
Special Issue Nr. 43: Advertising Literacy. How Can Children and Adolescents Deal with Persuasive Messages in a Complex Media Environment?

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‘Alexa, Adv(ert)ise us!’

How Smart Speakers and Digital Assistants Challenge Advertising Literacy Amongst Young People

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Abstract

Digital assistants increasingly infiltrate the world of children. The way they function reminds us somewhat of playmates, nannies and tutors. So far, educators have only marginally dealt with this new media phenomenon, yet the use of smart speakers by young people offers many opportunities as well as challenges. These are elaborated in this article and classified in terms of media education. Firstly, we will address a definition of smart speakers and digital speech assistants, and then examine their use by means of usage data. We will then concentrate on examining the extent to which these smart technologies play a role in the environments of young people. What forms of advertising are there? What data do digital assistants collect? And finally, how can parents, educators and companies ensure that smart technologies are used in a child-friendly manner that complies with data protection regulations? Our aim is to nudge the phenomenon of smart speakers and speech assistants into the media-pedagogical focus. Dealing with the specific characteristics of smart speakers requires a high degree of (child) user competence. As we will show in the conclusion, there are further pedagogically beneficial approaches from the point of view of promoting advertising literacy.

«Alexa, adv(ert)ise us!». Smart Speaker, digitale Sprachassistenten und deren Herausforderungen für die Werbekompetenzvermittlung an junge Menschen

Zusammenfassung

Digitale Sprachassistenten erreichen zunehmend auch die Lebenswelt von Kindern. Sie erinnern in ihren Funktionen teilweise an Spielkameraden, Kindermädchen und Hauslehrer. Die Pädagogik hat sich mit diesem neuen Medienphänomen bisher nur marginal auseinandergesetzt. Dabei liegen in der Nutzung von Smart Speakern durch junge Menschen viele Chancen, aber auch Herausforderungen. Diese werden in diesem Artikel herausgearbeitet und medienpädagogisch eingeordnet. Wir beginnen mit einer Definition von Smart Speakern und digitalen Sprachassistenten, um dann deren Gebrauch anhand von Nutzungsdaten zu beleuchten. Im nächsten Schritt widmen wir uns der Frage, inwieweit diese smarten Technologien in der Lebenswelt von jungen Menschen eine Rolle

spielen. Welche Formen von Werbung gibt es dort? Welche Daten sammeln Sprachassistenten? Und: Wie können Eltern, Pädagoginnen, Pädagogen und Unternehmen für eine kindgerechte, datenschutzkonforme Nutzung smarter Technologien sorgen? Unser Ziel ist es, das Phänomen Smart Speaker und digitale Sprachassistenten ein Stück weiter ins medienpädagogische Visier zu rücken. Der Umgang mit den spezifischen Eigenheiten von Smart Speakern bedarf eines hohen Masses an (kindlicher) Nutzungskompetenz. Wie wir abschliessend aufzeigen werden, ergeben sich aus Sicht der Werbekompetenzförderung weitere pädagogisch gewinnbringende Ansatzpunkte.

1. Digital Assistants: A New Frontier for Media Education

“We are in year zero of the voice revolution”, said Google employee Lionel Mora in late 2018 at the Smart Voice Summit in Paris (as cited in Lobe 2018).

Digital voice assistants are now standard companions in the everyday lives of many people: in their cars, mobile phones and homes. They can be used to play games, listen to music, research information, shop, operate household appliances and more, all simply by voice command. With smart speakers such as Amazon’s Echo and Apple’s Homepod, they have made their way into living rooms, bedrooms and kitchens via stand-alone devices – and into children’s rooms, too.

Smart speakers and voice assistants make media and potentially advertising content more accessible in the private sphere by using a tool which even young children have command over: the voice. ‘Smart’ in this context signifies, on the one hand, the interactivity between user and digital assistant. A central smart feature is that anyone who uses a smart speaker or other voice-controlled device communicates seamlessly with a globally connected technical device. The speech assistant collects user data from each of these interactions and continuously learns from them. On the other hand, users can be offered more targeted, group-specific content and more appropriate recommendations through networking and the associated user profiling of the device.

In this way, the device not only assists people in simple and repetitive everyday situations (such as controlling household appliances or providing simple information), but also offers them support in their role as consumers. Firstly, voice assistants, by knowing their users very well, are able to make personalised recommendations which are very convenient to accept and/or to be consumed by the user. Secondly, purchasing becomes easier, even for the youngest consumers, because a product can now be ordered online simply by voice command. This results in an attractive new business field for the advertising industry – and entails enormous challenges for media education.

The central questions that arise are:

- What does the development of smart technologies mean for young people, considering in their role as consumers as well?
- Is there a need for action from a pedagogical point of view and with regard to the well-being of the child?

The following article analyses these questions from a media-pedagogical perspective.

2. What Are Smart Speakers and Digital Assistants?

In this section, we outline fundamental knowledge on the topic in order to create consciousness about smart speakers and digital voice assistants, including within the context of advertising and forms of advertisements. Part of this basic knowledge includes clarification of the relevance for this current topic, using user data. We will begin with a definition of terms.

