

Turn off or tune in? What advice can SLTs, educational psychologists and teachers provide about uses of new media and children with language impairments?

Abstract

New media are commonplace in children's lives. Speech and language therapists, educational psychologists and teachers are sometimes called upon by caregivers to provide advice on whether or how children and young people with language impairments should be encouraged to use these media. This article aims to illuminate some of the key issues and to review the implications of different types of advice that practitioners might provide. Four broad strategies are considered: Prohibition, Laissez-faire, Restriction, and Constructive use. Possible consequences of each strategy are outlined and it is proposed that Constructive use should be the strategy of choice. Reasons in favour of a constructive orientation include the benefits of joint engagement, enjoyment, cognitive and perceptual challenges and social motivation; effective uses can support educational attainment in young people with language impairments. Some areas where children and young people with language impairments need support with new media are noted. Decisions that we make about whether to constrain or support uses of new media have direct implications for the quality of young people's lives and futures. SLTs, educational psychologists and teachers have important roles to play in the development of better-informed policies and strategies concerning language impaired youngsters and digital media.

Keywords: new media; children; young people; language impairments; speech and language therapists; educational psychologists; special needs teachers; advice to caregivers

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Turn off or tune in? What advice can SLTs, educational psychologists and teachers provide about uses of new media and children with language impairments?

Media such as computers, smartphones, videogame consoles, handheld games devices, tablets, apps are commonplace in contemporary children's lives (Lee et al., 2009; Lenhart et al., 2008; Rideout et al., 2010). As is invariably the case with the advent of any new medium, they offer the potential of benefits and the risk of problems. They are developed because of perceived market/user needs but their implementations, and the contents they deliver, are not always predictable or controllable. This can lead to concerns. The concerns tend to receive the maximum publicity. Thus, caregivers are exposed regularly to alarming warnings that new media activities will damage young brains, instigate addictions, impair family life, create a generation of social isolates, cause or exacerbate aggressiveness, and so on. Worse, the new media are sometimes depicted as even more pernicious than their predecessors because they are interactive.

Understandably, many caregivers are uncertain about the appropriate place of new media in their children's lives. Parents of children with developmental conditions, such as language impairments, often have heightened concerns about their children's wellbeing in general (Conti-Ramsden and Durkin, 2008; Lindsay and Dockrell, 2004). They observe areas in which their children struggle and they have anxieties about how the children will cope with the world beyond the family (Conti-Ramsden et al., 2008). In the context of these broader concerns, the possibility that new media may somehow be 'bad for' children already perceived as exceptionally vulnerable can be all the more disturbing.

In discussing these issues with caregivers of children/adolescents with language impairments and other disorders, we have found that many do have strong concerns. Some are uncertain how to respond to their children's media-related interests and enthusiasms, and others

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respond with what could be described as draconian decisions to exclude the new media altogether for as long as they can. Some reveal feeling guilty that their children do use new media, such as videogames. Speech and language therapists (henceforth, SLTs), educational psychologists and teachers tell us that they are frequently asked for advice on whether the media are harmful and what can be done about them. But these professionals often feel uncertain as to what to say. They feel (a) they already have much to discuss and to do with the children and the families under their care, and (b) they have rarely been trained in the developmental psychology of children's media uses. In their turn, they would welcome advice on what to advise. The purposes of this article are to illuminate some of the key issues and to review the implications of different types of advice that might be offered to caregivers.

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Almost all engagements with the tools of any culture involve linguistic dimensions. In respect of new media uses, these cover a wide spectrum. Language involvement may range from a toddler's requests for "more" app play, to learning the labels for equipment and games, to shared commentaries on activities, to online text processing and the manipulation of hyperlinks, to the dynamics of computer mediated communications, through to the esoteric lexicons and sophisticated instructions of software packages.

Surprisingly, linguistic dimensions have rarely been studied, perhaps because for most users language is transparent and taken for granted. For individuals who have difficulties with language, however, this and other dimensions of new media use raise questions of accessibility, costs and benefits. It has to be emphasised that the evidence base for advice on media uses by children and young people with language impairments is modest in scale and this remains a topic in pressing need of research. Nevertheless, some general points can be made, drawing on our broader knowledge of development and on emerging work on media in

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typical and atypical individuals. We will aim to review relevant findings and to discuss the potential consequences that different types of advice can have.

Our focus here is on the roles, actual or possible, of new media in the lives of children and young people with language impairments, with particular reference to the ways in which decisions about media use may hinder or benefit these individuals' communicative development. Thus, perennial topics of debate in relation to children and media, such as responses to violent, sexist, racist, commercial and other ideological contents, are not our central concern in this paper. However, we would note that the traditional emphasis on these matters has preoccupied many to the expense of investigating positive, constructive uses of media. To the extent that media can be beneficial to individuals with language impairments (to be discussed below), it behoves SLTs, other practitioners and caregivers, to beware of blanket disapproval.

Individual children and their developmental context

We stress that all of the points to be reviewed here are subject to developmental and individual differences. Especially in dealing with clinical populations, it is important to take into account other factors that bear on children's wellbeing and potential. In this article, we focus on children and young people with language impairments, the most common client group of SLTs interested in language disorders, a notable proportion of children in many classrooms, and a substantial proportion of those referred to educational psychologists. We use the generic term "language impairments" to encompass individuals who have difficulties with the production and/or comprehension of language, regardless of the level of their nonverbal skills. The term specific language impairment (SLI) will be reserved for individuals with histories of language impairment whose nonverbal IQs are within the typical range, at least in early childhood (Conti-Ramsden et al., 2012).

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Importantly, the various options for parental intervention that we will outline are not independent of other parenting behaviours. Caregivers, even caregivers seeking advice, are not blank slates, devoid of preferences, behavioural patterns and assumptions. For example, a parent who prohibits access to new media will probably have strong views about other activities, too; a caregiver who is indifferent to what her child does with his ipad will most likely be lax in other areas of domestic regulation. This means that, when providing advice to caregivers, practitioners need to be aware that, in some cases, some of the recommendations they offer may be compatible with individuals' ongoing caregiving orientation but, in other cases, may contrast or even conflict with a caregiver's general management style. (A review of parenting styles and their consequences is beyond the scope of this article; see Larzelere, Morris and Harrist, 2012, for discussions of influential models and current controversies).

We organise the first part of this article around four broad types of advice that practitioners might deliver to caregivers and others in a position to (attempt to) influence the new media uses of children and young people with language impairments. These advice categories are: (i) prohibition, (ii) laissez-faire, (iii) restriction, and (iv) constructive use. We order these in hierarchy of desirability, proposing that the first is the least favourable form of advice and that the latter is the most favourable. Hence, the main section of the article will focus on what constructive use entails and why it should be encouraged. We consider some respects of new media use in which language-impaired children may need support. Finally, we consider issues confronting both researchers and practitioners working with the proliferating and continuously evolving new media.

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Four broad categories of advice about media regulation strategies for caregivers

Strategy One: Prohibition (“You just can’t”).

By prohibition, we mean top-down (adult-dictated, unilateral) regulation to prevent children and young people from accessing some or any new media.

