MEDIA PROTECT: A setting- and parent-targeted intervention for a healthy childhood in the digital age

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Introduction

Screen media usage encompasses a variety of activities including television, DVDs, video games, computers, the internet, smartphones and tablets (Vanderloo, 2014). These activities are playing a progressively integral part in children and young people’s daily lives. In a representative sample of children in the US aged 8 to 10, mean daily screen time was nearly eight hours with different types of media, and more than 11 hours per day for 11- to 18-year-olds (Rideout et al, 2010). Health departments, practitioners and experts recommend that children under the age of three should not be using screen media at all (Strasburger, 2010; Vaala and Hornik, 2014). A maximum of half an hour per day is recommended for children in nursery and of one hour per day for 7- to 12-year-olds (Bitzer et al, 2014). However, national and international studies report an increase in the amount of time children are spending with screen media (Vaala and Hornik, 2014). Excessive use of screen media during childhood is connected with various negative outcomes, for instance, poor school performance (Nunez-Smith et al, 2008; Mößle et al, 2010; Ferguson, 2011), obesity/adiposity (Nunez-Smith et al, 2008; Bener et al, 2011; Staiano et al, 2013), low sleep quality (Cain and Gradisar, 2010; Marino et al, 2016), antisocial behaviour (Robertson et al, 2013), neurological changes (Sigman, 2017), attention problems (Christakis and Zimmerman, 2007; Nunez-Smith et al, 2008; Gentile et al, 2012) and addictive use (Mößle and Rehbein, 2013). For all these outcomes, screen media use has been identified as an independent risk factor in models controlling for other determinants (Mößle, 2012).

All in all, problematic screen media use in childhood is considered a major public health issue (Christakis et al, 2013), and an urgent need for primary prevention has been identified (Sigman, 2017). It has been argued that for effective prevention of problematic screen media use, the three dimensions of time, content and function should be taken into account, so that each dimension could be separately assessed as beneficial, neutral or problematic (Schmidt et al, 2012; Bleckmann and Mößle, 2014).
Meta-analyses and reviews reporting on the frequency and effectiveness of media literacy training-centred interventions to reduce problematic screen media use are not available in the international literature. In contrast, the effectiveness of programmes aiming to reduce the time spent using screen media is well documented in reviews and meta-analyses (Maniccia et al, 2011; Schmidt et al, 2012; Friedrich et al, 2014). These studies contain hardly any information on children’s media literacy, and much less on children’s eHealth literacy in the narrow sense in which the term is widely used, which comes as no surprise since this evidence is based mainly on trials that report on obesity reduction as the primary outcome, with ‘screen media reduction’ being only a mediator (Schmidt et al, 2012).

Regarding preventive actions in the field of digital media, this chapter provides a more detailed overview of the current practice and literature on German interventions. In Germany there is currently a focus on media literacy training and on the content dimension of problematic screen media use, with the screen time and function/dysfunction dimensions being largely neglected, and a focus on online rather than face-to-face preventive offers (Bitzer et al, 2014). There are many German initiatives that design websites targeting children, parents and teachers to give advice on screen media. Some of these provide scientific articles, information regarding the digital world and a place for discussion and exchange (for example, FLIMMO and juuuport). Individual federal states in Germany have various projects and initiatives that are financially supported by the respective states. Most offer workshops, training or information to support children, parents or teachers in how to promote media literacy, for instance, integrating digital media in school (such as multimediamobile or MedienkomP@ss) or empowering parents in supervising their children when playing computer games (such as Eltern-LAN), but also reflecting problem behaviour (for example, medienscouts and Eltern@home).

Additionally, certain associations exist that address the support of media competence while targeting children, parents and teachers (for example, smiley and internet-ABC). Most offer interventions that are not evaluated. In general, only a few interventions in Germany regarding screen media are scientifically monitored. These are either school-based, like Medienhelden (Möller et al, 2012; Schultze-Krumbholz et al, 2014), or combine different settings, for example, KidSMART (Müller et al, 2012) or ESCapade (Fachstelle für Suchtprävention der Drogenhilfe Köln, 2014). The goals of these programmes are to first address media literacy and second prevention: two focus on promoting media health literacy, either in order to reduce cybermobbing (Schultze-Krumbholz et al, 2014) or to level out the differences in digital skills between children with or without a migration background (Müller et al, 2012). In their intervention, Möller et al (2012) addressed media content, in particular reducing violent media consumption and promoting critical viewing skills. However, ESCapade focused on adolescents with problematic computer (online) use, and in this case on reducing computer time and problems due to their usage behaviour (Fachstelle für Suchtprävention der Drogenhilfe Köln, 2014).
We conclude from this that there is a need for interventions with a universal approach toward preventing problematic screen media use considering in particular young children and the three problem dimensions that seem all the more pressing when considering the continuous increase in the amount of time children are spending with screen media and the associated negative outcomes documented by media effects research.