- Smart speakers are ‘intelligent’ loudspeakers with integrated microphones, which are connected to the Internet via Wi-Fi and/or Bluetooth and can be operated by voice command. Examples include Amazon’s Echo, Apple’s Homepod or Google’s Home. Smart speakers are available in different shapes and with or without screens. They are the hardware, the material housing for smart software. Smart speakers can be classified as calm technology, defined as systems that are integrated into their environment in an inconspicuous and natural manner (Kahle and Meissner 2020, 19). Sieber classifies smart speakers such as Alexa and Siri as superbots, dialogue robots of the digital platform economy (Sieber 2019, 88), that possess a tremendous scope of personalised and intimate data about their owners (ibid., 92).
- Digital assistants/voice services, on the other hand, are cloud-based speech recognition programs, i. e. software that can recognise and analyse human speech and respond to it and/or execute commands by computer voice. Originally, speech assistants such as Siri and Google Assistant were used on mobile phones. Today they are also found in numerous other smart devices, including smart speakers, smart TVs, wearables, PCs (Microsoft’s Cortana), smart toys and smart home equipment, such as refrigerators and blinds that can be controlled by voice service. The most widely used voice assistant for stand-alone devices is currently Amazon’s Alexa (Beyto 2020, 18). Numerous companies from various branches are developing their own smart speakers, including Sonos, IKEA and Telekom.
- Skills/actions are advanced functions that any private or commercial third-party can develop and provide for smart speakers. So far in Europe, this is only possible for Alexa or Google Assistant. Everyone is enabled to offer a skill or an action

on the platform of the corresponding company. Users can activate these skills/actions for their software as required. They are available in various categories, from games and news to special children's skills/actions. The latter are subject to an examination by the companies following certain guidelines regarding data protection and advertising-free and suitable content.¹

2.1 Data Concerning the Use of Smart Speakers and Voice Assistants

It is not surprising that smart speakers have become part of everyday life, even for users who are not interested in technology. One in four adults in Germany owns at least one smart speaker, and in fact, that proportion rises to one in three among those under 35 years of age (Beyto 2020, 7 and 17).²

Speech assistants are used by technology-oriented users primarily for four things: streaming services (music, audio books), smart home applications, information retrieval and everyday organisation (ibid., 46). In a broader study that not only includes people interested in technology, audio streaming is also among the most common uses, but smart home applications are not mentioned (RMS 2019, 14)³. There is a consensus in all surveys considered that entertainment is the main field of use, followed by online research in the broadest sense.

At present, shopping by voice command seems to play only a minor role in Germany (Beyto 2020, 57; RMS 2019). According to Beyto (2020, 8), however, 85% of technology enthusiasts can at least imagine shopping on the internet using voice assistants in the future. It can also be assumed that, at least for repetitive standard purchases and intangible services such as streaming offers, shopping by voice command will become more frequent.

In German surveys on the use of voice assistants, children and young people have so far played a subordinate role. In the KIM study, only the smart TV is mentioned, which 27% of children between six and thirteen use at least occasionally, and the 'digital voice box', which 6% use regularly (Feierabend, Rathgeb, and Reutter 2019, 29). According to the same study however, smart speakers are only present in 6% of

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- 1 It would go beyond the scope of this paper to discuss whether and to what extent these guidelines can be disobeyed by the skill developers. The guidelines can be found in the Alexa Skills Kit (Amazon 2020) and in the Policies for Actions on Google (Google 2020).
 - 2 "In March 2020, 2,042 people took part in an online survey by YouGov Germany GmbH. The results were weighted and are representative for the German population 18 years old and up. Also in March 2020, the detailed patterns of smart speaker use by 1,196 technophile adult Germans (recruited over social media) were furthermore examined through an online survey" (ibid., 20).
 - 3 In this study, 9,976 online users between 16 and 69 years old in Germany were interviewed, of which 2,282 were active smart speaker users (= in the last 14 days).

households with children (ibid., 8).⁴ In contrast, 90% of children between six and thirteen can theoretically access smartphones within the family (ibid.).⁵ 39% have their own smartphone (ibid., 9).⁶

According to a study by Beyto, 75% of smart speakers owned by technology-oriented users are located in the living room, followed by the kitchen and the bedroom. A full 16% are in the children's bedroom (Beyto 2020, 44).

In the U.S. compared to Germany, the everyday use of smart speakers by children seems to have become much more established. For example, in an online survey of parents who have a child between two and eight years of age (n=1.127), 52% of them stated that their child interacts with a smart speaker several times a day to several times a week (Wronski 2019). The most common uses here are listening to music, homework help, obtaining information, having fun and listening to jokes (ibid.).

10% of the parents surveyed also stated that they find smart speakers "extremely helpful" in organising everyday family life and 19% find them "very helpful" (ibid.). 29% found them at least "slightly helpful" and 30% "moderately helpful" (ibid.). "Not at all helpful" (ibid.) was stated by only 11% of the parents (ibid.).

Thus, although smart speakers are not yet strongly anchored in the lives of children in Germany, the figures presented here indicate that this could soon change.