The focus/ extent of the prohibition may vary with developmental status. Thus, for toddlers and preschoolers, it may mean a complete exclusion of attractive media (such as tablets or videogames), while for individuals in middle childhood and beyond, it may mean selective access, for example permitting educationally-oriented computer software but forbidding entertainment uses. For adolescents, it may mean denial of preferred pastimes (such as games) and/or prevention from all or certain types of Internet use (e.g., social networking).

In practice, prohibition is difficult to enforce. Difficulty is not in itself an absolute reason for avoiding any strategy: most forms of parenting and childcare will prove difficult at least part of the time. However, electing for one of the most rigid parental strategies is fraught and likely to be associated with a broader pattern of authoritarianism, a well-established predictor of a host of social and behavioural difficulties in children and young people (Baumrind et al., 2010).

There are strong reasons for avoiding this approach in the context of new media use by children and young people with language impairments. These include:

Instigating or exacerbating poor parent-child relations. Unilateral repression of children’s enthusiasms runs risks of fostering resentment and poor communications (Baumrind, 1971).

Impairing the young person’s scope to interact with his or her peer community.

Children and young people share and discuss their play interests, including their play with

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digital media; to preclude a young person's involvement at this level could impede his or her opportunities for participation in everyday peer discourse (Durkin, 2006; von Salisch et al., 2006).

Promoting deviance and distrustful relations. Children and young people forbidden to undertake appealing activities to which their peers have enviable levels of access may seek covert means of involvement, which they hide from their caregivers (Baumrind, 1971; Jones et al., 1980).

Enhancing the attractions of 'forbidden fruit.' Children and young people have sometimes been found to have greater interest in media contents once they discover that they have been labelled as age-inappropriate (Bijvank et al., 2009). Thus, if parents do judge certain media materials, or whole genres, as unacceptable there is the possibility that the vigour of their condemnation will instigate heightened enthusiasm. This is a somewhat ambivalent outcome, depending on the validity of the motives for forbidding and on one's perspective on children's/ adolescents' autonomy and curiosity, but it can certainly be the opposite of caregiver intent.

Damage to children's and young people's self-esteem. Authoritarian parenting is associated with lower self-esteem in the child (Steinberg and Silk, 2002). In respect of media enthusiasms, telling children and young people that something highly motivating to them is unwelcome in the home is tantamount to telling them that part of them is unwelcome in the home. This is problematic for any individual but is potentially all the more so for children and young people with language impairments, who are at risk of lower self esteem (Jerome et al., 2002; Lindsay et al., 2002; Wadman et al., 2008). There are various issues here but a crucial one in the present context is that all of these consequences militate against communication and socialization in children who are most in need of opportunities to practise

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these skills (Durkin and Conti-Ramsden, 2007, 2010; Fujiki and Brinton, 2009; McLeod and McKinnon, 2010).

It may seem obvious to professionals who deal with children and young people, especially children with language impairments, that prohibition is not only likely to be ineffective but also counterproductive and potentially damaging. However, it is salutary to reflect that some caregivers do spontaneously deal with children's media interests in this way, and some specialists endorse it. For example, Anderson (2003) describes a mother who, whenever she found her son in possession of a violent videogame (his own or his friends'), took the disk, destroyed it and threw the fragments away. We can only speculate what messages the young person inferred from these encounters with real violence, what the short- and long-term emotional consequences may have been, and how mother-son relations proceeded henceforth. Not all prohibition is this overtly brutal but, as a regulatory regime, it is towards the harsh end of the childrearing spectrum and, at worst, can slide into child abuse.

Prohibition is the worst possible strategy to recommend to concerned caregivers. However, it is a strategy that will be implemented spontaneously by some. In a large sample of parents questioned about their (typically developing) primary school children's Internet use, some 11% indicated that they adopted an authoritarian approach (Valcke et al., 2010). We lack comparable evidence on the parents of children and young people with language impairments but practitioners may find an above-average use of authoritarian strategies among this group because of parental concerns about their offspring being more vulnerable. This may be an area for sensitive discussion by the practitioner and possibly some role modelling of alternatives to authoritarian caregiving styles.

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Strategy Two: Laissez-faire (“Let them get on with it”).

Laissez-faire refers to the diametrically opposed form of caregiving, whereby caregivers scarcely intervene or guide children’s behaviours and choices. In respect of media use, a laissez-faire regimen would allow the young person unrestricted access and unlimited time, with little adult interest or involvement in what he or she is doing.

This approach to children’s and young people’s media use is not to be recommended, for a number of reasons. In general, laissez-faire caregiving is associated with developmental difficulties, especially of the externalising type (Steinberg, 2001). Disadvantages in the present context include:

Children and young people may feel that nobody cares about their media uses and explorations. It is healthy for children and young people to explore and learn about their environment but, ideally, they need to be able to share their discoveries and to feel that their activities are worthwhile (Scardamalia and Bereiter, 1991; Vygotsky, 1978).

Children and young people may fail to explore potentially constructive uses of media.

Positive development builds on established knowledge and moves forwards in the context of a secure base and caregiver scaffolding; in the absence of this support, choices can become more random and less purposeful (Bernier et al., 2012; Bickard, 2013; Hoff, 2010; Vygotsky, 1978).

Children and young people may lack a reference point (an engaged caregiver) to whom

to turn in instances of difficulty, uncertainty, confusion or distress. New media sometimes present obstacles (unfamiliar packages, complicated instructions) and they can lead to access to materials unsuitable for children. In these contexts, laissez-faire pits the young person against random external forces; parental availability is preferable.

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Children and young people may engage in excessive levels of use of particular media. A risk with any attractive activity is that it will be over-indulged and it may become even more attractive in the context of less prepossessing tasks (such as homework) or times of stress (such as an upcoming exam).

While each of these consequences is negative in different ways, once again a common element of particular concern in relation to children and young people with language impairments is that they are all likely to impede parent-child communication. They run the risk that the young person who already finds communication difficult will lack opportunities, or become reluctant, to talk about things that matter to him or her. Indeed, one of the characteristics of families where laissez-faire parenting styles predominate is that they tend to be less conversation-oriented (Huang, 1999; Koerner and Fitzpatrick, 2006)

Valcke et al. (2010) report that, with respect to Internet use in typically developing primary school children, laissez-faire was the least frequent parental style, with only 7% of parents exhibiting this orientation. For the reasons summarised above, it is not to be recommended. However, once again, we do not know the incidence of laissez-faire media regulation in families of children and young people with language impairments. For practitioners working with families, such an orientation can present challenges because the laissez-faire caregiver may be less ready to change; indeed, such a caregiver may be less likely to seek advice per se.

Strategy Three: Restriction (“Only when I say so”).

By restriction, we refer to caregiver decisions to allow the child or young person access to some media for some of the time, but with rules preventing other uses.