In this chapter we describe the MEDIA PROTECT intervention, designed to close the gap identified in the German prevention landscape. The intervention aims to reduce problematic use of screen media in younger children (aged 4-7) by addressing their parents, educators and the children themselves. We describe the components of the intervention for all three target groups as well as the training of trainers delivering the intervention. In an attempt to integrate the only seemingly disparate goals of promoting more skilled use of digital media to support healthy behaviours in a more classical understanding of eHealth literacy (see Chapters 18 and 43, this volume), and enabling caretakers to reduce children’s use of digital media to support a healthy childhood, we briefly sketch a model of digital balance literacy (DBL) that focuses on developmental stages in childhood. The introduced DBL model forms a provisional theoretical basis for the MEDIA PROTECT intervention. To conclude the chapter, we suggest improvements to the intervention based on the results of the formative evaluation, and comment on the need to further develop and expand current eHealth literacy models in order to account for the age-dependent balance of digital risks and benefits for health in the future.

Applying models of eHealth literacy to children and adolescents

eHealth literacy is a facet of general health literacy that evolves over the life course, starting in early childhood (Zarcadoolas et al, 2005). However, a recent systematic review on definitions and models of health literacy in childhood and youth reveals a lack of suitable health literacy models for children younger than 10 (Bröder et al, 2017).

Most models that explicitly consider the health literacy of children strongly focus on parental or caregivers’ competencies in order to enable them to promote a child’s health. Given the fact that the younger children are, the more dependent they are on their caregivers, it is certainly justified to take an adult perspective on health literacy. But children already ‘take on an active role in their health. Viewing children … as active social agents draws attention to considering children’s perspective of health’ (Bröder et al, 2017, p 22).

However, most health literacy models for children and young adolescents are fairly similar to adult ones. They take a strong skills-based perspective, where skills such as knowledge, comprehension, responsibility, communication, critical thinking and evaluation are central parts of the models (Brown et al, 2007; Sanders et al, 2009; Schmidt et al, 2010; Subramaniam et al, 2015). This insufficient incorporation of life phase specificities leads to the conclusion that it is necessary
to shift the focus from an individualistic and skills-based perspective to models that also address contextual factors. Children have been shown to learn and master health literacy-related skills through their social environment (Borzekowski, 2009), supporting the assumption that system-related factors may be even more important for the health literacy of children than individual health literacy skills.

Another important aspect mentioned in the review by Bröder and colleagues (2017) is that digital media, which play an increasing role for children and adolescents, remain underrated in current health literacy models. eHealth literacy models take the important role of new media for health into account. Common models of eHealth literacy focus on the skills and knowledge of individuals. Norman and Skinner (2006, p 4) define eHealth literacy as ‘the ability to seek, find, understand, and appraise health information from electronic sources and apply the knowledge gained to addressing or solving a health problem’. Norgaard et al (2015) have introduced a broader framework for eHealth literacy with skills on three different dimensions, namely, individual, system and interaction dimensions. The individual dimension includes the ability to process information and engage in one’s own health. The system dimension addresses access to digital technologies that work and suit individual needs. The interaction dimension comprises individual ability and motivation to engage with digital services and the feeling of being safe and in control of digital technology. This model focuses both on the individual skills and technology characteristics level to master digital technology (Kayser et al, 2015).

For the family setting, in addition to the well-documented fact that children growing up in a family setting with problematic use of digital media are likely to develop unhealthy digital behaviours themselves, recent studies support the hypothesis that changes in the setting (reducing availability of screen media, especially in children’s bedrooms) will be more effective in preventing problematic use than individual skills-centred strategies (supporting children in self-regulating their screen media use) (Bleckmann and Mößle, 2015). Consequently, for eHealth literacy there are specific reasons to criticise the unreflected application of individual skills-centred adult models to children and adolescents.