2.2 Advertising Forms in the Context of Smart Speakers and Digital Assistants

Digital media and their channels always offer new terrain for marketing strategies and advertising messages. Smart speakers are thus also expanding the repertoire of advertising forms which are of central importance for media education. The special aspect lies in the 'smart' way of conveying informative and persuasive messages to young, inexperienced consumers.

The fact that companies are highly interested in smart advertising is shown by the numerous developments in voice commerce strategies (Radiozentrale 2019). Marketing agencies determine voice search readiness (Y. Sievers 2019), i. e. how well companies can be found via online voice searching and offer targeted campaigns for smart listening (Paperlein 2018)⁷. In addition, there are innovations in hardware such

4 In regard to the above-mentioned studies, this low number might be a surprise. The number results from 1,231 children and their main educators being interviewed, whereas the above-mentioned studies did not refer explicitly to this group. The KIM authors mention «digital speech assistants such as Alexa by Amazon» (Feierabend, Rathgeb, and Reutter 2019, 8). The low number could as such indicate that they mean stand-alone devices such as Echo, rather than the software itself.

5 The fact that there are smartphones used within the family does not, however, necessarily mean that children are allowed to use them.

6 In view of these numbers, the low number of children using digital assistants in the KIM study (see above) is further astonishing, considering that in most cases, smartphones have a pre-installed digital assistant.

7 An example in practice is the AXE audio spot by Unilever. Listeners can actively order a product sample of the deodorant during the spot via voice command (Gundelach 2020).

as hearables, smart headphones which promote the spread of smart audio advertising, as well as original voice-based ‘incentives’, such as vouchers which work via dynamic voice activation from within the advertisement.

Clearly recognisable advertising

Clearly recognisable advertising in the traditional sense has hardly ever been heard on smart speakers so far. Excluded from this are of course those advertising formats which are also broadcast via other audio media, such as radio advertising and commercials via streaming services such as Spotify. In addition, in the systematics of smart audio devices, persuasive messages are more likely to be placed via alternative means, as will be shown below.

Interactive voice advertising

A central feature of smart speakers is their interactivity. Communication takes place in both directions: Users ask, and the machine answers. Compared to the traditional radio format, smart speaker users can select and direct audio content more specifically. In the words of marketing company Mediascale: “Audio [is] now clickable” (Pauker 2019). It is nothing new that brand ambassadors can approach users in a quasi-informative way, with advertising prepared in the sense of native advertising. What is new, however, are approaches to transferring this form of advertising to smart speakers: With native audio or voice enabled content, interested smart speaker listeners can switch to an interview with a company representative through the help of a voice assistant and thus learn more about a brand or product. The advertisement can also be interrupted and cancelled by voice command (Mediascale 2020).⁸

Content marketing through skills and actions

Smart audio opens up a further option through which content and services (which in principle can be produced and/or provided by anyone) arrive in the home i. e. via voice interface. Skills or actions make this possible. They are developed by third parties and to a large extent, their content is also determined by these parties. Such apps offer individuals, companies, and interest groups new possibilities for commercial content marketing, but in principle these apps also offer opportunities for ideological purposes. The quality criteria are not always clearly visible to consumers. For example, a skill of a political party with corresponding ideological positions can be found in ‘news’, i. e. a section in which objective information is actually expected.⁹

8 This format was tested in 2019 in a field test by the marketing agencies Mediascale and RMS on radio channels such as Antenne Bayern and bigFM with brand promoters from Oddset, Mini, Consors Bank. The results showed, according to the marketing agencies, an increased popularity of the brands (ibid).

9 This skill can be found in the Alexa Skills on Amazon: <https://www.amazon.de/Alternative-f%C3%BCr-Deutschland-AfD-Kompakt/dp/B0743BC7TG>. Last accessed October 20, 2020.

As demonstrated here, smart technology is enjoying growing popularity among adolescents as well. Educators are therefore compelled to deal with this topic. In order to use smart speakers competently, it is essential to know and understand their specific characteristics: Media content can be encoded or processed, linked, transmitted and integrated into everyday life in an unprecedented way. Prime examples of this development are the new forms of advertising outlined in this paper, namely, “interactive voice advertising” and “content marketing”. In contrast to traditional forms of advertising, there are for example no formal markers when it comes to smart speakers in the sense of visual or audiovisual separation between the start and end of the advertising spot. In particular, children could have serious difficulty differentiating between objective information about a product or service and advertising. Another difficulty arises from the fact that Alexa and co. are so integrated into our daily processes, and thus to an increasing extent, they are not perceived as a medium for advertising.

3. Smart Technologies Under Review

In this section, we take a critical look at the topic of smart speakers and digital voice assistants. Further central challenges for media education arise when viewed from this perspective.

3.1 Ubiquitous Advertising and Enticements

Online shopping with the digital assistant is, from a child’s perspective, somewhat magical: You express a wish and it comes true. The buying process becomes particularly low-threshold when shopping by voice command: you don’t even have to click the ubiquitous ‘buy now’ button to order something.