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Restriction is intermediate between prohibition, discussed above, and constructive use, discussed below. By definition, restriction limits children's access to some aspects of their environment (Dearing, 2004); this may sometimes be warranted (for example, if a child is at risk of access to inappropriate adult materials) and sometimes problematic (for example, if a young person is denied opportunities to participate in mediated peer interactions). If stipulated without explanation or negotiation, restriction could be little more than prohibition with a safety valve: children's and young people's media enthusiasms are denied most of the time but, for limited periods, permitted. If restriction is administered as a 'hands off' regimen (caregivers allow the young person to enjoy agreed media under certain circumstances but they are not otherwise substantially involved), it imposes constraints but without the compensations of interchange and cooperative decision making. However, restriction may sometimes be conducive to achieving balance across a child's activities and to avoiding problematic levels of use; again, much depends on the developmental status of the child and his or her individual needs.

This strategy, then, has some positive features and some negative ones. On the positive side:

Children and young people will receive some guidance as to what their caregiver approves in media use. This may include the message that time has to be allocated among many activities.

Excessive or risky use of any particular form of media will be pre-empted (at least, to the extent that the restrictions are honoured). Restrictions can be positive if accompanied by a discussion as to why excessive uses of any activity are not desirable (see the key interactive nature of constructive uses below).

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On the negative side:

If presented simply as unilateral rules about time and contents, restriction may be experienced as arbitrary by children and young people and contrary to their desires.

The negatives and risks here are similar to those associated with prohibition (discussed above).

Strategy Four: Constructive use (“Yes. And let’s see what we can do together”).

By constructive use, we refer to a range of procedures for accommodating, supporting and building on children’s and young people’s media activities. This could involve various modes of engagement, including tuning in to the child’s spontaneous interests, introducing the child to possible media uses, discussion, elaboration and negotiation, and joint play or other collaborative uses. We propose that constructive responses to children’s media interests are the optimal strategy, though by no means the easiest to implement. Ideally, constructive uses will entail interpersonally-sensitive and developmentally-attuned engagement by caregivers (Bruner, 1981, 1986; Vygotsky, 1978). Not all caregivers will feel equipped to deliver this engagement in all circumstances, which is one reason why they may turn to professionals for advice on media use.

Interpersonally-sensitive: Any child or young person is an individual with interests, preferences and rights. Effective caregivers will acknowledge these human attributes and respond to the young person’s curiosity and enthusiasms (Jones et al., 1980; Kelly and Bailey, 2013; Skinner, 1986).

The basic premise here is that if children and young people are enthusiastic about something, there may be scope (for caregivers, therapists) to communicate about and build upon that interest. We do not think that this observation will come as a surprise to practising SLTs,

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educational psychologists or teachers, many of whom work with individuals' interests as a matter of course. Our modest contention here is that digital media enthusiasms should be included among the list of acceptable interests and not brushed aside as a self-evident problem or a waste of time. Inevitably, there are circumstances in which caregivers will need to set boundaries and to explain why some things are not possible or desirable. A key difference between this approach and prohibition/ restriction, as described above, is that it entails context-specific explanations and negotiations. Caregivers following a constructive strategy will voice their concerns, which may, for example, be about contents, time, or associated behaviours; they may stipulate limits (restrictions) but with clear justifications and possibly some negotiation. For example, extra time playing videogames may be acceptable providing an agreed amount of time has been spent on homework or other valued tasks.

Developmentally-attuned: Children's and young people's media enthusiasms reflect their developmental status and needs. These change over time. It is important to take developmental status into account in determining how to build constructively (Edwards et al., 2010; Vygotsky, 1978).

Ideally, caregivers, perhaps guided by SLTs or other practitioners, would negotiate with their language-impaired children to select apps, games and other digital media that are targeted to specific needs. These needs could include enjoyment and entertainment, but could also take into account opportunities to promote communication, information processing skills, social interaction, and language practice. To some extent, matching to developmental level is facilitated in the apps and educational games domains, where products may have clear statements of purpose (if not always accompanied by substantiated evidence of their efficacy) and indications of appropriate age groups. But there are many apps/ games and many claims; furthermore, age recommendations are usually based on broad assumptions about typically developing children. In the absence of research, selecting the best digital opportunities for a

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given child or young person (with or without language impairments) is a necessarily intuitive process. Nevertheless, interested caregivers can be guided to look for certain features of these digital media that may be helpful to their offspring and to observe – and discuss – with their child how he or she uses them.

Caregivers (and practitioners) do have a natural ally in this respect: the child or young person himself or herself. Children and young people will tire of or reject media formats and contents that are too ‘young’ or too easy for them, and they will avoid formats that are too advanced. Developmental status will also govern the ways in which children and young people use a genre or product. For example, a primary school child playing a sports videogame may be preoccupied with concrete outcomes (scores, winning); an adolescent playing a similar game may still be interested in these (universally compelling) features but may additionally be thinking about higher level processes, such as team identity, interpersonal issues among players, strategy and counter-strategy, the financial implications of success and failure, and so on. Importantly, caregivers showing interest in the game will find out - by discussion - what appeals to their child and how their child’s perspective might be scaffolded. Practitioners may find it helpful to encourage caregivers to discuss with the child what he or she is doing with media tools, what is enjoyed and disliked, what is difficult and easy; engaging collaboratively in the activities and allowing the child to take a lead where possible may foster discussion and underscore the child’s status as a partner – even the more senior partner, in contexts where his or her expertise exceeds the parent’s. While this form of parenting may be more demanding than banning, neglecting, or dictating, and possibly more difficult for some practitioners to describe and model, the encouraging findings are that this is already the approach to media use favoured by a majority of parents (Evans et al., 2011a; Pasquier et al., 2012; Valcke et al., 2010). We lack evidence specifically on the approaches adopted by parents of children with language impairments but

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we do know that it is a viable parenting option. We discuss next reasons why it should be encouraged.

Why advocate constructive caregiver orientation to children's uses of new media?

Recommending a constructive orientation is not a radical proposal. It draws on a vast body of knowledge about how children develop. Most of the major developmental theories propose that learning is a constructive process, facilitated by interactions with the tools of the surrounding culture and nurtured by collaboration both with more skilled partners and with peers motivated by shared interests (Bandura, 1986; Bruner, 1981, 1986; Piaget, 1972; Vygotsky, 1978). This holds for many aspects of child development, and is not unique to media uses. However, the tools of most cultures now include digital media and a reasonable expectation is that these will become ever-more prevalent in the lifetimes of contemporary children. What we already know about child development, in both atypical and typical individuals, suggests several reasons why a constructive orientation should be encouraged also in the context of new media use. These include the benefits of joint engagement, the developmental importance of tackling challenges, the social significance of peer-shared activities, and the educational potential of technologies.

The benefits of joint engagement

Social interaction is an important context for the expression and extension of cognitive and linguistic development (Clark, 2010; Durkin, 1995). It is particularly important to furnish opportunities for younger children to participate regularly in joint activities. For example, one well-established finding of child language research is that joint picture-book reading can be supportive of children's language and conceptual development. This form of caregiver-child interaction exploits and nurtures joint attention, provides a base for focussed and increasingly complex language use and stimulates elaborative discourse. It promotes

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phonological, semantic, vocabulary and narrative development (Farrant and Zubrick, 2012, in press; Fletcher and Reese, 2005; Kang et al., 2009; Sénéchal et al., 1998), and is associated with attachment security in the mother-child relationship (Fletcher and Reese, 2005).