Another such reason is that there is a complex field of both positive and negative effects of screen media use on children’s health, leading to possible counterproductive long-term effects of well-meant interventions to increase eHealth literacy in young age groups. So far, current concepts of eHealth literacy include the potential and proven benefits of the use of digital media for health, but largely neglect the potential and proven negative health effects of problematic screen media use. This is surprising because problematic screen media use is – as stated at the beginning of this chapter – a noticeable public health issue. To contribute to a balanced use of digital technology, which will contribute to a healthy childhood in the digital world, the current models turn out not to be suitable for the age group addressed in the MEDIA PROTECT intervention (pre-school and elementary school age), above all given the evidence of the harmful effects of screen media use for young children. The MEDIA
The MEDIA PROTECT intervention therefore needs to rely on a model that encompasses these considerations. To our knowledge, such models have not been published to date.

Therefore, in an attempt to compensate for the difficulties described in applying current adult eHealth literacy models to children (individual vs system contributions, positive and negative effects of screen media on health), we are developing the more comprehensive ‘model of digital balance literacy (DBL) for children in settings’ (see Figure 15.1).

The model encompasses a meta level of informed decisions of when and why to use electronic media for promoting health, and when and why not to use them based on comprehensive knowledge about screen-related health risks and benefits for different age groups, following the tradition of sound technology assessment. This meta level is especially important for decision-makers on interventions and frameworks on the health systems level. The two subordinate areas of our eHealth literacy framework are media use-oriented skills on the one side, and media reduction-oriented skills on the other. The first has a high conceptual overlap with the previously mentioned eHealth literacy models, and is especially important for adult individuals. The latter encompasses skills needed to reduce problematic screen media use at the individual and system levels, and is especially important for caretakers of young children.

In order to allow children to develop these skills step by step, the educational setting has the core responsibility for creating the conditions that support them.

**Figure 15.1:** Outline of the digital balance literacy (DBL) model on which the MEDIA PROTECT intervention is based
in a way that minimises the risk of harmful consequences from digital media use. The systems level could apply both to the family environment (for example, when parents make decisions on the availability and use of screen media for their children) to educational systems (for example, when teachers decide on the availability and use of screen media in school and for homework), and to directly health-related systems (for example, when doctors and parents decide on the use of digital technology for health purposes, such as diabetes apps). In very young ages the system needs to empower children and support them to develop real-life skills first; digital skills should successively evolve in later stages of the child’s development.

**The intervention and its components**

MEDIA PROTECT is a programme to sustainably prevent children’s problematic and, in the long run, addictive use of screen media in a multisetting approach through the targeting of parents, children and teachers.

Our theoretical model suggests putting a focus on changing the system or setting rather than children’s individual skills. Parents and nursery or elementary school teachers were therefore chosen as core target groups for the intervention. Parents are central mediators of children’s media use with an influence on bedroom media equipment, use times and use of age-inadequate media content, with children from disadvantaged family backgrounds being exposed to more developmentally inappropriate screen media use (Vandewater et al, 2005; Mößle, 2012; Bleckmann and Mößle, 2014). Besides parents, childcare settings, such as nurseries and grade schools, also play an important role for limiting screen time, because nearly every child at the age of three and older is enrolled there. They spend many hours in care, and the institutions provide opportunities for pre-schoolers to learn and adopt healthy behaviours (Vanderloo, 2014; Yilmaz et al, 2015). Research indicates that a negative association exists between screen viewing in children and levels of staff education – that is, children in day care with high-educated teachers watch less TV than children in day care with lower-educated staff (Vanderloo, 2014). Thus, increasing parents and teachers’ digital balance literacy in an intervention seems a promising way to enable them to guide children in the digital world.

Considering the arguments for an effective prevention by Schmidt et al (2012) and Mößle (2012), the three problem dimensions of media use, namely, time, content and function (Bleckmann and Mößle, 2014), were taken into account. The time dimension focuses the issue of time displacement by screen media in children (‘How long are they exposed?’). The content dimension deals with (non-)compliance with age recommendations, such as FSK and USK, which are awarded on the basis of violent and pornographic content (‘What type of information is transmitted to the child, or also from the child to the medium?’). The function dimension refers to the questions ‘Why are children exposed to screen media? What are the motivations to use?’ Examples on the negative side of this dimension are the instrumentalisation of children’s screen media use by
the parents for their care and educational purposes. The repression of real-world stress or failure experiences through screen media use (escapism) can also be counted as a functional dimension, as can the substitution of real-world social contacts with virtual ones (Bleckmann and Mößle, 2014). So children should be protected from problematic media use in all three dimensions in early life. This will not automatically increase their real-life resources, however, so the intervention should additionally aim at fostering children’s ‘life skills’ (Griffin and Botvin, 2004; Mößle, 2012) as well as their caretakers’ skills for providing a healthy real-life environment.