This process completes the dematerialisation of means of payment that has driven traditional online shopping. No money, symbolic shopping cart or credit card is visible when you buy something. From this perspective, shopping can become a rather casual act.¹⁰

This means that even children who cannot or may not yet ‘surf the net’ can theoretically fulfil their own consumer wishes merely with the power of their words. In the meantime, companies have integrated obstacles such as PINs into smart software in order to protect users from deregulated orders. This usually solves the practical problem of voice-command unauthorised purchases by adolescents, but the more casual and ubiquitous temptations in the home remain.

¹⁰ In a study carried out among 8- to 13-year-olds (2016), Naderer et al. show that even a fictitious payment with credit card (compared to cash payment in a Monopoly game) strongly abstracts players’ payment processes. We would like to illustrate that in the context of smart technologies, this degree of abstraction increases even more significantly.

3.2 Procuring Information via Search Engines

Voice search leads to new competition in search engine optimisation (Vlahos 2019, 209), driving suppliers into competition to occupy the first search result. At the same time, this circumstance might lead to the implication that “we live in a world where facts are simple and absolute” (ibid., 219) and seemingly, information management can easily be carried out using voice assistants. However, when considering the fact that only one result is shown at a time, access and/or provision of widespread information cannot be guaranteed.

The attempt to influence the user during research and shopping processes manifests itself in the following: On the one hand, customer loyalty is rewarded with convenient, personalised service. On the other hand, the search for alternative offers becomes more complicated. Brand loyalty can be consolidated more easily and the market power of the corresponding global players grows. Meanwhile, the possibly limited selection of products and offers which are not named by the assistant thus appear non-existent to consumers. This makes consumers in general and children in particular dependent on specific brands and products because they simply do not know about the alternatives.

This effect can be seen as a strong gatekeeper effect within the use of smart speakers based on algorithms. In contrast to traditional gatekeepers, the gatekeeper effect within algorithms is defined by the way in which it is non-transparent, accelerated and affect-driven (Sieber 2019, 37f), which makes it even harder to expose, especially for children. Moreover, smaller children are not yet able to access information through reading. Yet, with the existence of a smart speaker in their household, they can access information through voice command. Within the smart speakers position as a gatekeeper, children only have access to a limited and externally selected quantity of information, which may lead to restricted knowledge.

Furthermore, the aspect of the gatekeeper scenario outlined above can be applied not only to commercial advertising but also generally to all kinds of information (Sieber 2019, 37). Opinion is, at times, thus constituted on the basis of a chosen search engine and recommendation by the digital assistant, i. e. by the company behind it:

“Search engine operators, who like Google have a significant market share in many countries, act as a kind of gatekeeper for research nowadays. They are the first port of call for many people” (Nocun and Lamberty 2020, 125).

Smart speaker technology is also establishing another popular media channel that can be used by third parties, such as political groups and individuals, to convey meaning to young people in the form of opinions, content, etc.: Through skills and actions, it is thus in principle possible for them to be confronted with persuasive messages in a ‘smart’ way, even in their private lives.

3.3 Dishonest Anthropomorphism

Before smart speakers were developed, communication was a “human-only process” (Guzman 2018, 2) which concentrated for a very long time on the interaction between two human beings. With Human-Machine Communication, a new concept and area of communication research evolved. It focuses on the “creation of meaning among humans and machines and the study of this meaning-making and related aspects” (ibid.). In this context, technology is further expanded, according to Guzman. When it comes to Human-Machine Communication, the technology becomes more than a channel or a medium because it takes on the role of a communicator (ibid., 3).¹¹

Sieber refers to boundary shifting between human and mechanic communication when talking about communication robots (Sieber 2019, 163). He describes this development as “a dialogue change (Dialogwende)” (ibid., 5). Accordingly, the new voice services change the way we interact with technology and blur barriers between human relationships and digital ones.

This is a controversial point in terms of media education. Since humans are not yet accustomed to these new forms of communication, when dealing with robot technology, they often tend to react as if they were in the presence of a human – even if they know that they are interacting with a machine (Leong and Selinger 2019, 300). In other words, humans tend to attribute human attributes to robots and artificial intelligence. In light of this observation and following Kaminski et al. (2017), Leong and Selinger refer to the power of anthropomorphism and the potential for abuse that lies behind this insight:

“Unlike simply tricking the user into a misunderstanding, dishonest anthropomorphism leverages people’s intrinsic and deeply ingrained cognitive and perceptual weaknesses against them” (ibid.).

Therefore, producers of smart technology fundamentally possess a powerful tool which can use Human-Machine Communication to create, for example, emotional connections (ibid., 300) or trigger protective instincts (ibid., 304). It is not surprising that studies show robots can “effectively gain compliance from humans using message strategies” (Lee and Liang 2018, 128).

Thinking about children’s naivety and their lack of experience, it is safe to say that children might define their smart speaker or digital speech assistant as a digital ‘Mary Poppins’ or digital ‘playmate in a box’, with whom they can communicate, play music and be entertained. This all happens without a picture, purely via listening.

¹¹ A further discussion of an interesting approach to Human-Machine Communication would go beyond the scope of this paper.

