannot be ignored; and it could be argued that they need to be considered particularly carefully when one is addressing the activities of minority or ‘fringe’ groups of any kind. On the other hand, some of the types of material considered here are clearly illegal, and are covered by existing laws.

In respect of technology, the evidence suggests that attempts to filter or block access to particular types of internet content, whether in homes or in public settings such as schools, have rarely proven effective. As Frechette (2006) suggests, the software industry is currently generating significant profits from

parental anxieties about 'inappropriate content' – although such software often defines what is 'inappropriate' in narrow (and sometimes quite bizarre) ways. Evidence suggests that the effectiveness of such devices – for example in schools - is decidedly limited (Lawson and Comber, 2000). Filters are typically very crude and unreliable; and young people complain about how they block access to sites that are needed for perfectly legitimate educational reasons. Research also suggests that the use of filters (as well as more direct forms of observation by teachers) is frequently resisted (Goodson et al., 2002; Hope, 2005; Selwyn, 2006). School students will often claim that they can evade filters, through a range of inventive and devious strategies; and some even boast of their skill in hacking into teaching staff files (a strategy Hope (2005) calls 'sousveillance'). The limitations of filtering or blocking programs appear to be accepted even by researchers who strongly agree with them in principle (e.g. Dombrowski et al., 2007). There is also a danger that too prohibitive or protective an attitude in schools may lead to young people simply giving up on internet use in schools and reverting to home use: this has particular implications for young people whose access at home is limited, and it also means that productive educational use – as well as education about risk – become much more difficult (Burn and Cranmer, 2007).

Here again, the implication of such findings is that a more educational strategy is required. As I have noted, there have been some significant educational interventions focused on internet risk, and on related issues such as hate sites. In some cases, such strategies have proven less than effective, not least because they tend to be narrowly defined, and fail to connect with young people's perceptions of issues such as risk and privacy. However, research does suggest that parental intervention and involvement can enhance children's ability to understand web content, to handle risk, and use the medium effectively (e.g. Cho and Cheon, 2002); and there is also evidence of successful programmes being developed in schools (Berson and Berson, 2003). However, it should be emphasised that 'digital literacy' is not simply a matter of being able to use technological tools (such as search engines), but also of critically understanding information (Buckingham, 2007; Fabos, 2004). The implications of such an approach will be discussed in more detail in the final section of this report.

Section 6

New and Emerging Media

The two previous sections of this report have focused on potential risks and benefits of new media that are fairly widely recognised. However, the media landscape is rapidly changing; and as new media forms emerge, so too do new concerns about their possible effects. This section focuses on a range of relatively new phenomena, including social networking sites, user-generated content, online communities and social worlds, online gaming and peer-to-peer file-sharing. At least some of these phenomena have been collectively discussed under the (somewhat misleading) label of 'Web 2.0': what they mostly have in common is the opportunity for users to create and distribute their own content, in audio-visual as well as written form. Obviously, academic research on these developments is still in its infancy, and so this discussion draws on more speculative and non-academic accounts, some of which have yet to be published (so-called 'grey literature').

These phenomena continue to evoke well-established concerns of the kind considered above, albeit sometimes in new forms. Social networking sites, for example, have generated new anxieties about 'stranger danger' and bullying; while file-sharing and user-generated content sites have provided new opportunities for circulating sexually explicit or violent material that some consider inappropriate for children. Familiar concerns about addiction, about the demise of healthy family life, or about the physical effects of excessive use, have all been expressed once more in respect of these new phenomena. Equally, enthusiasts for 'Web 2.0' have proclaimed its potential for promoting creative self-expression, interactive communication and democratic participation in the media. As I have implied, these potentially positive and negative consequences must ultimately be seen as two sides of the same coin.

Even so, these new phenomena do raise new concerns, or at least lend some hitherto fairly marginal concerns a new intensity. Before taking each of these phenomena in turn, it is worth identifying four broader issues that cut across these different areas, particularly relating to the question of risk:

1. Privacy. New media forms such as social networking sites and blogs possess a form of intimacy, yet they are easily accessible in the public domain. Users may reveal highly personal information in the belief that they are doing so for an audience consisting only of their 'friends' (whether or not these are people they have met face-to-face). They may forget, or fail to fully register, the fact that this information is visible to others – and indeed to parents, teachers or employers as much as to potentially dangerous strangers. This situation provides significant new opportunities for sexual predators and for bullying by peers, as well as for various forms of deception and 'identity theft'. However, it also raises more far-reaching questions about the changing ways in which young people understand

the boundaries between the public and the private – an issue that has also emerged in relation to phenomena such as ‘reality television’ and the continuing rise of celebrity culture.

2. Trust and credibility. These new phenomena accentuate existing concerns about how users evaluate online information. For example, Wikipedia is an online user-generated encyclopaedia that is very widely cited by students as an authoritative source, although there have been significant criticisms of the quality of its content. Meanwhile, the rise of blogging has further facilitated the rapid circulation of ‘hate speech’, misleading rumours and conspiracy theories of all kinds. New media offer the benefit of a much wider range of information sources, but the motivations, identity and quality of those sources are often difficult to ascertain. ‘Communities’ of users may develop their own standards for judging and maintaining credibility, although this process can be fraught with disputes; but very often it is down to individual users to decide what and whom they should trust. In this respect, these media pose significant educational challenges: simply ‘wiring up’ schools or homes and assuming that the social good of information will flow through the screen is at best naïve and at worst positively dangerous. (For recent research on this broad issue, see Metzger and Flanagin, 2008).

3. Commercialism. Web 2.0 appears to be a domain in which ordinary users – rather than large commercial companies - are the authors and owners of content. However, key Web 2.0 sites (such as YouTube and MySpace) are owned by large global media corporations, and offer extensive opportunities for highly targeted advertising – which of course is why they are changing hands for billions of dollars. Furthermore, users of such sites are often required to provide significant amounts of personal information, which can be used by companies as a basis for further promotional activities, in what is termed ‘data-mining’. In other situations, commercial messages may be deeply embedded – in the form of branding or promotions – in content that outwardly appears to be a harmless form of play. Unlike television or print advertising, the commercial dimensions of these activities may be effectively invisible to children, and indeed to adults (see Montgomery, 2007).

4. Intellectual property. The potential of digital technology in terms of copying and circulating content has significant implications for the notion of copyright and intellectual property. This is most evidently the case with file-sharing, where copyright material is exchanged illegally by users, and in the rising incidence of academic plagiarism. However, it also applies to the way in which content can be ‘quoted’ or ‘cut and pasted’ into very different contexts from that in which it was originally presented. As the intellectual ownership of content is undermined, there is a danger that any ethical responsibility for the consequences of one’s communicative actions tends to be dissipated (most obviously in the case of slander or libel). In this respect, this situation does not only affect the profits of large corporations, but also the communication rights of individuals.

All these dimensions could be seen to present risks for young people. To a large extent, they are risks of the 'mundane' rather than the 'spectacular' variety (see Section 2) – although in some respects they may be more acute because they are relatively subtle, and because they are not necessarily recognised by adults (teachers, parents or caregivers). Here again, these risks can be seen as an inevitable corollary of the apparent freedom and flexibility that is afforded by new media. In this sense, the issue then becomes not so much one of preventing or neutralising these risks, but of enabling young people to deal with them on their own behalf. In the following pages, we consider the implications of these issues in relation to a series of specific areas.

Social Networking Services

Social networking sites such as MySpace, Facebook and Bebo are some of the most popular online destinations for young people today. These sites provide home pages on which the user can display their personal 'profile', including information such as their location, interests and tastes (for example in music, films or books) as well as photos or videos, music tracks and links to friends' pages. Home pages may also include facilities for chat, file sharing, blogging and discussion groups.

Such sites have many attractions and benefits for young people. These would include being able to meet people with the same interests and find 'like-minded' communities; the ability to discuss sensitive issues anonymously in potentially supportive environments; and the opportunities for self-expression which are not possible to the same degree in face-to-face situations (written, musical and visual expression, for example). These benefits stem partly from the anonymity and the global reach afforded by the internet. Anonymity is most obviously important in discussions concerning sensitive issues (sex and sexuality, for example). Such situations can also overcome the disadvantages of some face-to-face environments in which there are unequal power relationships (for example, times when children's knowledge or opinion may not be respected). The potential reach of social networks has been important to young artists as a way of developing an audience for their productions (for example, music, videos or animation); and this also aids young people who might otherwise be limited to face-to-face interactions in smaller communities or in communities in which they have a minority interest (a particular musical style or a political view, for example).

At the same time, many of the general concerns connected with children and young people's use of the internet discussed in Section 5 also emerge in reference to social networking. Anonymity brings risks as well as benefits, particularly around unwanted contact (bullying and 'stranger danger'). There is concern that online social networking is bringing bullying into the home outside of school hours, a different experience from face-to-face bullying which is more limited in terms of time and place. Some research has suggested that girls may

be particularly at risk of being bullied in this way (Noret and Rivers, 2006). Issues of trust are connected to bullying, particularly when trust is established on a false basis and then intentionally broken in order to cause emotional harm. Trust and anonymity are also key issues in relation to grooming practices in which older men portray themselves as younger for the purpose of seducing under-age girls. The extent to which sexual abuse is occurring through social networking services is questionable, however (boyd and Ellison, 2007; Cassell and Cramer, 2007): it is still the case that the vast majority of sexual abuse occurs in the home and between known contacts where the adult is clearly recognisable. The other concern discussed in the previous section which is relevant here is about greater access to 'hate speech' or other anti-social content (neo-Nazi or pro-anorexia groups, for example). The concern here is that young people are finding support for activities that they otherwise would not have found. Here again, however, it is unclear whether this means that behaviour and attitudes change when in contact with social networks, or whether people are simply sharing ideas with a wider community than was previously available to them.