The intervention follows a multidisciplinary approach involving teachers, parents and children, targeting parents with children aged between four and seven as well as teachers working with this age group. Figure 15.2 gives an overview of the components of the MEDIA PROTECT intervention.

**Teachers**

A central part of the intervention is a training session for teaching staff, which is delivered as a group intervention. Educators in schools and nurseries can choose between participating in the two units of 2.5 hours each on one day or two separate days. The training sessions take place directly in the schools or nurseries or at a neutral location. These are conducted by certified multipliers, more than 50 of whom have been trained in many regions of Germany so far.

The overall objective is to empower teachers to promote healthy and prevent unhealthy use of screen media in the family in their daily work with parents and children. In particular, teachers receive information on media education, media addiction prevention and parental-directed communication strategies. A large variety of methods (presentation by multipliers with discussion, quiz, partner and team work, and case discussions) are used. Furthermore, the staff assemble a

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**Figure 15.2: Components of the MEDIA PROTECT intervention**

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Parents</th>
<th>Children</th>
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<tbody>
<tr>
<td>• Training: a total of 5 hours</td>
<td>• Parents’ evening: advice and information</td>
<td>• ‘Tivi Tivi’ interactive children’s theatre RADELRUTSCH</td>
</tr>
<tr>
<td>• Content: media education, prevention, guide to parent talks on media education</td>
<td>• Technical evening: installation and configuration of security software</td>
<td>• Follow-up to the play (eg, summary, movement games)</td>
</tr>
<tr>
<td>• Creating a local ‘leisure map’ with alternatives to the screen media</td>
<td>• Individual advice: telephone calls and consultation</td>
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**WRITTEN MATERIAL:**

- Training manual
- Flyer, ‘Media counsellor for parents’
- Flyer for children and teachers for follow-up
‘screen-free leisure map’ for parents that shows no-cost or low-cost alternatives to screen media use. On the one hand, they use photographs and text to describe alternatives for playing indoors, such as helping with household chores, feely bag play (see http://makethefirstfivecount.ca/activities/feely-bag-game/), and so on, and on the other hand, possibilities and locations for playing outside, such as picking flowers, playing catch, and so on, are shown. Suitable nearby locations for the outdoor activities such as playgrounds, parks, animal parks and so on are shown on a map. The training also contains ideas and materials for taking up the topics of theatre play for children (described in the Children section) in nursery or school hours after the play. This includes ‘finger play’ (see https://momlovesbest.com/blog/fingerplay-ideas-for-preschoolers), songs, short poems accompanied by movement, drawing pictures of scenes from the play, re-staging short scenes from the play and other follow-up ideas.

During the training session, all participants receive a MEDIA PROTECT manual containing all the information conveyed in the session and additional written material (for example, theoretical basics, exercises, material and methods for individual counselling) as well as materials from other projects (for example, ‘Facing the screen dilemma’ by the Campaign for a Commercial-Free Childhood [CCFC]).

Parents

The intervention includes a parents’ evening in nursery or school, with a 45-minute MEDIA PROTECT input included in the agenda of a regular parents’ evening. This is carried out by the multiplier, who visits the nursery or school. The multiplier gives information and advice on media education and media addiction prevention. The methods used are presentation by the multiplier partly with a PowerPoint presentation, a think pair-share (see www.readingrockets.org/strategies/think-pair-share) discussion based on a handout with a case example from everyday family life, a small mock TV advertising show performed by the multiplier as the TV host and staff or parents as the multiplier’s assistants, demonstrations using images (for example, a sailing boat) and finally live objects (such as chocolate vs bread) as metaphors for media education topics.

One week after the parents’ evening, all parents receive a letter containing written materials irrespective of whether they attended the event or not. They receive the screen-free leisure map (described earlier). They also get a media guide for parents, which contains information divided into four different age groups, between 0 and 13. For each group, the child’s developmental stage with specific needs and vulnerabilities is described and illustrated graphically, a brief case report from a family, as well as four to five bullet points of practical advice for ‘stressless media education in the family’ are provided. Moreover, the media guide provides information on and explanations for screen media effects in different areas: sensorimotor and speech development, parent–child interaction and bonding, school achievement and learning, obesity, sleep and aggression/
empathy. In addition, the parents receive a telephone voucher for individual counselling by the multiplier on media education.