3.4 Gender Biases

Smart technology does not only possess, as demonstrated, the potential for an emotional connection between a human and a machine. Through human-machine interactions, patterns of behaviour arise that can then be transferred to human-human interactions (Kudina 2019, 110). On this topic, an often criticised point is that, in addition to the fear of “command-based interaction” (ibid., 111), nearly all voice assistants are programmed with the voice of a young woman and many responses correspond to a traditional division of roles. Manufacturing companies have, according to their own statements, conceived these voice assistants regardless of gender. Nonetheless, UNESCO found out in their report entitled “I’d blush, if I could” (West, Kraut, and Chew 2019), that the female voices of the voice assistants and their playful, consistently friendly and servile answers consolidate gender-based prejudices. The title of the report refers to an example of a response from the voice assistant to a sex-based insult which a producer had programmed up until recently. Given that children do not possess the reflective capability necessary to differentiate between various contexts of interactions, they require support from parents and educators in this learning process.

In summary, the sub-section “Smart technologies under review” clarifies the breadth of the spectrum in which user competence is urgently needed:

- To a certain extent, smart speakers and digital voice assistants promote the common and ever-present temptation to consume, and therefore children are exposed to this as well. In this context, user competence signifies being aware of these temptations and being able to choose what one actually wishes to purchase/consume right now, or whether the user is simply being influenced in a certain way.
- Those who use smart speakers competently view information procurement via voice search cautiously and are capable of questioning the results and even checking them against other sources.
- Those who use smart speakers competently possess a high degree of reflective capacity, such that even when using these tools regularly, they do not absorb a pedagogically undesirable behavioural pattern (e.g. “gender bias”).

However, there are manipulative influences that have penetrated the daily lives of children. Within the context of this ‘dishonest anthropomorphism’, pedagogical measures to promote advertising literacy could reach their limits. As a result, the development of artificial intelligence must be carefully reviewed, since it must be ensured that when children use media, there is no damage to the human person, either on the individual level or on the social level. Accordingly, this sub-section seeks to sensitise the perception for ethical limits of smart technology.

4. Competent Daily Use of Smart Technology

Competent use of media is built on the foundation that users – naturally also in their role as consumers – can participate in the global market of possibilities in a self-determined and reflective way. This includes the option to withdraw from this market at any time and to separate one's own private life from it. With regard to digital voice assistants, the focus in this section is now shifting to the issues of privacy, security settings and data protection.

4.1 Which Data is Passed on to Whom?

Smart speakers have added another dimension to data transmission in everyday life and questioned the nature of intimacy and private conversations (Vlahos 2019, 197). On the one hand, data is no longer transmitted only by an individual and his or her personal device, such as a mobile phone, but by the smart speaker as a fixed entity of a household community that can be used by everyone. Even if there are several devices in a house, they are usually interconnected, since that is what makes the technology of a smart home so attractive.

In addition, even without voice profiles, numerous data points are passed on unfiltered to smart speaker companies. Of course, this is also the case when using other internet-capable devices. A big difference with the smart speaker, however, is that data transmission can be restricted in principle, but only at the expense of the functionality of the device.

What exactly is stored and for how long depends on the company. In principle, the more personalised the service of the smart speaker, the more personal the information it requires. Another unique feature of smart speakers is that they can be integrated into (family) everyday life in their role as digital assistants, correspondingly 'smart'. It can be assumed that not all users are aware that every single interaction with the speech assistant is recorded and stored. In addition to meta-information such as location, serial number of the smart speaker and optional individual information such as shopping and contact lists, voices are also recorded by the smart speaker automatically. This biometric data makes users almost one hundred percent identifiable – even for companies.¹²

¹² Furthermore, marketing agencies work on optimising the targeting on smart devices for commercial purposes. RMS, for example, presented an audio data management platform on the DMECXO 2018 through which smart speaker users are trackable via Listener ID instead of cookies. This makes user profiling more exact, which is very useful for the advertisement industry (Stüdemann 2019).

In summary, this means:

“If a smart speaker is used a lot, it can not only create individual profiles over the course of time using the collected data, but also read out entire social structures in the household: When does the family leave the house? What are the eating and leisure habits of the family? When is the child alone? Who comes to visit? What Amazon, Google and Co. do with the data of their users and how long they store it remains all too opaque” (A. Sievers 2019).

4.2 *Inadvertent Activation of Voice Assistants and Saving of Recordings*

Privacy is a sensitive issue in this context because in principle, voice assistants always listen. Technically speaking, they must be in ‘listening mode’ so that the microphones can hear the corresponding activation word and receive voice commands. Only then should they listen actively.

This does not always work properly. In addition to occasional headlines about accidentally activated speech assistants (Koch 2017, amongst others), the media-pedagogical institution jugendschutz.net has shown in a test that speech assistants sometimes also respond when words similar to the activation word are said, e.g. “Alexander” or “Ok, Kuchen” [speaking of ‘cake’ in German instead of asking the assistant to “Ok, Google”] (A. Sievers 2019).

Moreover, children especially, with their high voices and individual language development, are particularly often misunderstood by speech assistants and can theoretically activate them more easily by mistake (ibid.).