As outlined in the introduction to this section, there are more subtle issues that relate to social networking to do with privacy and trust; and these are also tied in with the commercial component of social networking services. As evidenced by the recent high-profile sales of social networking sites, this is a highly commodified enterprise. eMarketer research estimates that revenue from social networking advertisements will amount to \$1.9 billion in total by 2010 (King, 2006), and marketers are seeing these advertisements as a key point of access to the pocket books of young people. Online marketing on social network sites includes data mining information on users' pages, and then 'hypo-targeting' individual users with personalized advertisements based on demographic and psychographic data. New 'social advertising' programs are capable of collating individual users' actions across a variety of websites, and can also access an individual's list of friends for advertising purposes. In addition to these developments, various companies have established their own pages on social networking sites in attempting to capture a young audience: these pages frequently offer incentives for users to engage with them or become a friend or fan. Finally, 'conversational advertising' aims at providing young people with branded materials which they use, share and discuss with friends (such as a humorous video clip).

Although we may question the proliferation of these more targeted forms of advertising, some research indicates that young people are adept at ignoring advertising, and only engaging with advertisements that are entertaining, relevant or have some value (Chester and Montgomery, 2007). Previous research on young people's understanding of television advertising shows that children can often display a considerable degree of cynicism about it – although this does not necessarily mean that it fails to influence them (Buckingham, 1993). However, the European Research into Consumer Affairs report (2001) suggests that children are confused by the blurring of advertising and content on websites;

while Seiter (2005) shows that young people who are very critical of mainstream advertising are much less likely even to be aware of such practices, or to view them as anything more than a 'fact of life'. Further research indicates that the commercial function of more traditional websites aimed at young people is not understood by users (Livingstone and Bober, 2003; Seiter, 2005). However, young people's understanding of new immersive or 'social' forms of advertising and of the commercial motives of social networking sites has not yet been researched.

One of the main concerns in relation to these new forms of marketing is to do with privacy. Many young people see marketing as an invasion of their privacy (Livingstone, 2007), and 95% of teens in the UK are concerned that their personal information is being passed on to advertisers and other websites (Davies, 2007). However, research is showing that when young people trust a social networking service, they are more willing to divulge personal information (Dwyer et al., 2007); and young people's public display of information is providing fraudsters with access to details which can result in identity theft (Davies, 2007; Gross and Acquisti, 2005). This research also suggests that people trust messages that appear to originate from friends in their social network - yet it is not difficult to pose as a friend and send a fraudulent message.

Although young people are aware of the risk of sharing personal information, they see social networking sites as private or peer-defined spaces (Acquisti and Gross, 2006; Barnes, 2006; and Stutzman, 2006). Research shows that online social networking is seen as part of youth culture: the point of having a page is to be part of a peer network, to define one's identity for a wider social group, to negotiate and manage public identity and to build a community of 'friends'. Young people see social networking sites as spaces for play, often submitting false information or jointly constructing a single page with a group of friends (Livingstone, 2007). Perhaps because social networking is an important part of many youth cultures, and traditionally youth cultures centre on practices that are separate both from younger children and from adults, it is possible that young people do not see these online practices as 'public'.

Although social networking pages can be marked as 'private' by the user, policies vary from site to site: some services withhold information marked private from marketers, while others, such as Facebook, sell such information 'for marketing purposes', even after a user has quit a service. Importantly, research is showing that companies' privacy policies are difficult to understand, and young people are in need of training in order to make the most of the facilities available to them on social networking sites (Davies, 2007; Livingstone, 2007). As they are currently used, the private/public settings do not completely meet the needs of young people socialising online. For example, in face-to-face settings young people maintain complex gradations of friendships in terms of intimacy which are not possible to replicate through social networking services (Livingstone, 2007); and privacy options are geared toward individual interactions which do not provide

users with the flexibility they need to handle conflicts within groups of friends (Preibusch et al., 2007).

Recent reports suggest that the information young people post online is sometimes used when they apply for jobs, internships, clubs or schools, as well as by organisations such as university police looking for 'misbehaviour'. Clearly there is a need here to develop young people's critical understanding of the public nature of social networking sites as well as the privacy settings available to them. Although media literacy will help in this regard, companies themselves can also take action: for example, it would be possible to make the most private setting the default, rather than the current policy of having the most public setting as the default; or to have opt-in policies for tracking programs, rather than the current opt-out policy. (In November 2007, less than a month after launching the marketing program Facebook Beacon, public pressure resulted in Facebook changing their opt-out policy to an opt-in.) Although users may find targeted marketing useful in getting to know new products, it could be argued that the onus should be on the individual to make their information available to marketers.

User-Generated Content

Beyond the more 'customised' facilities offered by social networking sites, there is a range of other participatory sites such as wikis, blogs and image-sharing sites, which are designed specifically for users to upload, share or view content. There are also more personal forms of user-generated content such as email and instant messaging, which are also discussed here. Many social networking sites involve creating content (for example, posting messages, images and music), and vice-versa, sites that are focused on user-generated content have the capacity to build social networks; and as such, there are clear connections between this section and the previous one. As with social networking sites, young people's desire to interact with media in social, personal and expressive ways is driving the popularity of user-generated content sites. There may even be some unsettling of traditional relationships between media producers and consumers here: we know of at least one school age student who is a senior editor with Wikipedia – an experience of participation in knowledge creation unthinkable in the era of the print encyclopedia

Although statistics vary, it is clear that young people are viewing and contributing to sites which include user-generated content, with a study from 2005 indicating that as many as 57 percent of online teenagers post their own content to such sites (Chester and Montgomery, 2007). Sharing and discussing media on user-generated content sites such as YouTube is one way in which young people are socialising, much in the same way other media are used in social relationships (for example, discussing popular television shows, movies or music). User-generated content sites are also seen to be offering young people spaces in which they can 'have a voice': the opportunity to create and distribute one's own

media is being hailed by some as providing the means to a more democratic media environment (Jenkins, 2006b). However, this can be overstated: one recent study shows that only 0.16 percent of users of YouTube actually contribute videos, while only 0.2 percent of visitors upload images to the photo sharing site Flickr - although Wikipedia presents rather more positive data, with 4.6 percent of users editing entries on the site (Auchard, 2007).

Even so, the ease of sharing media and the global reach of such networks is leading to the emergence of new participatory cultures online, which may have particular benefits for young people. Jenkins et al. (2007) assert that these participatory cultures build on traditional skills (literacy, research, critical analysis), but that specific new media literacies are also developing. Rather than being based simply on technological skills, this new media literacy involves 'a set of cultural competencies and social skills'. Jenkins et al. identify eleven new skills associated with online social environments, including appropriation, multitasking, collective intelligence, judgment, networking and negotiation. Importantly, however, educators also have a role to play here. Jenkins et al. outline three concerns in relation to participatory media cultures which point to a need for educational intervention: the participation gap (unequal access to skills and knowledge); the transparency problem (learning to view media critically); and the ethics challenge (consideration of emerging ethical issues). In relation to user-generated content, the ethics challenge and the transparency problem are key risks which are discussed in this section.

The ethics challenge discussed by Jenkins et al. (2007) includes questions about representation – that is, about how young people are presenting themselves, their peers and other materials for comment, for example in blogs or through photos and videos. There are also questions here about how young people understand the immediate or long-term impacts of such representations on other individuals or social groups. On a wider level, there are ethical questions concerning intellectual property and copyright. The Creative Commons movement recognises the benefit of allowing people to share and build on each other's ideas and work. However, it is not uncommon on user-generated sites for young people to draw or build on copyrighted material that does not operate under a Creative Commons license. Large companies are increasingly tracking the use of their content in spaces such as personal webpages, social networking sites or YouTube in seeking to identify and prosecute people for copyright infringements. Recently, the Entertainment Software Association called for the implementation of a piracy curriculum for children aged 5 to 11 (Caron, 2007). (These issues are considered further in the section below on file-sharing.)

Young people's involvement in this participatory culture offers a range of benefits in terms of learning: users are making judgments about content, building collective knowledge for the purposes of assessment, comparing and critiquing representations – all of which are helping to develop their skills in critical evaluation (Jenkins, 2006; Ito, in press; Gee, 2004). However, assessing the

credibility of online content remains a key concern, in relation both to information and to social interaction. Engaging in online communication entails making judgments about whether emails or instant messages are from people who can be trusted, about whether comments expressed on a blog or in response to user-generated content are valid, and about the authority and expertise of the participants.

Whereas in other media forms, credibility can be established by authority indicators (author identity and reputation), this is much more difficult on the internet: there are typically no standards that determine who is permitted to post, and information may be easily misrepresented. Research to date has investigated credibility in relation to websites which are considered mainly adult-centred (for example, news and health information). However, such issues of credibility are also increasingly arising in the social spheres in which young people interact: research has not investigated children's or young people's understanding of credibility in these more informal contexts, and there is concern that they may not have the experience necessary to identify unreliable sources or to know about aids such as ratings and recommender systems (Metzger and Flanagin, 2008).