Interested parents also have the opportunity to visit a technical support evening, which is carried out by the multiplier and lasts for approximately two hours. Parents bring along their children’s digital devices to the event and receive hands-on support as well as written step-by-step guidelines for installing and configuring child protection software (filter and time limitation software for devices with different operating systems).

**Children**

For children, an interactive theatre play is part of the intervention. This involves the children in the audience advocating screen-free leisure activities to a screen-fixated main character. After the play, the children receive a colouring book while teachers conduct a follow-up according to the methods they acquired in their training session (described earlier).

**Training of multipliers**

To realise the intervention, professionals from either pedagogical or therapeutic fields (for example, teachers, psychotherapists and social education workers) were trained as multipliers. The training consists of three units, each lasting two days (overall 50 hours supervised attendance course), plus self-study assignments from a 400-page manual and three practice phases (around 150 hours in total). Around 200 hours of training are thus performed in the course of a year.

The first training unit covers the following topics: theoretical foundations, history of media education, media effects studies, defining and discussion of separate problem dimensions, basics of public health and prevention science, and risk and protective factors of computer game addiction. Central topics in the second unit are (media) education programmes, marketing and advertising, public perception management by multinational corporations and strategies to counter them, presentation and moderation techniques and opportunities to practise them, as well as the follow-up for the interactive theatre play for the children. The final unit covers parental mediation, family dynamics, systemic counselling techniques, legislation and practice of age-rating systems like the Pan-European Game Information (PEGI), technical skills for using child protection software and considerations as to their limitations. Between the three units extensive assignments for self-study and three practice phases take place. Practice phase 1 is the delivery of the 45-minute parental input by the multiplier to be recorded as an audio file and assessed and reflected together with a personal mentor. Practice phase 2 is the delivery of a mock training course for professionals in the private frame also recorded on audio file with mentor feedback, and in practice phase 3 two novices act as a team to deliver two training sessions at nursery or school under real life conditions. Again, the mentor gives personal feedback to both multipliers.
Practice phases can be repeated if unsuccessful. Individual feedback is also used to reflect on the balance of prevention of digital risks and empowerment to use digital chances in the personal theory of the multipliers, to shift this balance in the desired direction according to the DBL model. Multipliers are required to attend regular refresher courses of two days’ duration every two years to keep the certificate they are awarded after successful completion of all training components.

**Future changes and adaptations**

We conducted a formative evaluation of the MEDIA PROTECT intervention in the same institutions that participated in the controlled trial. Results of the trial have not been published, but the results of the evaluation \((n=59\) nurseries and schools in the intervention group) based on semi-standardised questionnaires and qualitative interviews were predominantly positive. Feedback by the multipliers and parents was slightly more positive than that of the nursery and elementary school teachers (professionals). The multipliers and professionals made a number of suggestions for improving the intervention. Other suggestions can be derived from the parents’ feedback and also the reactions of the children to the theatre play. For more details on the results of the formative evaluation, see Stiller et al (2018).

Based on the results of the evaluation, some changes are planned and others have already been performed: for nursery children, for example, a second and simpler play with identical core messages has been developed. More focus will be put on the professionals and their skills both to advise parents on matters of media education and to create a digitally well-balanced environment for the children in their educational setting. The basic qualification requirements of the multipliers have already been raised in accordance with the national health insurance guidelines to ensure the quality of preventive interventions in settings: MEDIA PROTECT multipliers are required to have an academic educational, medical, psychological or digital media-related training background. In the meantime the intervention has been re-named and is now called **ECHT DABEI – gesund groß werden im digitalen Zeitalter** (‘REALLY PRESENT – growing up healthy in the digital age’).

The DBL model adds a systems and digital risks perspective to current eHealth literacy models. It might prove worthwhile to integrate these additions into the debate on adolescents (cf Bröder et al, 2017) and adults’ eHealth literacy. The model could also be applied to the broader context of eHealth at the national or international health systems level as well as on medical professionals’ use of digital media. Although the model was developed for children and the settings in which they live, it seems advisable to consider the balance of harm and benefit in a wider understanding of ‘harm’ than just a failed digitally assisted operation. Data security, the political power of ‘dopamine labs’, ethical questions related to the use of technology inside the human body and so on not yet explicitly included in the DBL model would have to be additionally considered on the risks and harm side.
References