Drawing on this work, SLTs may well make recommendations to caregivers of preschoolers to encourage this form of interaction around traditional picture books.

It is but a small step to extend these benefits to other media that many preschoolers enjoy.

Conversations oriented around digital media have, in principle, comparable scope for building on the child's interests and generating a rich body of imaginative stimuli for play, imagination, exploration and commentary. Furthermore, for at least some families, there may be benefits, or compensations, from exploring less traditional media. For example, Reese (2012) points out that shared book reading - while enjoyable and beneficial for many, and widely endorsed by early childhood practitioners - is not ubiquitously enjoyed. Some children - and some caregivers - find the activity unappealing or even aversive. Less favourable orientations to joint book reading may be more common in groups that fall outside middle and upper middle socioeconomic strata, and particularly among caregivers who find reading difficult. Even among parents who do use picturebook reading, however, there appear to be many missed opportunities to provide explanations and elaborations of novel vocabulary (Evans et al., 2011b).

In some cases, caregivers may find the dynamics and diversity of electronic media more congenial than traditional picturebooks (Wood, 2010). Advances in digital media mean that picturebooks can now be delivered in other formats, sometimes with additional features, such as sound and moving pictures. (Media savvy readers might note that a precursor of these innovations was called television! See Lemish and Rice, 1986, for arguments that television can also be used to support language development.) Very much as with traditional picture books, electronic books (e-books) can be explored independently and collaboratively. In

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principle, e-books could be designed to facilitate particular linguistic phenomena, such as explaining novel words, modelling discourse skills or manipulating narrative structure.

Emerging evidence suggests that, as with traditional picturebooks, the optimal form of engagement is joint caregiver-child reading (Wood et al., 2010). Korat and Or (2010), working with kindergarteners and their mothers, found that, compared to traditional printed book reading, e-book reading generated more discourse initiated by the child and more responsiveness to maternal initiations. Moody, Justice and Cabell (2010) found that e-books were engaging to kindergarten children whether the reading was adult-led or child-led; children showed higher levels of persistence (pointing at pictures and words, turning pages, commenting and answering questions) in the adult-led e-book condition compared to adult-led traditional reading. One recent study found that training parents to use picture books or to use e-books both led to improvements in the word comprehension and phonological awareness of typically developing preschoolers, compared to control participants (Korat et al., in press). There was no difference between gains in the traditional versus e-book conditions. Although this study was not focused on children with language impairments, it is notable that the parents were mothers from disadvantaged backgrounds and were able to implement guidelines on how to help the child to get the most out of collaborative picturebook reading.

Several research groups have reported successful interventions with language-impaired children using traditional picturebooks (Dale et al., 1996; Justice et al., 2011; van Kleeck et al., 2006). Extending this work into the digital media and with SLI participants, Smeets, van Dijken and Bus (in press), tested the effects of several weeks' exposure to ebooks on vocabulary learning. In two separate experiments, even without adult co-reading, 5- to 7-year-olds with language scores at least 1.5 SDs below age norms showed post-intervention improvements on a difficult vocabulary test. Interestingly, Smeets et al.'s findings indicate

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that, for children with more severe language impairments, the presence of background music and other sounds was counterproductive. The authors suggest that competing auditory information may impede attention to language in children with SLI. These studies provide a valuable steer to future work aimed at determining the optimal presentation modalities for children with language impairments.

Another reason why practitioners might consider encouraging caregivers to explore the potential of electronic media is that sometimes these media are popular with fathers. Fathers tend to do less joint book reading with their children than do mothers, though they do tend to be willing to participate in this activity (Duursma et al., 2008). In domestic interactions, fathers tend to provide less complex language input and less conversational initiations (Davidson and Snow, 1996; Pancsofar and Vernon-Feagans, 2006). Interestingly, the association between joint book reading and attachment security noted above has not been obtained for fathers (Fletcher and Reese, 2005). Yet, the quality of paternal input was found by Pancsofar and Vernon-Feagans to contribute to the prediction of language abilities in three-year-olds and these authors make the point that: 'For two-parent dual-earner families, fathers may make important contributions to children's early language skills and should be included in all efforts to improve language development and school readiness' (p. 585). We suspect that most SLTs and educational psychologists would share this view but sometimes wonder how to facilitate greater paternal involvement. Embracing media which may be more popular among males is not guaranteed to achieve this but does provide an opportunity that is worthy of attention. Again, this is not to argue that e-books should replace traditional books. Both have their appeal and both are associated with positive language and literacy developments. But e-books may be an effective addition or alternative to traditional joint reading in some contexts.

Challenging activities promote skills practice

Almost all developmental theories agree that children and adolescents need challenges and that how they tackle challenges will have implications for their learning and their progress.

Digital media present plenty of challenges. Videogames provide a prominent example.

Videogames have been to a large extent stigmatized in popular representations of the new media. They are depicted as mindless, repetitive and active activities, violent and antisocial. They are stereotyped as the preoccupation of adolescent boys. In fact, these characterizations ignore the diversity of games and overlook the facts that they are now played by individuals in most age groups and are increasingly popular with females (Lenhart et al., 2008). The image of videogames is not our primary concern here, except to recommend that practitioners examine their own beliefs and assumptions about videogames as, in our experience, this is an area of media use which often preoccupies caregivers.

The conventional assumption is that videogames should be condemned and avoided (even prohibited). We argue that there are several reasons why videogames should be not simply tolerated but actively encouraged in the leisure time of children and young people with language impairments.

Videogames (VGs) challenge, and may foster, cognitive and perceptual abilities.

‘Challenge’ is cited by players as a key attraction of VG play (Durkin, 2006; Olson, 2010; von Salisch et al., 2006). Rather than mindless repetition, players typically strive to improve their performance (improve on previous scores, reach new levels of the game, learn tricks and shortcuts, compete with other players). Evidence is accumulating (largely from experimental work with adults and typically developing young people) that VG practice is associated with, and may contribute causally to, higher cognitive and perceptual performances (Adachi and Willoughby, 2013; Blumberg et al., 2013; Jackson et al., 2012; Spence and Feng, 2010).

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Children and young people with language impairments often have associated difficulties in information processing and reaction time tasks (Hoffman and Gillam, 2004; Miller et al., 2001). At present, we lack direct evidence that these difficulties can be partially mitigated by VG practice, but there are a priori reasons to expect that this should be the case. Practice is a well-attested route to improved performance in almost any domain. Motivation is a well-established contributor to any type of skills development. Much work remains to be done but it is plausible that children with special needs, including language impairment, will gain more from recurrent opportunities to rehearse and embellish their skills, in a medium that they find engaging, than they will from exclusion (see Durkin, 2010; Durkin et al., 2013, for fuller discussions). Evidence from randomized controlled trials of the impact of computer games on the language performance of children with SLI is mixed. Some have reported no benefits additional to those of speech and language therapy (Cohen et al., 2005). Others have provided tentative evidence that both purposeful intervention formats, such as *Fast ForWord* or other language training games, and regular computer games with only incidental language requirements, were associated with gains equivalent to those obtained via individualized language therapy delivered by SLTs (Gillam et al., 2008). None of the available evidence indicates that playing videogames is in itself harmful to language development (in language impaired or typical children), though it has to be stressed that this question has not been investigated extensively.