Commercial interests also impinge on the credibility of user-generated content, with special email techniques being used by companies which capitalise on friendship networks (phishing and viral email), promotional blogs set up by companies which appear to be written by an individual with no commercial interest or connection, and content posted on chat sites, forums, image sharing sites or informational web pages for the purpose of promotion. As outlined above, online environments are seen as an important means of capturing the increasingly lucrative youth market. In terms of user-generated content, companies are supplying young people with more ways to interact with their brands, including branded instant messaging sites, contests for contributing video or music to advertisements, and branded content (for example, wallpaper, bots and buddy icons) for instant messaging, blogging or other personal webpages. Whether young people understand, resist, ignore or manipulate these commercial messages is an area for further research.

Online Communities and Online Worlds

The idea of the online or 'virtual' community is by now well established, and there is a significant body of literature relating to this phenomenon. Studies of text-based online communities such as forums, chatrooms and bulletin boards, where participants meet to discuss common interests, have explored both the positive and negative aspects of life within such settings.

A number of the concerns relating to teenage users of such sites overlap with those that have arisen around social networking. A key area of interest has been

the ways in which online communities may support dangerous, harmful or illegal activities. Aside from concerns relating to contact with paedophiles, other dangers have also been identified. Recent discussion of suicide pacts (or 'net suicide') between internet users who meet online has suggested that depressed adolescents may be particularly vulnerable (Naito, 2007). The suggestion that internet chatrooms and websites encourage anorexia and bulimia amongst teens has also been expressed (news-medical.net, 2006). Although other researchers have challenged this idea (Mulveen and Hepworth, 2006), the internet services company Yahoo! has appeared to endorse this position by taking down pro-anorexia groups for violating their terms of service (Reaves, 2001).

Despite such concerns, online communities have also been presented as contexts in which teens can receive valuable support and information. In contrast to reports in which the anonymity of online communication is blamed for enabling predators to take advantage of vulnerable teens, it can also be argued that anonymity is a positive feature of online environments, enabling participants to communicate openly in a way that they would not feel comfortable to do in the real world. For example, studies of health bulletin boards have suggested that online communities provide a platform for teens to discuss sensitive topics (Suzuki and Calzo, 2004) and can provide safe spaces for teens to explore their emerging sexuality, particularly in comparison to the potential difficulties they may face in doing so in real life (Subrahmanyam et al., 2004; Hillier and Harrison, 2007).

The emergence of two and three-dimensional avatar-based online worlds such as Second Life has reignited debates about the nature of online community and introduced a range of related and somewhat different issues to those mentioned above. In these environments, participants select, customise or create characters – or avatars – and may be able to furnish parts of the environment in which they interact. They may also purchase, create and sell items, in some sites exchanging virtual money – such as the 'Linden dollar', which is the currency of Linden Lab's online world Second Life (Keegan, 2007). Whilst Second Life is aimed at adults, there are several online environments targeted at children and teens, including Teen Second Life (for 13–17-year-olds), Habbo Hotel and Whyville!, a site which has 1.5 million registered users aged 8-16 (Kafai et al., 2007).

Media coverage of these environments includes descriptions of the virtual crime that takes place online (including the theft of virtual possessions: Keegan, 2007) and concerns about the content of such environments. One recent case, involving a virtual paedophile ring in Second Life, illustrates this concern. Journalists revealed a hidden virtual playground (named 'Wonderland') within Second Life in which avatars designed to look like children offered visitors sex (Skynews, 2007; SecondLifeInsider, 2007). Despite restrictions on membership stating that Second Life is intended to have an over-18 population, the Wonderland case raised concerns that activities within this online environment

might encourage harm against children in the real world. Linden Lab, who own Second Life, are currently introducing age verification measures for entrance to 'adult-related' areas (Nino, 2007); although there is clearly a difference between computer-generated images of children and photographs or video of real children. The relationship between fantasy and reality, and the issue of the legality of such activities within online worlds, remains complex and controversial.

A secondary area of concern relating to online worlds involves the commercial ties that are being established between the owners of these sites and companies that seek to target their members. These relationships have been encouraged by developments in viral and internet marketing techniques. Chester and Montgomery (2007: 52) have described the 'aggressive' way that the teen site Habbo Hotel promotes itself as a 'marketing venue', and how Whyville! 'is actively promoting itself as a vehicle for product placement' through sponsored educational activities (54). They suggest that such sites 'are increasingly being shaped by the imperatives of the marketplace, designed to serve as powerful vehicles for brand promotion and financial transactions' (53). The concern with data-mining that arises in relation to social networking is also an issue here, and researchers have explored this activity in the context of children's online worlds such as Neopets.com (Chung and Grimes, 2005; Seiter, 2005).

Online worlds have been presented in more positive terms in educational research. Work in this area has included studies of the 'informal' learning that goes on within such worlds (e.g. Sefton-Green and Willett, 2003): this extends earlier studies of teaching and learning within forums and bulletin boards. Educationalists have also been quick to start exploring the use of online environments for educational programmes and interventions. One example, Global Kids' 'Digital Media Initiative', which is supported by the MacArthur Foundation, has involved a number of educational initiatives including a 2006 'summer camp' for teens in Teen Second Life. The Global Kids website describes how, 'At the conclusion of the camp, the youth involved created an interactive maze to raise awareness about the issue of child sex trafficking around the world' (www.globalkids.org/?id=22). Many schools are now adopting virtual learning environments (VLEs) such as Moodle and Blackboard; while Teen Second Life is also being used experimentally for creative educational work with school students by the Open University (www.schome.ac.uk).

The importance of identity formation in avatar-based worlds has led other researchers to explore the use of these sites to address issues of diversity. Kafai, Cook and Fields' (2007a) study of racial diversity in the design of avatars and discussions on Whyville! presents such environments in a positive light. These authors suggest that sites like Whyville! provide an opportunity for educationalists to encourage conversations about race 'so that [teens] can learn about other views and explore who they are, both off line and on line' (Kafai et al. 2007a: 8).

Online Gaming

The internet presents children and teens with a range of online gaming entertainment. One increasingly popular phenomenon involves online multiplayer games which may be joined by paying monthly subscription fees. Like the online worlds described above, these involve avatars and immersive 2- or 3-dimensional worlds, but introduce set activities and teamwork. Participants begin by creating an avatar and then make their way through levels, increasing their avatar's strength and experience by successfully completing tasks and/or defeating enemies in combat. One key aspect of these games is the social nature of the gameplay offered, with participants joining forces in 'clans' and 'guilds'. Gameplay is often supplemented by chat, and teamwork and social interactions are a significant aspect of the gaming experience.

These games are often referred to as 'massively multiplayer' online games (MMOGs) or massively multiplayer online role-playing games (MMORPGs) - a development of earlier paper-and-pencil role-playing-games such as Dungeons and Dragons (Tobold, 2003). The most famous MMOG titles include the Sims Online, Ultima Online, Everquest and World of Warcraft: the latter had 9.3 million subscribers as of November 2007 (Sliwinski, 2007). A recent survey of over 30,000 MMORPG players suggested that 25% are under the age of 18; that an average player spends 22 hours a week in the environment; that the level of usage is not correlated with age; and that 80% of players regularly play MMORPGs with someone they know in real life (Yee, 2006).

The academic literature on online gaming explores a range of issues that have been raised in work on console and PC gaming (see Section 4). However, the social aspect of interacting in these game environments, and the repercussions of potentially endless forms of gaming entertainment, introduce new issues and concerns – concerns which have been voiced by the media in different ways. Thus, it has been suggested that the potentially open-ended, social and goal-driven nature of online gaming is more likely to lead to gaming addiction (Ahn and Randall, 2007; Becker, 2002). In 2005, the parents of a teenager who had killed himself sued the creators of World of Warcraft, blaming the game for their son's fate (MacKay, 2005; Wells, 2006). 'Gaming addiction' is receiving increasing attention: the Internet Addiction Recovery site contains a test to see whether you are an 'obsessive online gamer' (www.netaddiction.com) while researchers at the Charite University Medicin Berlin have suggested that game players share reactions with drug addicts (Wells, 2006). Counselling for game addiction in Korea – which has high levels of online gaming - has risen sharply over the past few years (ibid.). Such developments appear to tie into recent stories suggesting that the internet is increasingly leading teens towards gambling addictions (Villavicencio, 2005, Canadian Health Network, 2007). However, as we have noted, some researchers question whether the popular metaphor of 'addiction' is really applicable in this context (Widyanto and Griffiths, 2007).

Following cases of adult gamers apparently dying of heart attacks or exhaustion after excessive gameplay periods, the Chinese government has recently attempted to encourage gaming companies to install software which forces users to log off from games after a fixed period. After 2 hours of gameplay, players under the age of 18 are prompted to take a break and get some exercise, and failure to comply results in a significant reduction of the points earned (Associated Press, 2007). Although positive about the initiative, a spokesman from one of the companies involved has pointed out that there are problems with this system, relating primarily to the difficulty of ascertaining the identity of those logging on.