From the perspective of data protection, such cases of inadvertent activation are questionable because in this way, information is passed from private individuals to companies without the persons concerned being aware of it. Companies claim to be working on the elimination of the sources of error. Today, smart speakers already have several types of privacy controls such as “activation word, mute button, audio logs, speaker recognition” (Mhaidli et al. 2019, 253), but full security has not been achieved yet.

4.3 *Risk of Interception and Hacking*

The problem that 100% protection of privacy does not exist for smart speakers is also suggested by some cases that have been published in the media:

- Several smart speaker companies have confirmed that they have randomly listened to call recordings in order to improve the software (Gollmer 2019).
- A project of the Security Research Labs research institute has demonstrated the vulnerability of smart speaker systems to hacker attacks. In this project, fake phishing messages were distributed among smart speaker users via voice assistants (SRLabs 2019).

- In 2017, the German Federal Network Agency banned the sale and possession of a smart child's doll. According to the reasoning, the doll was a camouflaged transmitter in accordance with § 90 of the Telecommunications Act (TKG) (Riese 2017).

From this perspective, it cannot be ruled out that smart speakers could become a risk for offline security if, for example, criminals infiltrate a household using such devices and know exactly who is at home and when, among other things.

Viewed from a media-pedagogical point of view, the topic is also challenging for the following reason. Users often do not expect any threat to their privacy in fact when dealing with Alexa and similar assistants because, as Zeng, Mare, and Roesner (2017) pointed out in a study, they often have only a limited technical understanding of smart home technologies. Even if consumers are aware that smart speakers and digital voice assistants collect large amounts of data, a concrete action response (in the form of, for example, "I turn off the assistant when I hold private conversations") is usually not forthcoming. One explanation for this is provided by Lau et al., among others, in their study on the differentiated perception of privacy between users and non-users of smart speakers: According to one of their findings, users often exchange privacy for convenience (Lau, Zimmermann, and Schaub 2018). Mhaidli et al. (2020) describe the willingness of users, "to trade off their privacy for the convenience and benefits provided by these devices" (ibid., 253) as a "privacy calculus" (ibid.).

With regard to the promotion of user competence, it is therefore important to make children aware, in a way that is clear to them, that smart technology can access their private data and that they pay for the services of digital assistants with their personal data. This sensitisation as intended through "Boundary Management" (Leong and Selinger 2019) goes hand in hand with practicing basic security settings, such as "How do I turn off the smart speaker?", but also with rehearsing concrete action strategies for everyday life, such as "I only switch on the assistant when I have a concrete request, then I switch it off again". Ideally, automated actions of self-control are consolidated in the learning process.

5. Interim Conclusion

It is already clear at this point that media-pedagogical concepts urgently need to be developed with a view to promoting user competence among young people. Before we can transfer this knowledge to didactic projects, however, we would like to broaden our analysis: In the course of this article, it has already been shown that the use of smart speakers often comes into contact with advertising. In the following, we would like to show that this is not a coincidence and that a closer look at an advertising interpretation in the context of a media-pedagogical smart speaker analysis allows us to broaden our perspectives and draw beneficial conclusions. As a point of

reference within this framework, we draw on an advertising literacy model, based on the considerations of Baacke et al. (1999) and Schulze (2013) (Haas 2020, 94). Emphasis is placed on the interplay of four dimensions:

- Acquiring structural knowledge about advertising, including trends and types: the *advertising knowledge* dimension.
- Critical, reflective attitude towards advertising: the *advertising criticism/advertising ethics* dimension.
- Safe interaction in everyday life with advertising and consumption: *advertising media use* dimension.
- Becoming an active consumer and producer: *advertising media design* dimension.

Advertising literacy is understood in this context as a continuation of media competence (Baacke et al. 1999, 338). In German-speaking countries, as well as in this article, the concept of media competence is based on the research of Chomsky and Habermas (ibid., 54). As a condition as well as a target concept of learning through media, this media competence approach also emphasises the ability “to make media messages accessible to others and to understand, critically analyse and evaluate media messages appropriately, as well as to design them oneself [...]” (Grafe 2011, 76).¹³

In order for newer forms of advertising to also be adequately analysed from a pedagogical standpoint, it is also necessary to broaden the understanding of advertising (Haas 2020, 91). This expansion of the topic offers a promising degree of added value when it comes to the topic of smart speakers and digital voice assistants since in German-speaking countries, the subject of advertising is usually didactically negotiated exclusively under the aspect of ‘traditional commercial advertising’. In this context, advertising implies that we are concerned with targeted means of communication that are used to draw the attention of potential consumers to goods and services with the aim of making them known or selling them. In fact, this area of advertising literacy promotion is already in demand in terms of educational transfer benefit. However, smart speakers and the advertising mechanisms based on them are, at first glance, difficult to grasp with the characteristics of traditional advertising, partly because the hardware does not cost much and the services available on it are largely free of charge. As with so many seemingly free online services, the true currencies are attention and data.¹⁴

13 For similarities and differences in the pedagogical discussions about the examination of media in German-speaking and Anglo-American countries, see Silke Grafe (2011) and Sonja Ganguin, Gemkow, and Haubold (2020).