Games are enjoyed.

This is almost a truism but nonetheless important. All children and young people need activities that they enjoy but individuals who live with communicative difficulties often experience social and emotional difficulties and may be in particular need of compensatory pleasures (Durkin and Conti-Ramsden, 2010; Snowling et al., 2006). Interestingly, Durkin, Conti-Ramsden, Walker et al. (2009) found that adolescents with language impairments

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reported higher levels of engagement in offline games than did their typically developing peers. Enjoyment does not guarantee learning, but it does nurture contexts in which children are disposed to engage with task demands and with other people (Durkin et al., 2013; Koegel et al., 2013).

Videogame play is associated with positive development

Evidence indicates that moderate amounts of video game play are associated with positive social and behavioural adjustment in childhood and adolescence (Adachi and Willoughby, 2011; Allahverdipour et al., 2010; Durkin and Barber, 2002; Lenhart et al., 2008; Ohanessian, 2009; Ventura et al., 2012). This could be because healthily developing youngsters seek to explore the many opportunities of their environments, and digital media are now a prominent feature of their worlds. It could also be because the challenges of video game play are motivating and rewarding, characteristics known to be associated with positive affect and achievement (Eccles and Barber, 1999; Larson, 2000).

This is not to recommend a laissez-faire approach to VG play in children and young people with language impairments. We stress that there is much that remains to be investigated here. There could be problems if a child or young person engaged in games excessively, to the cost of other important activities and social interaction. Not all apps or games are created equal: some will have greater potential for benefits than others, and different games will promote different skills. Many educational applications prove ineffective for at least some users, many videogames are unappealing to some children, and many devices will sink to the bottom of the toy chest along with other transient diversions.

Social uses of new media motivate young people

For most young people, high among the appealing aspects of new technologies and media are the social dimensions. These include opportunities to participate in physically co-present activities, such as playing videogames together, as well as new means of supplementing and extending traditional forms of peer contact. Children and young people have always formed peer and friendship networks; now, these arrangements are conducted in part online.

Children and young people have always talked to their friends; increasingly, these communications can be undertaken via smartphones, text messaging, twitter, email, and other digital services.

Videogames are integral to peer socialization for many young people. Although it is true that VG play can be, and often is, conducted alone, this by no means predicts social isolation.

Among typically developing children, for example, individual play tends to be the default and social play is preferred (Durkin and Aisbett, 1999; von Salisch et al., 2006). Individual play feeds into peer interactions because games and game skills are subsequently discussed with fellow gamers (Feierabend and Klingler, 2003). Working with adolescents with ASD, Koegel et al. (2013) found that participation in social clubs organized around interests such as videogaming promoted peer interaction and increased verbal initiations relative to baseline measures.

As noted above, the young person who has nothing to report about game play has less to say to his or her peers. This may not be an insuperable obstacle to socialization – there are many other things that children and young people do and discuss – but, in at least some peer contexts, it could be a disadvantage. Children and young people with language impairments already have more than their share of disadvantages. Although much more research is needed, early answers indicate that many children and young people with language

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impairments are as eager as their typically developing peers to use games and social media. Indeed, for some purposes, children and young people with language impairments find online communication more congenial than face-to-face, arguably because the pressures of immediate speech processing and the impact of negative nonverbal evaluations are less salient in the online context (Durkin et al., 2010). Even though using mobile phones is challenging for young people with language impairments, they are well aware of the benefits; social motives – the desire to keep in touch – predict the extent to which they participate (Conti-Ramsden et al., 2010a).

Educational uses of new media are associated with educational attainment

Educational uses of new media are a topic of great practical and pedagogical concern. There is little doubt that computers can be advantageous in principle - but this is not always confirmed in practice (Selwyn, 2000).

Durkin et al. (2009) found that, in adolescents, language and literacy skills predicted home use of educational computing. Educational uses were less favoured among adolescents with language impairments than among their typically developing peers. A greater proportion of the former (30%) reported no uses of educational applications during a given week, compared to their typically developing peers (8%). The participants with language impairments reported that they found that the information provided in educational applications was often too technical, involved the use of too much text, was difficult to understand, and that it was hard to read, write and spell when using these packages.

Yet, some children and young people with language impairments will develop some skills and some will persist with difficult applications. Durkin and Conti-Ramsden (2012) found that, among adolescents with language impairments frequency of educational uses was associated positively with exam scores at 17 years. This correlational finding is consistent

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with the interpretation that educational uses of home computers support academic attainment, but also with the possibility that those who fare well in education will be more able to use educational applications of technologies. More striking was the finding that, after nonverbal abilities (performance IQ) was controlled for statistically, frequency of educational uses at age 17 contributed to the prediction of educational progress at age 19 in individuals with language impairments. More research is needed into causal relationships but the evidence to date indicates that educational uses of the computer are associated with positive outcomes for this population.

Some areas where children and young people with language impairments need support

An interest in using new media does not necessarily mean that children and young people with language impairments find the process as easy as do their typically developing peers, nor that their patterns of use are identical to those of their peers. As pointed out above, just leaving children and young people to it and hoping for the best, we argue, is not the optimal strategy. For example, working with adolescents with language impairments, Durkin et al. (2009) found that they made significantly less use of email, messaging facilities, and commercial sources than did their typically developing peers. Furthermore, there is strong evidence that simply making educationally/ developmentally advantageous new media contents available – for example, via free websites – is least likely to be taken up by the households where the children's needs are greatest (van Dijken et al., 2011).

Not surprisingly, computer use can be a source of anxiety for those who find it difficult. Conti-Ramsden, Durkin and Walker (2010b) found that adolescents with language impairments reported higher levels of computer anxiety than did typically developing peers. Furthermore, language ability was highly (negatively) correlated with computer anxiety.

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This is particularly important when viewed in the context of the amount and quality of school support for educational uses. Not all teachers have expertise in this area and not all feel comfortable with it (Underwood and Dillon, 2011). Many children and young people have to learn about applications through trial-and-error. This may be a viable route for individuals with typical development but can be an arena for silent suffering, or disaffection, for children and young people with language impairments.

Durkin, Conti-Ramsden and Walker (2011) found that adolescents with language impairments were less likely than their typically developing peers to reply to a text message, and that those who failed to respond had significantly lower reading abilities than senders. Senders with language impairments composed shorter texts and used less text language. Correlational analyses revealed significant positive relationships among textism density (the frequency with which participants used the abbreviations and neologisms of the text genre), the number of types of textisms used, and measures of literacy. Consistent with independent evidence from studies of typically developing children (Plester et al., 2009; Wood, 2010), text language use among adolescents with SLI tends to be associated with higher levels of language and literacy abilities.