Meanwhile, as in other online environments, press coverage of online gaming also contains stories of teens meeting dangerous predators in MMORPGs – the arrest of an Australian woman for trying to kidnap a teenage boy whom she met on World of Warcraft being one example (abc.news, 2007). Online gaming is also an important venue for companies seeking to use these environments for marketing and branding purposes through ‘in-game advertising’ and ‘gamevertising’. Chester and Montgomery (2007: 51) have suggested that Massively Multiplayer Online Games ‘will increasingly become part of the advertisers’ arsenal to engage with a hard-to-reach youth demographic’.

As with the other media we have considered, these concerns about negative effects need to be offset by an understanding of the positive aspects of online gaming. Thus, some research has focused on the social and educational benefits of such games. Studies based on participant observation within MMORPGs have challenged the notion of games as an isolating and alienating activity, and focused on the intense sociability of these online environments (Taylor, 2006). Other researchers have analysed the learning that occurs amongst peers within online games such as Lineage (Steinkheuler, 2004) and World of Warcraft (Nardi and Harris, 2006; Nardi et al., 2007). As in the context of online worlds, educationalists have also sought to exploit the potential of online gaming in terms of learning (Crobit, 2005). Here too, the centrality of identity formation within MMORPGs has led to these environments being used in educational initiatives relating to diversity and race. The authors of a recent study of one such initiative have suggested that using such sites to explore identity construction and discrimination can help teens ‘develop a more sophisticated, less essentialist model of diversity’ (Lee and Hoadley, 2006: 383).

Peer-to-Peer Filesharing

File-sharing applications such as BitTorrent, Gnutella, BearShare and Limewire enable users to share files (including music, films and television programmes) without going through a third party. In contrast to user-generated content sites

such as YouTube and Flickr where files are accessed via a central website, file-sharing involves decentralised connections between users' home computers. Files are kept on users' personal computers and connections are established between the hard drives of those providing and receiving the files. Whilst video sharing is increasing, most of literature relating to this activity explores peer-to-peer file sharing in relation to music piracy. This focus stems from the first and most famous file-sharing site Napster, which was closed down in 2001 following a legal battle with record companies over copyright infringement for sharing audio MP3 music files (<http://iml.jou.ufl.edu/projects/Fall04/Davison/napster.html>) (the site now offers a legal 'pay-for' downloading service).

The growth of broadband internet over the past few years appears to have encouraged the practice of peer-to-peer file-sharing. This, in turn, has raised a range of concerns relating to data security and copyright infringement. The popularity of file-sharing amongst teens – a survey by the Pew Internet and American Life Project suggests 51% of US teens report downloading music compared to just 18% of adults (pewinternet.org, 2005) – has been a particular concern. Teens are obviously more likely to use such services because of a lack of disposable income, as well as the fact that legal music subscription services require credit cards (Macworld, 2005). Teens have been positioned as being both the most at risk from, and the primary perpetrators and benefactors of, this phenomenon.

The downloading of copyrighted material makes the user vulnerable to litigation by the copyright holder; although reports suggest that most children and young people are unaware of, or unconcerned by, this fact (Gray, 2003; BBC News, 2004). The repercussions of this has been illustrated by a number of recent lawsuits in the US and Europe. These include cases in which children, teenagers and parents – including those who have been unaware of their children's file-sharing activity - have been served with lawsuits (Gray, 2003; Bode, 2006; Wagner, 2006). These cases have led some groups to provide parents with information as to what they should do if they themselves receive a lawsuit (e.g. Aftab, n.d.; www.subpoenadefense.org). It has also been suggested that file-sharing influences other behaviour – with a recent survey of music consumers suggesting that file-sharers are more likely to cheat and steal in the real world (Hoffman, 2005: although it should be noted that this research was commissioned by the Canadian Recording Industry Association).

Aside from the possibility of lawsuits, there are two other main concerns relating to young people's file-sharing activity. The first relates to issues of privacy, and specifically concerns over computer security, data protection and identity theft. In contrast to debates about social networking, where the primary concern relates to participants openly providing information without realising the consequences of this, file-sharing involves the danger of accidentally making information accessible by providing unknown others with access to the hard drives of shared folders on home computers. There are stories of identity theft that have attributed

this to the use of peer-to-peer services by children (Thompson, 2006). In addition, there is the related danger of accidentally downloading computer viruses, with research funded by McAfee Inc. suggesting that that 'Europe's teenagers are prepared to risk their home PC security for free content' (itbsecurity, 2006) – although it should be noted that McAfee are leading manufacturers of PC security software. More broadly, concerns about the trust and credibility of data sources has led to discussion of the potential use of reputation systems in file-sharing networks (Gupta et al., 2003).

The second issue here relates to the content of files shared in this way – and, in particular, intentional and accidental contact with pornographic material. Survey research has suggested that file-sharing activity is closely linked to unwanted exposure to such material (Wolak et al., 2007; House of Representatives, 2001). Stories of pornographic material being disguised as child-friendly files also circulate (local6.com, 2006). Such concerns are fuelled by the fact that many filters and parental control programs do not prevent access to peer-to-peer sharing (Ropelato, n.d.; House of Representatives, 2001)

Much of the research funded by the entertainment industry and computer security companies tends to emphasise the negative aspects of file-sharing. Yet to some extent peer-to-peer file sharing can be seen as a model of exchange and distribution that reflects early libertarian aspirations about the internet – the notion that this medium would help to break down the power of global corporations and enable collaboration and the free exchange of information (Lessig, 2004). Researchers have explored various positive aspects of peer-to-peer file-sharing, including the cooperation activities (and non-cooperation activities) involved in file-sharing (Kwok and Yang, 2004), and how young people see it as a means of developing skills that are important to their culture (Livingstone and Bober, 2003). Some research suggests that file-sharing gives media fans the ability to resist the power of global media corporations (Hu, 2005). It has also been suggested that the peer-to-peer model has implications for educators. As in the case of social networking and online social worlds, several higher education institutions in particular are experimenting with the potential of file-sharing networks for supporting student work. Over the longer term, this may be part of a broader rethinking of the notion of plagiarism: Devoss and Porter (2006), for example, argue that 'digital filesharing forms the basis for an emergent ethic of digital delivery, an ethic that should lead composition teachers to rethink pedagogical approaches and to revise plagiarism policies to recognize the value of filesharing and to acknowledge Fair Use as an ethic for digital composition' (Devoss and Porter, 2006).

Conclusion

This section has sought to identify some of the potential risks and benefits of new and emerging forms of online communication. While some of the risks are clearly

familiar from studies of previous cultural forms, others are distinctly new. Likewise, some of the positive aspects of these phenomena are only just beginning to appear. In this ever-changing environment, it is important to be aware that the consequences of technological developments are by no means guaranteed: technologies may embody certain constraints and possibilities (or 'affordances'), but which of these proves to be significant depends to a great extent on how the technologies are used. Here again, it is important to recognise that the potentially negative effects of these media may well be inextricable from the positive ones; and that the most significant or pervasive risks may be the ones that are less than immediately obvious.

Section 7

The Role of Media Literacy

The Byron Review will be assessing a range of potential measures that might be taken to ensure children's safe and productive use of the internet and computer games. These may include regulatory strategies and interventions of various kinds. These possibilities will be carefully evaluated in the light of growing international experience in the field. This final section of the report considers one such strategy, namely the promotion of media literacy. This issue has been addressed extensively in our earlier review for Ofcom (Buckingham et al., 2005), so this section will provide a brief overview of the rationale for this approach, and some of the questions that it raises.

Both in the UK and internationally, media literacy has become an increasingly significant dimension of cultural policy. According to the former Culture Secretary Tessa Jowell, media literacy is an essential component of contemporary citizenship, that will eventually become 'as important a skill as maths or science' (Jowell, 2004). Ofcom has a statutory responsibility under the 2003 Communications Act to promote media literacy, through supporting research, educational and networking activities. The BBC, Channel 4, the Film Council, Skillset and the British Film Institute are leading a Media Literacy Task Force that has produced a Media Literacy Charter, which currently has more than 120 institutional signatories. Meanwhile, the European Commission has established a Media Literacy Expert Group, and will shortly be issuing an official 'Communication' on the theme (European Commission, 2007); and UNESCO has launched a new policy statement on media literacy following a high-profile meeting in Paris in 2007.

This growing interest in media literacy reflects a new emphasis in regulatory policy. While it is by no means incompatible with content regulation or with government intervention more broadly, the focus here is on empowering consumers to make informed choices and judgments about media on their own behalf. This is a broadly educational strategy, which includes work in schools as well as in the home and in other informal settings. Media literacy is generally conceived as a partnership between government, the media industries, teachers, parents and children themselves.

Ofcom defines media literacy as 'the ability to access, understand and create communications in a variety of contexts'. Media literacy is partly about being able to locate and use media; but it is also about critical understanding, evaluation and judgment, and about creating media for the purpose of communication and self-expression. Promoting media literacy is therefore about addressing basic inequalities in people's access to media – not only the so-called digital divide, but also divides in relation to other media as well. Ultimately, however, these divides are not simply about access to equipment: they are also about cultural capital -

about the skills and understanding that people need in order to use and interpret what they see and hear, and to create their own communications.