14 Smart speakers and the new advertisement mechanisms resulting from them are not only challenging for media pedagogy, which can be seen in this example: The US government is currently planning a far-reaching lawsuit against Google because they claim the company has misused its advertising business dominance. The challenge lies, according to news agency heise online, in the fact that these are «[J]uridical uncharted waters with free services» (Sokolov 2020).

When taking into account an ideological dimension of advertising, however, smart speakers and voice assistants can certainly be understood in the context of traditional advertising:

“Advertising almost always aims to influence people’s behaviour, whether they buy a product, choose a party or visit a museum. Sometimes it is only intended to influence opinions and attitudes that are reflected in a variety of different behaviours (example: advertising for a particular belief)” (Krober-Riel and Esch 2015, 53).

This advertising perspective is not yet adequately taken into account in media literacy education in Germany. However, it is important because it raises awareness for the fact that consumers are permanently confronted with persuasive forms of communication, especially in the digital age (Buijzen, van Reijmersdal, and Owen 2010). This is vividly illustrated by current topics in media education, such as child influencers (Evans, Hoy, and Childers 2018) or ‘fake news’ (including in connection with conspiracy theories). On the one hand, smart speakers and digital voice assistants establish another channel for advertising to children, in the sense of ‘influencing’ them, and in principle anytime and anywhere, even in the children’s bedrooms. On the other hand, this increases the scope as well as the way in which consumers can potentially be influenced in their smart use. As described, the range extends from ‘interactive voice advertising’ to possible influence through skills/actions for commercial or ideological purposes to ‘dishonest anthropomorphism’. However, even the selection process of an organic search result generated from the specific algorithm (performed by the platform processing the search query), can be interpreted in some way as a possible attempt to influence.

Companies with persuasion knowledge about their targets and persuasive processes (following the Persuasion Knowledge Model by Friestad and Wright, 1994) will thus design their homepage in an SEO-optimized way and hence will rank higher in search queries. If an influencer possesses persuasion knowledge about the content and persuasive processes (uses clever choice of words, appealing video structure, etc.), he or she also will achieve a higher organic reach and will therefore also be ranked higher. Even organic search engine results can therefore never be completely neutral, e.g. companies ‘advertise’ for users, their attention and possibly their purchasing power by means of the texts optimised on their pages or channels. In the sense of content marketing, they do not always advertise their brand in a way that is recognisable at first glance, but they still try to stimulate interest in their products or services, or to present themselves well. This can significantly influence, for example, a purchase decision. To this point, a further (pedagogically questionable) feature arises in the context of smart speakers: Users are first presented with only *one* result. Those with advertising skills (see above) will be ‘one step ahead’: It becomes difficult

for users to determine the objectivity of the results. In clear contrast to a search on a desktop computer, whereby a user can choose between hundreds of results and directly compare them to each other, the result from a smart speaker is subject to a high degree of preselection.

As shown in the article, there are also aspects of a media-pedagogical smart speaker analysis in which the reference to ‘pure’ user competence, rather than to advertising literacy, seems more obvious at first glance. However, we are not concerned with a tension, but rather a complementary relationship between media competence and advertising literacy. As Baacke et al. (1999) write:

“If we insert this detailed position of ‘advertising literacy’ into Baacke’s overarching scheme of ‘media competence’ [...], it emerges that [...] media competence and advertising literacy are ‘inseparably’ linked insofar as the specific skills related to advertising messages are performances that constitute a central component of communicative media action. Apart from advertising, it is moreover a matter of otherwise identifying specific media codes (going beyond advertising, extended to genres); of distinguishing the objective information content and additional aesthetic or other analog messages; of being able to assess forms of statement of mass media in the context of market-economy forms of organisation [...]” (ibid., 74).

In light of this interim conclusion, we will elaborate in the following possible media educational approaches to the topic of ‘smart speakers and digital voice assistants’ from the perspective of promoting advertising literacy.

6. Starting Points for Media Education in Dealing with Smart Speakers and Digital Assistants

The advertising media design dimension (see above) explicitly emphasises the producer role of the subjects. Everyone has the opportunity to actively influence and develop the cultural cycle and the associated advertising media system (Haas 2020, 20). In this context, it is a matter of articulating one’s ideas and opinions of the world with the help of media, and doing so in the most creative way possible. With its aesthetic orientation, advertising media design wants to create something new and at the same time promote flexible, ingenious creative processes. In terms of concrete pedagogical work with adolescents, this means that in addition to critical-analytical educational sequences, concrete daily life and topic-oriented approaches and methods are to be implemented (Baacke et al. 1999, 339), such as programming a voice app for a smart speaker (see below). The creative power of advertising media design, which naturally cannot be seen in isolation from the other dimensions, is expressed in different ways depending on the actor.