Some children with language impairments may respond silently when they encounter difficulties with digital media. Interpersonal assistance may not always be available and, even if it is, it may be difficult to articulate the problem. Computer-based assistance may be available but it is itself likely to be highly language-dependent and quite possibly obscure (readers who have ventured into the Help regions or Manuals of some common software packages may empathise). Some forms of assistance may be less immediately helpful to individuals with language impairments. For example, Durkin et al. (2011) found that adolescents with SLI were more vulnerable to errors associated with predictive texting, so that they failed to deal with incorrect substitutions by the device. The temptation may be to

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give up or to let the machine take over. This will not always be the outcome but the crucial point is that individuals with language impairments may need above average levels and frequency of support and this may not always be delivered.

Research and practice in a rapidly evolving digital environment

Often, caregivers, teachers, therapists want to know - quickly - the answer to questions such as: ‘What is the best app for practising past tense morphemes?’, ‘I have a child with mixed receptive-expressive difficulties: What kinds of games will help improve his comprehension abilities?’, ‘How do I guide a parent to use this e-book as an aid to vocabulary development?’

Unfortunately, it is not always easy to answer these very well motivated questions. A serious challenge is that the media are changing faster than we can evaluate them, their effects and their uses. Novel formats and improved equipment appear frequently, often introducing capacities that affect radically how human beings operate and interact. Within some media, new products emerge almost daily. These are interesting facts of our lives as citizens and consumers, but they present considerable challenges to researchers and practitioners who favour evidence-based approaches to interventions with children.

Traditional methodologies, such as experiments and randomized controlled trials, remain fundamental to good science but a high quality study could take a year or more to conduct and report. During that time, the technology and contents it investigated may have been supplanted. Furthermore, both researchers and practitioners know that the answers to questions such as the above are rarely straightforward. A game or app that is beneficial for some children, in some circumstances, at a certain stage in their development, may not be appropriate or useful for others with different needs and potential.

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How can we improve our understanding and hone our use of digital tools, yet still keep up with the diversity of new media opportunities and meet the pressing needs of children and families? We have emphasized that research in this area is scant and overdue (this Special Issue of *CLTT* is a welcome corrective). We suggest that, while systematic evaluations using conventional techniques must remain pivotal to high quality research, there are compelling reasons to exploit and develop complementary modes of investigation. Practitioners can contribute formatively in this respect by reporting on their own observations and practices in working with children and young people with language impairments and new media. Case studies, case series, and observational reports of positive and negative uses would provide a better – more grounded - basis for guiding /enabling good professional practice. This would also stimulate further relevant research and ensure that practitioners contribute to the evidence-base themselves.

Importantly, knowledge, ideas and evaluations of new media are exchanged regularly among practitioners, for example via the American Speech and Hearing Association's website (<http://blog.asha.org/>) and Apps for Children with Special Needs (<http://a4cwsn.com/>).

Kuster (2012) provides an extensive list of recommended resources and numerous others can be found on the Internet. As practitioner questions, experiences and discoveries grow, we need rigorous research techniques designed to capture their insights and to identify emergent needs. How we develop and test those techniques are subjects for future consideration but a crucial point is that colleagues working most closely with children receiving therapies are well placed to report on problems and progress.

Conclusions

We are not proposing that digital media are a panacea, or invariably positive, or consistently sought-after and valued by all young people themselves. Nevertheless, digital media, such as

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games, mobiles, computers, are important to many young people (with or without language impairments). They have the potential to motivate and facilitate skills learning, they are prompts to peer interchanges and can be shared with caregivers. Because they help make technology and communication enjoyable, they may well serve as a gateway to other forms of media use.

Digital media are an inevitable part of the landscape of contemporary child and adolescent development, integral to leisure and social lives, increasingly exploited in education, and an essential dimension of many workplaces. Tuning out is unlikely to be a realistic option for current and future generations of children. Various strategies are open to caregivers making decisions about the place of new media in their children's lives and many caregivers, especially of children with exceptional characteristics such as language impairments, may seek advice from practitioners. We have argued that the least favourable advice to provide is to attempt to exclude these media from young people's lives, and the most favourable is to embark on constructive encouragement.

This recommendation is far from platitudinous. Children with developmental conditions, including language problems, may be at greater risk than their typically developing peers of limited access to the proliferating technologies and communication devices of the 21st century. Decisions that we make about whether to constrain or support uses of new media have direct implications for the quality of young people's lives and futures.

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Conflict of Interest Statement

The Authors declare that there is no conflict of interest.

References

Adachi PC and Willoughby T (2011) The effect of violent video games on aggression: Is it more than just the violence? *Aggression and Violent Behavior* 16: 55-62.

Adachi PJC and Willoughby T (2013) More than just fun and games: The longitudinal relationships between strategic video games, self-reported problem solving skills, and academic grades. *Journal of Youth and Adolescence* 42: 1041–1052.

Allahverdipour H, Bazargan M, Farhadinas BA et al. (2010) Correlates of video games playing among adolescents in an Islamic country. *BMC Public Health* 10: 286.

Anderson CA (2003) Video games and aggressive behavior. In: Ravitch D and Viteritti JP (eds) *Kid Stuff: Marketing Sex and Violence to America's Children*. Baltimore MD: Johns Hopkins University Press, pp.143-167.

Bandura A (1986) *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice-Hall.

Baumrind D (1971) Current patterns of parental authority. *Developmental Psychology Monograph* 4: 1–103.

Baumrind D, Larzelere RE and Owens EB (2010) Effects of preschool parents' power assertive patterns and practices on adolescent development. *Parenting Science and Practice* 10: 157–201.

Bernier A, Carlson SM, Deschênes M et al. (2012) Social factors in the development of early executive functioning: A closer look at the caregiving environment. *Developmental Science* 15: 12-24.

New media and children with language impairments

Bickhard MH (2013) Scaffolding and self-scaffolding: Central aspects of development.

Children's Development Within Social Context: Volume I: Metatheory and Theory: Volume II: Research and Methodology 2: 33.

Bijvank MN, Konijn EA, Bushman BJ et al. (2009) Age and violent-content labels make video games forbidden fruits for youth. *Pediatrics* 123: 870–876.

Blumberg FC, Altschuler EA, Almonte DE et al. (2013) The impact of recreational video game play on children's and adolescents' cognition. *New Directions for Child and Adolescent Development* 139: 41–50.

Bruner J (1981) The social context of language acquisition. *Language & Communication* 1: 155–178.

Bruner J (1986) *Actual Minds, Possible Worlds*. Cambridge, MA: Harvard University Press.

Clark EV (2010) Adult offer, word-class, and child uptake in early lexical acquisition. *First Language* 30: 250-269.

Cohen W, Hodson A, O'Hare A et al. (2005) Effects of computer-based intervention through acoustically modified speech (Fast ForWord) in severe mixed receptive-expressive language impairment: Outcomes from a randomized controlled trial. *Journal of Speech, Language, and Hearing Research* 48: 715–729.

Conti-Ramsden G, Botting N and Durkin K (2008) Parental perspectives during the transition to adulthood in adolescents with a history of specific language impairment (SLI). *Journal of Speech, Language, and Hearing Research* 51: 84-96.

New media and children with language impairments

Conti-Ramsden G and Durkin K (2008) Language and independence in adolescents with and without a history of specific language impairment (SLI). *Journal of Speech, Language, and Hearing Research* 51: 70-83.