Beyond extending access, a basic first step in media literacy is informing consumers. In the case of the concerns of this review, this points to the crucial role of content labelling. Much of the democratic potential of the modern media derives from the fact that 'gatekeepers' or intermediaries (such as editors or broadcasters) no longer have such powerful control; yet it is also from this that much of the risk and potential for harm derives. In this new environment, there is an increasingly important role for labelling and classification systems that inform parents and children about what they are likely to encounter. This should be seen not only in negative terms – as a matter of warnings or guidance – but also more positively, as a matter of alerting people to content that they might find particularly valuable. The contemporary proliferation of media has generated new risks, but it has also led to the production of a great deal of positive material that could never have been created or distributed before – some of it made by children themselves. One of the key challenges that parents and children face is simply finding out what is available, and knowing where to locate it.

There is a long tradition of media education in UK schools, although it has remained fairly marginal to the mainstream curriculum, particularly in primary schools. Paradoxically, media literacy has not been a significant element of the National Literacy Strategy; and the National Curriculum for Information and Communication Technology currently focuses primarily on technical skills rather than on the evaluation of digital content. By contrast, media educators have a well-established conceptual framework, and a developed set of classroom strategies, that are increasingly being extended to digital media such as computer games and the internet (Buckingham, 2003, 2007; Burn and Durran, 2007). Media education involves understanding the processes by which media are produced; analysing the verbal and visual 'languages' they use to create meaning; making judgments about how media represent the world; and understanding how audiences are targeted, and how they respond. These approaches generally involve both critical study and creative production of media. As digital media have become more and more accessible and easy to use, teachers have found that children can develop critical understanding in a more engaging, hands-on way by making media themselves. While there is a considerable body of professional 'know how' among specialist teachers in this field, there remains a need for in-depth evaluation of the effectiveness of media education, and for a more systematic approach across the age range.

In relation to new media, there have been several educational initiatives addressing aspects of online risk. There is now a plethora of websites and educational resources in the field, produced by a wide range of voluntary sector and industry bodies, as well as by government agencies. Evidence of the effectiveness of these initiatives is rather limited, and somewhat mixed: much depends on the training of teachers, and on the involvement of parents. Some

research suggests that a greater awareness of risk does not necessarily lead children to adopt less risky behaviour; and this in turn points to the need for approaches that connect more effectively with children's everyday experiences of these media (O'Connell, 2002). In the light of contemporary developments of the kind discussed in Section 6 of this report, such strategies also need to adopt a broader approach: children need to be aware of 'stranger danger', but they also need to understand the commercial strategies that are being used online, and develop skills in critically evaluating online content. Here again, the experience on such issues could usefully be drawn together and evaluated at this stage, and more coherent strategies devised.

However, as we suggested in Section 6, new media pose much wider challenges for educators (see Buckingham, 2007; Jenkins et al., 2007). In addition to addressing inequalities in access to technology, and in the competencies that are required to use it, educators also need to be exploring some of the new ethical issues posed by new media, and the ways in which online content needs to be assessed and evaluated. In this respect, they will need to look beyond narrow conceptualisations of 'digital literacy' that see it simply in terms of safety or technical skill, and to address much broader questions about how these media are produced, circulated and consumed. Such an approach would need to address issues of trust and credibility, but it would also need to analyse the social, political and economic dimensions of technology. Furthermore, it should be emphasised that media literacy is not simply concerned with 'information', but also with media as art forms with intrinsic and lasting value (Burn and Durran, 2007). Many computer games and online worlds offer rich and complex symbolic environments; and the experience of play is often very emotionally intense. Likewise, some forms of online communication, and the creation of 'user-generated content', can involve profound issues of identity, self-representation and personal investment. Media literacy also involves reflecting on these cultural experiences and the pleasures that they entail: here again, addressing the risks that may be at stake in young people's use of media must involve an understanding of the reasons why they often deliberately choose to take them.

Parents can clearly play a key role in developing media literacy. However, we should be wary of assuming that parents necessarily possess such skills and knowledge themselves, particularly when it comes to new media: media literacy is an issue for adults too, as Ofcom's report on this issue makes clear (Livingstone et al., 2005). Regulatory devices such as filters or age verification systems, or legislative constraints such as those introduced in the US under the Children's Online Protection and Privacy Act (see Montgomery, 2007), are unlikely to be effective if parents are unable to operate the technology or are unaware of what their children might be doing online. Research suggests that parental monitoring and involvement can make a difference to children's awareness of issues such as online safety (e.g. Cho and Cheon, 2005), but this needs to be handled sensitively, in a way that respects young people's right to privacy and does not place an undue burden on parents themselves. Simply

sharing and discussing experiences of game-playing and online participation can be a valuable starting point. Here too, there is a need to develop constructive approaches that are positively 'child centred', and in tune with the realities of everyday family life; and the basis for this should be dialogue with parents and children themselves.

Finally, it is important to emphasise that media literacy is not an alternative to regulation, as is sometimes implied. People (adults or children) who are more media literate are not necessarily immune to harm, or to media influence more broadly. The primary aim of media literacy education is not to reduce the influence of the media, any more than the aim of literacy education is to reduce the influence of books. Rather, it seeks to enable children to make informed decisions on their own behalf, and thereby to make the most of the opportunities that the media can provide.

REFERENCES

- Abc.news (2007) Adelaide Woman 'lured World of Warcraft teen'
<http://www.abc.new.au/news/stories/2007/07/02/1967287.htm> last accessed 3 December 2007
- Acquisti, A., and Gross, R. (2006). 'Imagined communities: Awareness, information sharing, and privacy on the Facebook', pp. 36-58 in P. Golle and G. Danezis (Eds.), Proceedings of 6th Workshop on Privacy Enhancing Technologies Cambridge, UK: Robinson College
- Aftab, Parry (n.d.) 'Talking to your children about downloading music – A parents guide', www.wiredsafety.org
- Ahn, J. and Randall, G. (2007) Computer Game Addiction
<http://andrewd.ces.clemson.edu/courses/cpsc414/spring07/chp/team3.pdf> last accessed 1 December 2007
- Anderson, C. (2004) 'An update on the effects of playing violent video games', Journal of Adolescence 27: 113-122
- Arnett, J. (1994) 'Sensation seeking: a new conceptualisation and a new scale', Personality and Individual Differences 16(2): 289-296
- Associated Press (2007) 'China Cracks Down on Teens Playing Video Games' 18 July 2007, www.foxnews.com/printer_friendly_story/0,3566,289681,00.html last accessed 29 November 2007
- Auchard, E. (2007) 'Participation on Web 2.0 sites remains weak', Reuters, 17 April 2007.
<http://www.reuters.com/article/internetNews/idUSN1743638820070418> accessed 3 December 2007
- Barker, M. (1984a) A Haunt of Fears London, Verso
- Barker, M. (ed.) (1984b) The Video Nasties London, Pluto
- Barker, M. (2001) 'The Newson Report: a case study in "common sense"', pp. 27-46 in M. Barker and J. Petley (eds.) III Effects: The Media Violence Debate 2nd edition, London: Routledge
- Barnes, S. (2006) 'A privacy paradox: Social networking in the United States' First Monday, 11 (9), retrieved September 8, 2007 from http://www.firstmonday.org/issues/issue11_9/barnes/index.html

- BBC News (2004) 'Downloaders 'unfazed' by lawsuits', 24 May 2004, <http://news.bbc.co.uk/1/hi/entertainment/music/3743065.stm> last accessed 2 December 2007
- Becker, D. (2002) 'When games stop being fun', www.news.com/2102-1040_3-881673.html?tag=st.util.print last accessed 3 December 2007
- Bensley, L. and van Eenwyk, J. (2001) 'Video games and real-life aggression: review of the literature', Journal of Adolescent Health 29(4): 244-257
- Bentivegna, S. (2002) 'Politics and new media', pp. 50-61 in Lievrouw, L. and Livingstone, S. (eds.) The Handbook of New Media London: Sage
- Berson, I. and Berson, M. (2003) 'Digital literacy for effective citizenship', Social Education 67: 164-167
- Berson, I., Berson, M. and Ferron, J. (2002) 'Emerging risks of violence in the digital age', Journal of School Violence 1(2): 51-71
- Bevort, E. and Breda, I. (2001) Internet et les Jeunes Paris: CLEMI
- Bode, Jarl (2006) 'RIAA Drops Case it Can't Make Against Mom After Bleeding Her Dry – Focuses on Suing Kids', Tuesday 19 December 2006 <https://www.techdirt.com/articles/20061219/121441.shtml>
- boyd, d. m., & Ellison, N. B. (2007) 'Social network sites: Definition, history, and scholarship' Journal of Computer-Mediated Communication, 13(1), article 11. <http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html>
- Boyle, G. (2000) 'The pornography debates: beyond cause and effect', Women's Studies International Forum 23(2): 187-195
- Boyle, R. and Hibberd, M. (2005) Review of Research on the Impact of Violent Computer Games on Young People Stirling: Stirling Media Research Institute
- Bragg, S. and Buckingham, D. (2002) Young People and Sexual Content on Television: A Review of the Research London: Broadcasting Standards Commission
- Buckingham, D. (1993) Children Talking Television: The Making of Television Literacy London: Falmer.
- Buckingham, D. (1996) Moving Images: Understanding Children's Emotional Responses to Television Manchester: Manchester University Press

Buckingham, D. (2000) After the Death of Childhood: Growing Up in the Age of Electronic Media Cambridge: Polity