We would like to refer to three main actors, namely educators, parents and producers of smart technologies, including those in the advertising industry:

Pedagogical actors (1) are faced with the task of designing target group-specific and action-oriented teaching/learning programs for adolescents. Smart speakers are quite complex as an advertising phenomenon due to their new, interactive and subtle possibilities of persuasive communication. The approach to the promotion of advertising literacy represented in this paper is also suitable for digital assistants and smart speakers in (pre-)school and out-of-school learning. The following aspects provide a basis for educational processes:

- a. Focus on individual advertising knowledge with questions such as: *What data does the speech assistant collect and why? What is personalised advertising?*
- b. Focus on advertising criticism/advertising ethics with topics such as *monopolisation when shopping or selective results via digital assistants/dishonest anthropomorphism/gender biases/reflection on one's own (consumption) wishes.*
- c. Focus on advertising media use with, for example, the following content: *How do I switch a microphone on and off in the smart speaker? When does it make sense to continue researching by hand, to compare products and sources and only then to decide which recommendation to follow or which content is useful?*¹⁵
- d. Focus on advertising media design which, under the keyword *empowerment*, encourages learners to become active and creative themselves, e.g. *programming a skill or action for a smart speaker itself within the framework of appropriate guidelines and under pedagogical supervision/having children describe the everyday life of digital voice assistants in a creative writing exercise (also suitable for younger learners).*

A didactic goal is that learners do not perceive themselves in their everyday world as mere consumers, but rather become active themselves and thus perceive themselves as producers of knowledge and can promote what they have created themselves.

For a successful promotion of advertising literacy in the context of smart speakers, it is necessary to take responsibility not only for media educators but also for other agents. Here, the parents (2) should be mentioned first, since they have a decisive influence over the development of their children – when it comes to consumer behaviour as well (Schuhen et al. 2015, 121) and communicative competence (Kudina 2019, 111). Of course, they need support in using smart technologies in a child-friendly manner, in compliance with data protection laws, and in setting up

¹⁵ To enable young people to understand smart speakers and digital assistants as new information systems with all their advantages and disadvantages, they need to actively experience the research of information (hands-on and ears-on). This means that they can understand the differences in the results of several providers, companies and/or information sources. The essential aim is to evoke a learning process which demonstrates these aspects and why it is useful to compare and analyse different sources.

the required precautions. Such sensitisation to the topic of smart speakers including data protection can be achieved, for example, through parent-teacher meetings at schools, information events in public libraries, information brochures and/or workshops.

Media products are not neutral. There are always media makers behind the scenes with their views and interests, for example, when it comes to ideology, economic interests or politics. They influence the construction of their media products (Haas 2015, 92f). Therefore, smart speaker and advertising companies (3) also bear a social responsibility, especially if they offer products and content that young people can and want to consume. Needless to say, the smart speaker technology of the major providers will continue to develop and smaller companies with innovative ideas will also enter the market. For example, Mycroft and Q¹⁶ are positioning themselves as alternatives in the digital assistant market with open source voice recognition, gender-neutral voices and the promise of advertising freedom.¹⁷ A U.S. start-up also developed Chatterbox, a smart speaker that can be assembled and programmed by children starting at primary school age.¹⁸

However, in order to influence the future development of smart technologies on the producer side and to provide young people on the consumer side with the necessary tools for their adequate use, the active participation of educational experts is required. The teaching of advertising literacy skills plays a central role in this. Children are inexperienced consumers. This aspect must not be ignored when producing new technologies and marketing strategies. One of the tasks of media education is therefore to enter into dialogue with the advertising industry and to provide support in order to establish more pedagogical perspectives in economic processes.

7. Conclusion

In addition to all the sensitive points set out here, smart speakers undoubtedly offer numerous opportunities for young people: they can help with homework, promote versatile skills such as language development via pedagogically valuable game applications and interactive stories, and make the daily lives of busy parents (and thus their children) easier. In addition – and this is always an important factor when it comes to children – they are fun. However, there are numerous challenges which arise from using smart speakers and digital voice assistants from a media-pedagogical perspective.

16 Several initiatives produced and provided Q in 2019 in Denmark, the first gender-neutral voice assistant. This project aims to counteract gender stereotypes in business contexts (see <https://www.genderless-voice.com>, last accessed October 21, 2020).

17 “We promise to never sell your data or give you advertisements on our technology” (see <https://mycroft.ai>, last accessed October 21, 2020).

18 The project can be found on the official website (see <https://hellochatterbox.com>, last accessed October 21, 2020).

Advertising is a central component of every culture and, as shown here, its presence is growing. Therefore, children also encounter advertising in various forms in their own world. The promotion of advertising literacy – in the active accompaniment of parents and educators – should therefore begin as early as possible in the child's life. In light of these circumstances, the aim of teaching advertising literacy is also to enable consumers to decode, evaluate and select messages in media texts in a reflective manner, including via smart speakers and language assistants. Advertising literacy here means, on the one hand, consciously deciding for or against an offer – independent of recommendations by a language assistant – and, on the other hand, to be able to search for alternative offers if necessary.

“We are in year zero of the voice revolution”, as Google employee Lionel Mora was already quoted in this paper. The world seems increasingly ‘smarter’, consumption is becoming easier and more casual. At the same time, the permanent, overflowing supply of products and media content with smart technologies is penetrating ever further into the private sphere.

Advertising literacy is a central qualification here, on the one hand, to be able to identify and enjoy suitable offers. On the other hand, it is necessary to recognise the fierce competition of the companies behind the numerous smart speakers and to understand that we pay for the smart service of our voice assistant with much sought-after and expensive currencies: with our attention and our data.

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