Conti-Ramsden G, Durkin K and Simkin Z (2010a) Language and social factors in the use of cell phone technology by adolescents with and without specific language impairment (SLI). *Journal of Speech, Language, and Hearing Research* 53: 196-208.

Conti-Ramsden G, Durkin K and Walker A (2010b) Computer anxiety: A comparison of adolescents with and without a history of specific language impairment (SLI). *Computers and Education* 56: 134–145.

Conti-Ramsden G, St Clair MC, Pickles A et al. (2012) Developmental trajectories of verbal and nonverbal skills in individuals with a history of SLI: From childhood to adolescence. *Journal of Speech, Language, and Hearing Research* 55: 1716-1735.

Dale PS, Crain-Thoreson C, Notari-Syverson A et al. (1996) Parent-child book reading as an intervention technique for young children with language delays. *Topics in Early Childhood Special Education* 16: 213-235.

Davidson RG and Snow CE (1996) Five-year-olds' interactions with fathers versus mothers. *First Language* 16: 223–242.

Dearing E (2004) The developmental implications of restrictive and supportive parenting across neighborhoods and ethnicities: Exceptions are the rules. *Journal of Applied Developmental Psychology* 25: 555-575.

Durkin K (1995) *Developmental Social Psychology: From Infancy to Old Age*. Oxford: Blackwell.

New media and children with language impairments

Durkin K (2006) Game playing and adolescents' development. In: Vorderer P and Bryant J (eds) *Playing Video Games: Motives, Responses, and Consequences*. Mahwah NJ: Erlbaum, pp.415–428.

Durkin K (2010) Videogames and young people with developmental disorders. *Review of General Psychology* 14: 122–140.

Durkin K and Aisbett K (1999) *Computer Games and Australians Today*. Sydney: Office of Film and Literature Classification.

Durkin K and Barber B (2002) Not so doomed: Computer game play and positive adolescent development. *Journal of Applied Developmental Psychology* 23: 373- 392.

Durkin K, Boyle J, Hunter S et al. (2013) Video games for children and adolescents with Special Educational Needs. *Zeitschrift für Psychologie*, in press.

Durkin K and Conti-Ramsden G (2007) Language, social behavior and the quality of friendships in adolescents with and without a history of Specific Language Impairment. *Child Development* 78: 1441-1457.

Durkin K and Conti-Ramsden G (2010) Young people with specific language impairment: A review of social and emotional functioning in adolescence. *Child Language Teaching and Therapy* 26: 105-121.

Durkin K and Conti-Ramsden G (2012) Frequency of educational computer use as a longitudinal predictor of educational outcome in young people with Specific Language Impairment. *PLoS ONE* DOI:10.1371/journal.pone.0052194

New media and children with language impairments

Durkin K, Conti-Ramsden G, Walker A et al. (2009) Educational and interpersonal uses of home computers by adolescents with and without Specific Language Impairment (SLI).

British Journal of Developmental Psychology 27: 197–217.

Durkin K, Conti-Ramsden G and Walker A (2010) Computer-mediated communication in adolescents with and without a history of specific language impairment (SLI). *Computers in Human Behavior* 26: 176-185.

Durkin K, Conti-Ramsden G and Walker A (2011) Txt Lang: Texting, textism use and literacy abilities in adolescents with and without specific language impairment. *Journal of Computer Assisted Learning* 27: 49–57.

Duursma E, Pan BA and Raikes H (2008) Predictors and outcomes of low-income fathers' reading with their toddlers. *Early Childhood Research Quarterly* 23: 351-365.

Eccles JS and Barber BL (1999) Student council, volunteering, basketball, or marching band: what kind of extracurricular involvement matters? *Journal of Adolescent Research* 14: 10–43.

Edwards CP, Sheridan SM and Knoche L (2010) Parent-child relationships in early learning. In: Baker E, Peterson P and McGaw B (eds) *International Encyclopedia of Education*. Oxford: Elsevier, pp.438–443.

Evans CA, Jordan AB and Horner J (2011a) Only two hours? A qualitative study of the challenges parents perceive in restricting child television time. *Journal of Family Issues* 32: 1223-44.

Evans MA, Reynolds K, Shaw D et al. (2011b) Parental explanations of vocabulary during shared book reading: A missed opportunity. *First Language* 31: 195-213.

New media and children with language impairments

Farrant BM and Zubrick SR (2012) Early vocabulary development: The importance of joint attention and parent-child book reading. *First Language* 32: 343-364.

Farrant BM and Zubrick SR (in press) Parent-child book reading across early childhood and child vocabulary in the early school years: Findings from the Longitudinal Study of Australian Children. *First Language*.

Feierabend S and Klingler W (2003) Lehrer/-Innen und Medien 2003 [Teachers and media 2003] Medienpädagogischer Forschungsverbund Südwest.

Fletcher KL and Reese E (2005) Picture book reading with young children: A conceptual framework. *Developmental Review* 25: 64–103.

Fujiki M and Brinton B (2009) Pragmatics and social communication in child language disorders. In: Schwartz RG (ed) *Handbook of Child Language Disorders*. New York: Psychology Press, pp.406–423.

Gillam RB, Loeb DF, Hoffman LM et al. (2008) The efficacy of Fast ForWord language intervention in school-age children with language impairment: A randomized controlled trial. *Journal of Speech, Language, and Hearing Research* 51: 97-119.

Hoff E (2010) Context effects on young children's language use: The influence of conversational setting and partner. *First Language* 30: 461-472.

Hoffman L and Gillam R (2004) Verbal and spatial information processing constraints in children with specific language impairment. *Journal of Speech, Language, and Hearing Research* 47: 114–125.

Huang LN (1999) Family communication patterns and personality characteristics. *Communication Quarterly* 47: 230–243.

New media and children with language impairments

Jackson LA, Witt EA, Games AI et al. (2012) Information technology use and creativity: Findings from the Children and Technology Project. *Computers in Human Behavior* 28: 370-376.

Jerome A, Fujiki M, Brinton B et al. (2002) Self-esteem in children with specific language impairment. *Journal of Speech, Language, and Hearing Research* 45: 700-714.

Jones DC, Rickel AU and Smith RL (1980) Maternal child-rearing practices and social problemsolving strategies among preschoolers. *Developmental Psychology* 16: 241-242.

Justice LM, Skibbe LE, McGinty AS et al. (2011) Feasibility, efficacy, and social validity of home-based storybook reading intervention for children with language impairment. *Journal of Speech, Language and Hearing Research* 54: 523-538.

Kang JY, Kim YS and Pan BA (2009) Five-year-olds' book talk and story retelling: Contributions of mother—child joint bookreading. *First Language* 29: 243-265.

Kelly KR and Bailey AL (2013) Becoming independent storytellers: Modeling children's development of narrative macrostructure. *First Language* 33: 68-88.

Koegel R, Kim S, Koegel L et al. (2013) Improving socialization for high school students with ASD by using their preferred interests. *Journal of Autism and Developmental Disorders* 43: 2121-2134.