Buckingham, D. (2006) 'Is there a digital generation?', in D. Buckingham and R. Willett (eds.) Digital Generations: Children, Young People and New Media Mahwah, NJ: Erlbaum

Buckingham, D. (2003) Media Education: Literacy, Learning and Contemporary Culture Cambridge: Polity

Buckingham, D. (2007) Beyond Technology: Children's Learning in the Age of Digital Culture Cambridge: Polity

Buckingham, D. with Banaji, S., Burn, A., Carr, D., Cranmer, S. and Willett, R. (2005) The Media Literacy of Children and Young People: A Review of the Academic Research London: Ofcom

Buckingham, D. and Bragg, S. (2004) Young People, Sex and the Media: The Facts of Life? London: Palgrave Macmillan

Buckingham, D. and Burn, A. (2007) 'Game literacy in theory and practice', Journal of Educational Multimedia and Hypermedia 16(3): 323-349

Buckingham, D. and Willett, R. (eds.) (2006) Digital Generations: Children, Young People and New Media Mahwah, NJ: Erlbaum

Burn, A and Cranmer, S (2007) 'A Glass Half Full? Schools and Young People's Internet Use in the UK', in Tufte, B and Ekstrom, K (Eds.) Children, Media and Consumption Goteborg, Sweden: UNESCO International Clearinghouse on Children, Youth and Media

Burn, A and Durran, J (2007) Media Literacy in Schools: Practice, Production, Progression London: Paul Chapman

Burn, A. and Schott, G. (2004) 'Heavy hero or digital dummy? Multimodal player-avatar relations in Final Fantasy 7', Visual Communication 3(2): 213-233

Burn, A. and Willett, R. (2004) "'What exactly is a paedophile?' Children talking about Internet risk', in Bachmair, B., Diepold, P and de Witt, C. (eds.) Jahrbuch Medienpädagogik 5 im Auftrag der Kommission Medienpädagogik in der Deutschen Gesellschaft für Erziehungswissenschaft. Opladen: VS Verlag für Sozialwissenschaften

Canadian Public Health Association (2007) 'Online gambling: Is Addiction One Click Away' <http://www.canadian-health->

network.ca/servlet/ContentServer?cid=1182713494185&pagename=CHN=RCS%2FCHNRResource last accessed 2 December 2007.

Caron, F. (2007) 'ESA targeting children with anti-piracy curriculum' <http://arstechnica.com/journals/thumbs.ars/2007/10/03/esa-targeting-children-for-anti-piracy-curriculum> accessed 3 December 2007

Cassell, J. and Cramer, M. (2008) 'High Tech or High Risk: Moral Panics about Girls Online', in T. McPherson (ed.) Innovative Uses and Unexpected Outcomes MacArthur Foundation Series on Digital Media and Learning

Center for the Digital Future (2007) Surveying the Digital Future University of Southern California, Centre for the Digital Future www.digitalcenter.org

Chaudhry, L. (2000) 'Hate sites bad recruitment tools', Wired <http://www.wired.com/culture/lifestyle/news/2000/05/36478>

Chester, J. and Montgomery, K. (2007) Interactive Food and Beverage Marketing: Targeting Children and Youth in the Digital Age Berkeley Media Studies Group <http://digitalads.org/documents/digiMarketingFull.pdf> last accessed 3 December 2007

Cho, C-H. and Cheon, H. (2005) 'Children's Exposure to Negative Internet Content: Effects of Family Context', Journal of Broadcasting and Electronic Media 49(4): 488-509

Chung, G. and Grimes, S. (2005) 'Data Mining the Kids: Surveillance and Market Research Strategies in Children's Online Games' Canadian Journal of Communication, 30(4) <http://cjc-online.ca/viewarticle.php?id=984&layout=html> last accessed 2 December 2007

Cohen, S. (2002) Folk Devils and Moral Panics: The Creation of the Mods and Rockers 3rd edition, London: Routledge

Cragg, A., Taylor, C. and Toombs, B. (2007) Video Games: Research to Improve the Understanding of What Players Enjoy About Video Games, and to Explain Their Preferences for Particular Games London: British Board of Film Classification

Cumberbatch, G. (2004) Video Violence: Villain or Victim? A Review of the Research Evidence Concerning Media Violence and its Effects in the Real World with Particular Reference to Video Games London: Video Standards Council

Davies, G. (2007) Data Protection Topline Report http://www.ico.gov.uk/upload/documents/library/data_protection/detailed_specialist_guides/research_results_topline_report.pdf

- Davies, M.M. (2007) The Future of Children's Television Programming: Academic Literature Review London: Ofcom
- Devoss, D. and Porter, J. (2006) 'Why Napster Matters to Writing: Filesharing as a new Ethic of Digital Delivery'. Computers and Composition, 23(2): 178-210.
- Dombrowski, S., Gischlar, K. and Durst, T. (2007) 'Safeguarding young people from cyber pornography and cyber sexual predation: a major dilemma of the internet', Child Abuse Review 16: 153-170
- Donnerstein, E., Linz, D. and Penrod, S. (1987) The Question of Pornography Glencoe: Free Press
- Dovey, J. and Kennedy, H. (2006) Games Cultures: Computer Games As New Media Buckingham: Open University Press
- Durkin, K. and Barber, B. (2002) 'Not so doomed: computer game play and positive adolescent development' Applied Developmental Psychology 23: 373-392
- Dwyer, C., Hiltz, S. R., & Passerini, K. (2007) Trust and privacy concern within social networking sites: A comparison of Facebook and MySpace. Proceedings of AMCIS 2007, Keystone, CO. Retrieved September 21, 2007 from <http://csis.pace.edu/~dwyer/research/DwyerAMCIS2007.pdf>
- ECPAT (2005) Violence Against Children in Cyberspace Bangkok: ECPAT
- Egenfeldt-Nielsen, S. and Smith, J.H. (2004) Playing with Fire: How do Computer Games Affect the Player? Goteborg: UNESCO Clearinghouse for Children and Violence on the Screen
- European Commission (2007) Information Society, Media and Communications: Linking European Policies Brussels: EC
- European Research into Consumer Affairs (2001) Commercial practices targeting children on the Internet <http://www.net-consumers.org>
- Fabos, B. (2004) Wrong Turn on the Information Superhighway: Education and the Commercialization of the Internet New York: Teachers College Press
- Facer, K., Furlong, J., Furlong, R. and Sutherland, R. (2003) Screenplay: Children and Computing in the Home London: Routledge

Ferguson, C. (2007) 'Evidence for publication bias in video game violence effects literature: a meta-analytic review', Aggression and Violent Behavior 12(4): 470-482

Frechette, J. (2006) 'Cyber-censorship or cyber-literacy? Envisioning cyber-learning through media education', pp. 149-171 in D. Buckingham and R. Willett (eds.) Digital Generations: Children, Young People and New Media Mahwah, NJ: Lawrence Erlbaum

Freedman, J. (2002) Media Violence and its Effect on Aggression: Assessing the Scientific Evidence Toronto: University of Toronto Press

Gauntlett, D. (1998) 'Ten things wrong with the "effects model"', in R. Dickinson, R. Harindranath and O. Linné (eds.), Approaches to Audiences – A Reader London: Edward Arnold

Gee, J.P. (2003) What Video Games Have To Teach Us About Learning and Literacy Basingstoke, Hants: Palgrave Macmillan

Gee, J. (2004) Situated language and learning: a critique of traditional schooling London: Routledge.

Goldstein, J. (2001) Does Playing Violent Video Games Cause Aggressive Behavior? Paper presented at 'Playing by the Rules' conference, Cultural Policy Center, University of Chicago

Goodson, I., Knobel, M., Lankshear, C. and Mangan, J.M. (2002) Cyber Spaces/Social Spaces: Culture Clash in Computerized Classrooms Basingstoke: Palgrave Macmillan

Gray, K. (2003) 'Music-downloading lawsuits don't faze many teens' USA Today, 10th March 2003, http://www.usatoday.com/tech/news/2003-10-06-teens-and-downloading_x.htm last accessed 4 December 2007

Griffiths, M. (1999) 'Violent video games and aggression: a review of the literature', Aggression and Violent Behavior 4(2): 203-212

Griffiths, M. (2000) 'Does Internet and Computer "Addiction" Exist? Some Case Study Evidence' CyberPsychology and Behavior 3(2): 211-218

Griffiths, M. (2007) 'Videogame addiction: fact or fiction?', pp. 85-103 in T. Willoughby and E. Wood (eds.) Children's Learning in a Digital World Oxford: Blackwell

Gross, R., and Acquisti, A. (2005) Information revelation and privacy in online social networks pp. 71-80 in Proceedings of WPES'05 Alexandria, VA: ACM.