Koerner AF and Fitzpatrick MA (2006) Family communication patterns theory: A social cognitive approach. In: Braithwaite DO and Baxter LA (eds) *Engaging Theories in Family Communication: Multiple Perspectives*. Thousand Oaks, CA: Sage, pp.50–65.

Korat O and Or T (2010) How new technology shapes the parent-child interaction. *First Language* 30: 139-154.

New media and children with language impairments

Korat O, Shamir A and Heibal S (in press) Expanding the boundaries of shared book reading: E-books and printed books in parent-child reading as support for children's language. *First Language*.

Kuster (2012) Internet: In Search of the Perfect Speech-Language App?. Available at: <http://www.asha.org/Publications/leader/2012/120403/Internet--In-Search-of-the-Perfect-Speech-Language-App/> (accessed 29 August 2013).

Larson RW (2000) Toward a psychology of positive youth development. *American Psychologist* 55: 170–183.

Larzelere R, Morris A and Harrist A (eds) (2012) *Authoritative Parenting: Synthesizing Nurturance and Discipline for Optimal Child Development*. Washington, D.C: American Psychological Association.

Lee SJ, Bartolic S and Vandewater EA (2009) Predicting children's media use in the USA: Differences in cross-sectional and longitudinal analysis. *British Journal of Developmental Psychology* 27: 123-143.

Lemish D and Rice ML (1986) Television as a talking picture book: a prop for language acquisition. *Journal of Child Language* 13: 251-274.

Lenhart A, Kahne J, Middaugh E et al. (2008) Teens, video games and civics: Teens gaming experiences are diverse and include significant social interaction and civic engagement. http://www.pewinternet.org/PPF/r/263/report_display.asp.

Lindsay G and Dockrell JE (2004) Whose job is it? Parents' concerns about the needs of their children with language problems. *The Journal of Special Education* 37: 225-235.

New media and children with language impairments

Lindsay G, Dockrell JE, Letchford R et al. (2002) Self esteem of children with specific speech and language difficulties. *Child Language Teaching and Therapy* 18: 125–143.

McLeod S and McKinnon DH (2010) Support required for primary and secondary students with communication disorders and/or other learning needs. *Child Language Teaching and Therapy* 26: 123–143.

Miller C, Kail R, Leonard L et al. (2001) Speed of processing in children with specific language impairment. *Journal of Speech, Language, and Hearing Research* 44: 416–433.

Moody AK, Justice LM and Cabell SQ (2010) Electronic versus traditional storybooks: Relative influence of children's engagement and communication. *Journal of Early Childhood Literacy* 10(3): 294-313.

Ohannessian CM (2009) Media use and adolescent psychological adjustment: An examination of gender differences. *Journal of Child and Family Studies* 18: 582-593.

Olson CK (2010) Children's motivations for video game play in the context of normal development. *Review of General Psychology* 14: 180–187.

Pancsofar N and Vernon-Feagans L (2006) Mother and father language input to young children: Contributions to later language development. *Journal of Applied Developmental Psychology* 27: 571–587.

Pasquier D, Simões JA and Kredens E (2012) Agents of mediation and sources of safety awareness: a comparative overview. In: Livingstone S, Haddon L and Görzig A (eds) *Children, Risk and Safety on the Internet*. Bristol: The Policy Press, pp.217-228.

Piaget J (1972) Intellectual evolution from adolescence to adulthood. *Human Development* 15: 1–12.

New media and children with language impairments

Plester B, Wood C and Joshi P (2009) Exploring the relationship between children's knowledge of text message abbreviations and school literacy outcomes. *British Journal of Developmental Psychology* 27: 145-161.

Reese E (2012) The tyranny of shared book-reading. In: Suggate S and Reese E (eds) *Contemporary Debates in Childhood Education and Development*. Abingdon and New York: Routledge, pp.59–68.

Rideout VJ, Foehr UG and Roberts DR (2010) *Generation M2: Media in the lives of 8- to 18-year-olds*. Menlo Park, CA: The Henry J. Kaiser Family Foundation.

Scardamalia M and Bereiter C (1991) Higher levels of agency for children in knowledge building: A challenge for the design of new knowledge media. *The Journal of the Learning Sciences* 1: 37-68.

Selwyn N (2000) Researching computers and education — glimpses of the wider picture. *Computers in Education* 34: 93–101.

Sénéchal M, Lefevre J-A, Thomas EM et al. (1998) Differential effects of home literacy experiences on the development of oral and written language. *Reading Research Quarterly* 33: 96–116.

Skinner EA (1986) The origins of young children's perceived control: Mother contingent and sensitive behavior. *International Journal of Behavioral Development* 9: 359-382.

Smeets DJ, van Dijken MJ and Bus AG (in press) Using electronic storybooks to support word learning in children with severe language impairments. *Journal of Learning Disabilities*.

New media and children with language impairments

Snowling MJ, Bishop DVM, Stothard SE et al. (2006) Psychosocial outcomes at 15 years of children with a preschool history of speech-language impairment. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 47: 759–765.

Spence I and Feng J (2010) Video games and spatial cognition. *Review of General Psychology* 14: 92-104.

Steinberg L (2001) We know some things: Adolescent-parent relationships in retrospect and prospect. *Journal of Research on Adolescence* 11: 1–20

Steinberg L and Silk JS (2002) Parenting adolescents. In: Bornstein MH (ed) *Handbook of Parenting: Vol. 1: Children and Parenting*. Mahwah, NJ: Erlbaum, pp.103–133.

Underwood J and Dillon G (2011) Chasing dreams and recognising realities: teachers' responses to ICT. *Technology, Pedagogy and Education* 20(3): 317–330.

Valcke M, Bonte S, De Wever B et al. (2010) Internet parenting styles and the impact on Internet use of primary school children. *Computers and Education* 55: 454–464.

van Dijken MJ, Bus AG and de Jong MT (2011). Open access to living books on the internet: A new chance to bridge the linguistic gap for at-risk preschoolers? *European Journal of Special Needs Education* 26: 299-310.

van Kleeck A, Vander Woude J and Hammett L (2006) Fostering literal and inferential language skills in Head Start preschoolers with language impairment using scripted book-sharing discussions. *American Journal of Speech-Language Pathology* 15: 85-95.

Ventura M, Shute VJ and Kim YJ (2012) Video gameplay, personality and academic performance. *Computers and Education* 58: 1260-1266.

New media and children with language impairments

von Salisch M, Oppl C and Kristen A (2006) What attracts children? In: Vorderer P and Bryant J (eds) *Playing video games: Motives, responses and consequences*. Mahwah, NJ: Lawrence Erlbaum Associates, pp.147-163.

Vygotsky LS (1978) *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.

Wadman R, Durkin K and Conti-Ramsden G (2008) Self-esteem, shyness and sociability in adolescents with specific language impairment. *Journal of Speech, Language, and Hearing Research* 51: 938 – 952.

Wood C (2010) *The Impact of Technology on Children's Attainment in English: A Review of the Literature*. Coventry: BECTA.

Wood C, Pillinger C and Jackson E (2010) Understanding the impact of young readers' literacy interactions with talking books and during adult reading support. *Computers and Education* 54(1): 190-198.