- Grossman, D. and deGaetano, G. (1999) Stop Teaching Our Kids to Kill New York: Crown
- Gunter, B. (1998) The Effects of Video Games on Children: The Myth Unmasked Sheffield: Sheffield Academic Press
- Gupta, M., Judge, P. and Ammar, M. (2003) 'A reputation system for peer-to-peer networks' International Workshop on Network and Operating Support for Digital Audio and Video Archive
- Herring, S. (2008) 'Questioning The Generational Divide: Technological Exoticism and Adult Construction of Online Youth Identity' in Buckingham, D. (ed.) Youth, Identity and Digital Media Cambridge, MA: MIT Press
- Higonnet, A. (1998) Pictures of Innocence: The History and Crisis of Ideal Childhood London: Thames and Hudson
- Hillier, L. and Harrison, L. (2007) 'Building Realities Less Limited than their Own: Young People Plasticising Same-Sex Attraction on the Internet' Sexualities, 10(1): 82-100
- Hoffman, A. (2005) 'Study finds file sharers more prone to thievery' ReportonBusiness.com
<http://www.theglobeandmail.com/servlet/ArticleNews/TPStory/LAC/20050930/RCRIA30/TPBusiness/Canadian> last accessed 1 December 2007
- Holloway, S. and Valentine, G. (2003) Cyberkids: Children in the Information Age London: Routledge
- Hope, A. (2005) 'Panopticism, play and the resistance of surveillance; case studies of the observation of students' Internet use in UK schools', British Journal of Sociology of Education 26(3): 359-373
- House of Representatives (2001) Minority Staff Special Investigations Division report Children's Access to Pornography Through Internet File-Sharing Programs prepared for Rep. Henry A. Waxman and Rep. Steve Largent.
http://oversight.house.gov/Documents/20040817153928_98690.pdf last accessed 1 December 2007
- Howard, R. (2007) 'Understanding "internet plagiarism"', Computers and Composition 24(1): 3-15
- Hu, K. (2005) 'The Power of Circulation: Digital Technologies and the Online Chinese Fans of Japanese TV Dramas' Inter-Asia Cultural Studies, 6(2): 171-186.

- Itbsecurity.com (2007) 'Teenagers Risk PC Security for Free Downloads' <http://www.itbsecurity.com/pr/8750> last accessed 21 November 2007.
- Ito, M. (in press) 'Mobilizing the Imagination in Everyday Play: The Case of Japanese Media Mixes', in Drotner, K., and Livingstone, S. (eds.) The International Handbook of Children, Media and Culture London: Sage
- Itzin, C. (ed.) (1992) Pornography: Woman, Violence and Civil Liberties Oxford: Oxford University Press
- Jenkins, H. (2006a) Fans, Bloggers and Gamers: Essays on Participatory Culture New York: New York University Press
- Jenkins, H. (2006b) Convergence Culture New York: New York University Press
- Jenkins, H. with Clinton, K., Purushotma, R., Robison, A. J., and Weigel, M. (2007) Confronting the Challenges of Participatory Culture: Media Education for the 21st Century. The MacArthur Foundation. http://www.digitalllearning.macfound.org/atf/cf/%7B7E45C7E0-A3E0-4B89-AC9C-E807E1B0AE4E%7D/JENKINS_WHITE_PAPER.PDF accessed 27 November 2007
- Jenkins, P. (1992) Intimate Enemies: Moral Panics in Contemporary Great Britain New York, Aldine de Gruyter
- Jessen, C. (1999) Children's Computer Culture: Three Essays on Children and Computers Odense, Denmark: Odense University
- Jones, G. (2001) Killing Monsters: Our Children's Need for Fantasy, Heroism and Make-Believe Violence New York: Basic Books
- Jowell, T. (2004) UK Film Council Press Release, January
- Jowett, G., Jarvie, I. and Fuller, K. (1996) Children and the Movies: Media Influence and the Payne Fund Controversy Cambridge: Cambridge University Press
- Kafai, Y.B., Cook, M. and Fields, D. (2007a) "'Blacks Deserve Bodies Too!'" Design and Discussion about Diversity and Race in a Teen Virtual World', Situated Play, Proceedings of DiGRA 2007 Conference, http://www.gseis.ucla.edu/faculty/kafai/paper/whyville_pdfs/DIGRA07_race.pdf last accessed 1 December 2007.
- Kafai, Y.B, Cook, M. and Fields, D. (2007b) 'Your Second Selves: Avatar Designs and Identity Play in a Teen Virtual World', Situated Play, Proceedings of

DiGRA 2007 Conference,
http://www.gseis.ucla.edu/faculty/kafai/paper/whyville_pdfs/DIGRA07_avatar.pdf
last accessed 1 December 2007.

Kassis, W. (2007) ‚Unbeherrschte oder Zügellose? Eine aristotelische Klassifikation und ihre Koppelung mit Fritz’ These der Gewalttrahmungskompetenz bei extensiven Nutzern gewaltorientierter Computerspiele’ Zeitschrift für Pädagogik 53 (2): 223-242

Keegan, V. (2007) ‚3D or not 3D – that is the question’, 5 April
www.guardian.co.uk/technology/2007/apr/05/media.comment/print last accessed 1 December 2007

King, R. (2006) ‚Marketing to Kids Where They Live’, Business Week 11 September
http://www.businessweek.com/technology/content/sep2006/tc20060908_974400.htm (accessed 3 December 2007)

Kirriemuir, J. and McFarlane, A. (2004) Literature Review in Games and Learning Bristol: NESTA Futurelab

Kirsh, S. (2003) ‚The effects of violent video games on adolescents: the overlooked influence of development’, Aggression and Violent Behavior 8: 377-389

Kwok, S.H. and Yang, C.C. (2004) ‚Searching the peer-to-peer networks: The Community and their queries’, Journal of the American Society for Information Science and Technology, 55(9): 783-793.

Lawson, T. and Comber, C. (2000) ‚Censorship, the Internet and schools: a new moral panic?’ The Curriculum Journal 11(2): 273-285

Lee, E. and Leets, L. (2002) ‚Persuasive Storytelling by Hate Groups Online: Examining Its Effects on Adolescents’, American Behavioral Scientist 45(6): 927-957

Lee, J. and Hoadley, C.M. (2006) ‚“Ugly in a World Where You Can Choose to Be Beautiful”: Teaching and Learning about Diversity via virtual Worlds’, in Barab, S. and Hay, K. (eds.) Making a Difference: Proceedings of the 7th International Conference on Learning Sciences International Society of the Learning Sciences.

Lee, N. (2001) Childhood and Society: Growing Up in an Age of Uncertainty Buckingham: Open University Press

Lenhart, A., Rainie, L. and Lewis, O. (2001) Teenage Life Online Washington DC: Pew Internet & American Life Project

Lessig, L. (2004) Free Culture: The Nature and Future of Creativity London: Penguin

Lightfoot, C. (1997) The Culture of Adolescent Risk-Taking London: Guilford Press

Livingstone, S. (2002) Young People and New Media London: Sage

Livingstone, S. (2003) 'Children's use of the internet: reflections on the emerging research agenda', New Media and Society 5(2): 147-166

Livingstone, S. (2007) Taking risky opportunities in youthful content creation: teenagers' use of social networking sites for intimacy, privacy and self-expression. Paper presented at Poke 1.0 - a Facebook social research symposium. London Knowledge Lab, University of London, UK. 15th November

Livingstone, S. and Bober, M. (2003) UK Children Go Online: Listening to Young People's Experience LSE: LSE Research Online, <http://eprints.lse.ac.uk/archive/0000388>, last accessed 1 December 2007

Livingstone, S. and Bober, M. (2005) UK Children Go Online: Final report of Key Project Findings London: London School of Economics

Livingstone, S. and Helsper, E. (2006) 'Does advertising literacy mediate the effects of advertising on children? A critical examination of two linked research literatures in relation to obesity and food choice', Journal of Communication 56: 560-584

Livingstone, S. and Helsper, E. (2007) 'Taking risks when communicating on the internet: the role of offline social-psychological factors in young people's vulnerability to online risks', Information, Communication and Society 10(5): 619-644

Livingstone, S., van Couvering, E. and Thumim, N. (2005) Adult Media Literacy: A Review of the Research Literature London: Ofcom

Local6.com (2006) 'Parent warns of internet porn disguised as movies for children', posted 22 August 2006, <http://www.local6.com/problemsolvers/9714328/detail.html>

MacKay, M. (2005) 'World of Warcraft: Could it be Killing Our Teens?' <http://searchwarp.com/swa26182.htm> last accessed 1 December 2007.

Macworld Staff (2004) 'Money-Troubled Teens turn to P2P'
<http://www.macworld.co.uk/news/index.cfm?NewsID=10329&Page=1&pagePos=8>, last accessed 1 December 2007.

Mediappro (2007) Mediappro: the appropriation of media by youth, Final Report,
www.mediappro.org

Metzger, M. and Flanagin, A. (eds.) (2008) Digital Media, Youth, and Credibility
Cambridge, MA: MIT Press

Millwood Hargrave, A. and Livingstone, S. (2006) Harm and Offence in Media Content: A Review of the Evidence Bristol: Intellect

Millwood Hargrave, A. and Livingstone, S. (2007) Harm and Offence in Media Content: Updating the 2005 Review London: Ofcom

Mitchell, A. and Savill-Smith, C. (2004) The Use of Computer and Video Games for Learning: A Review of the Literature London: Learning and Skills Development Agency

Mitchell, K., Finkelhor, D. and Wolak, J. (2003) 'The Exposure Of Youth To Unwanted Sexual Material On The Internet', Youth and Society 34(3): 330-358

Montgomery, K. (2007) Generation Digital: Politics, Commerce and Childhood in the Age of the Internet Cambridge, MA: MIT Press

Morrison, D. with MacGregor, B., Svennevig, M. and Firmstone, J. (1999) Defining Violence: The Search for Understanding Luton: University of Luton Press

Mulveen, R. and Hepworth, J. (2006) 'An Interpretative Phenomenological Analysis of Participation in a Pro-anorexia Internet site and Its Relationship with disordered eating', Journal of Health Psychology 11(2): 282-296.

Naito, A. (2007) 'Internet Suicide in Japan: Implications for Child and Adolescent Mental Health', Clinical Child Psychology and Psychiatry, 12(4): 583-597

Nardi, B. and Harris, J. (2006) 'Strangers and Friends: Collaborative Play in World of Warcraft', pp 149-158 in Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work, Banff, Canada

Nardi, B., Ly, S. and Harris, J. (2007) 'Learning Conversations in World of Warcraft', Proceedings of the 40th Annual Hawaii International Conference on System Sciences

Newsmedical.net (2006) 'Internet exacerbates problems of anorexia and bulimia in teens' 4 December www.news-medical.net/print_article.asp?id=21194 last accessed 1 December 2007.

Nino, T. (2007) 'Linden Lab responds to Wonderland Scandal', <http://www.secondlifeinsider.com/2007/10/31/linden-lab-responds-to-wonderland-scandal/> last accessed 27 November 2007.

Noret, N. and Rivers, I. (2006) 'The prevalence of bullying by text message or e-mail: results of a four year study', poster presented at British Psychological Society Annual Conference, Cardiff, April

O'Connell, R. (2002) Young People's Use of Chat Rooms: Implications for Policy Strategies and Programs of Education Report for Home Office Internet Task Force, Preston: University of Central Lancashire

O'Connell, R. (2003) A Typology of Child Cybersexploitation and Online Grooming Practices Preston: University of Central Lancashire

Ofcom (2007) Children and the Internet Consumer Panel Report, London: Ofcom

Pearson, J. (1999) Women's Reading in Britain 1750-1835: A Dangerous Recreation Cambridge: Cambridge University Press

Peter, J. and Valkenburg, P. (2006) 'Adolescents' exposure to sexually explicit material on the internet', Communication Research 33(2): 178-204

Pewinternet (2005) '57% of Teen Internet Users Create, Remix or Share Content Online', www.pewinternet.org/PPF/r/113/press_release.asp, 11/12/2005 – accessed 27 November 2007.

Polak, M. (2007) "'I think we must be normal... There are too many of us for this to be abnormal!!!': Girls creating identity and forming community in pro-ana/mia websites', pp. 81-94 in S. Weber and S. Dixon (eds.) Growing Up Online: Young People and Digital Technologies London: Palgrave Macmillan

Preibusch, S., Hoser, B., Gürses, S., and Berendt, B. (2007) 'Ubiquitous social networks—opportunities and challenges for privacy-aware user modelling' *Proceedings of Workshop on Data Mining for User Modeling* Corfu, Greece. Retrieved October 20, 2007 from <http://vasarely.wiwi.hu-berlin.de/DM.UM07/Proceedings/05-Preibusch.pdf>

Prensky, M. (2006) 'Don't Bother Me, Mom – I'm Learning!' St. Paul, MN: Paragon House

- Reaves, J. (2001) 'Anorexia Goes High Tech'. 31 July, www.time.com/time/health/article/0,8599,169660,00.html last accessed 1 December 2007.
- Reeves, B. and Wartella, E. (1985) 'Historical trends in research on children and the media, 1900-1960' Journal of Communication 35(2): 118-135
- Ropelato, J. (n.d.) 'P2P Networking – Kids Know! Do Mom and Dad?' <http://internet-filter-review.toptenreviews.com/peer-to-peer-file-sharing.html>
- Rowland, W. (1983) The Politics of TV Violence: Policy Uses of Communication Research Beverly Hills, CA: Sage
- Sandy, G. (2001) 'The Online Services Bill: Theories and evidence of pornographic harm', paper presented at 2nd Australian Institute of Computer Ethics Conference, Canberra
- Schofield, J.W. and Davidson, A.L. (2002) Bringing the Internet to School: Lessons from an Urban District San Francisco, CA: Jossey-Bass
- Sefton-Green, J. and Willett, R. (2003) 'Living and Learning in Chatrooms (or does informal learning have anything to teach us?)' Education et Societies, 2, <http://www.wac.co.uk/sharedspaces/chatrooms.pdf>, last accessed 1 December 2007.
- Segal, L. (1993) 'Does pornography cause violence? The search for evidence', pp. 5-21 in P. Gibson and R. Gibson (eds.) Dirty Looks: Women, Pornography, Power London: British Film Institute
- Seiter, E. (2005) The Internet Playground: Children's Access, Entertainment, and Mis-Education Oxford: Peter Lang.
- Selwyn, N. (2006) 'Exploring the "digital disconnect" between net-savvy students and their schools', Learning, Media and Technology 31(1): 5-18
- Shim, J., Lee, S. and Paul, B. (2007) 'Who Responds to Unsolicited Sexually Explicit Materials on the Internet?: The Role of Individual Differences' CyberPsychology and Behavior 10(1): 71-79
- SkyNews (2007) Report on Wonderland scandal www.youtube.com/watch?v=dN_jr6xjs90 last accessed 4 December 2007.
- Sliwinski, A. (2007) 'World of Warcraft hits 9.3 million subscribers', Nov 15 <http://www.joystiq.com/2007/11/15/world-of-warcraft-hits-9-3-million-subscribers/> last accessed 1 December 2007

Springhall, J. (1998) Youth, Popular Culture and Moral Panics London: Macmillan

Steinkuehler, C. (2006) 'Learning in Massively Multiplayer Online Games' <http://www.academiccolab.org/resources/documents/SteinkuehlerICLS2004.pdf> last accessed 1 December 2007.

Stutzman, F. (2006) 'An evaluation of identity-sharing behavior in social network communities', Journal of the International Digital Media and Arts Association, 3(1): 10-18.

Subrahmanyam, K., Greenfield, P. and Tynes, B. (2004) 'Constructing Sexuality and Identity in an Online Teen Chatroom' Journal of Applied Developmental Psychology, 25(6): 651-666.

Sulake Corporation (2007) 'Habbo Takes Creativity and Self-Expression to a New Level' http://www.sulake.com/press/releases/2007-02-01-Habbo_takes_creativity_and_self_expression_to_a_new_level

Susuzki, L.K. and Calzo, J.P. (2004) 'The Search for Peer Advice in Cyberspace: An Examination of Online Teen Bulletin Boards about Health and Sexuality', Journal of Applied Developmental Psychology, 25(6): 685-698

Tapscott, D. (1998) Growing Up Digital: The Rise of the Net Generation New York: McGraw Hill.

Taylor, L. (2006) 'Positive features of video games', pp. 247-265 in N. Dowd, D. Singer and R. Wilson (eds.) Handbook of Children, Culture and Violence London: Sage

Taylor, M. and Quayle, E. (2003) Child Pornography: An Internet Crime London: Brunner-Routledge

Taylor, T.L. (2006) Play Between Worlds: Exploring Online Game Culture, Cambridge, MA: MIT Press

Thompson, C. (2006) 'Free Online Music Leaves Sad Song of Identity Theft' Komo 1000, March 14 <http://www.komoradio.com/news/archive/4179946.html> last accessed 4 December 2007.

Thornburgh, D. and Lin, H. (2002) Youth, Pornography and the Internet Washington DC: National Academies Press

Tynes, B. (2006) 'Children, adolescents and the culture of online hate', pp. 267-289 in N. Dowd, D. Singer and R. Wilson (eds.) Handbook of Children, Culture and Violence London: Sage

Valentine, G. (2004) Public Space and the Culture of Childhood Basingstoke: Ashgate

Wagner, M. (2006) 'Record Companies Drop File-Sharing Lawsuit Against Internet-Illiterate Mon', Information Week, 20 December
www.informationweek.com/blog/main/archives/2006/12/record_companie.html

Warschauer, M. (2003) Technology and Social Inclusion: Rethinking the Digital Divide Cambridge, MA: MIT Press

Weaver, C. and Carter, C. (eds.) (2006) Critical Readings: Violence and the Media Maidenhead: Open University Press

Weber, S. and Dixon, S. (eds.) (2007) Growing Up Online: Young People and Digital Technologies London: Palgrave Macmillan

Wells, T. (2005) 'Online Gambling Addiction: Myth or Reality?'
www.devhardware.com/index2.php?option=content&do_pdf=1&id=1616 last accessed 2 December 2006.

Whitlock, J., Powers, J. and Eckenrode, J. (2006) 'The virtual cutting edge: the internet and adolescent self-injury', Developmental Psychology 42(3): 407-417

Widyanto, L. and Griffiths, M. (2007) "'Internet addiction": a critical review', International Journal of Mental Health and Addiction 4(1): 31-51

Wolak, J., Mitchell, K. and Finkelhor, D. (2007) 'Unwanted and Wanted Exposure to Online Pornography in a National Sample of Youth Internet Users', Pediatrics, 119(2): 247-257.

Yee, N. (2006) 'The Demographics, Motivations and Derived Experiences of Users of Massively Multi-User Online Graphical Environments' PRESENCE: Teleoperators and Virtual Environments, 15, 309-329
<http://www.nickyee.com/pubs/Yee%20%20MMORPG%20Demographics%202006.pdf>