MeTag App and MeTag Analyze

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Our review of the MeTag app and the MeTagAnalyze web app is based on an initial test project involving undergraduate students, and, later, its adoption as part of a mixed-methods longitudinal research project on the datafication of childhood and family life. We contextualise the value of media diaries as a research tool in phenomenological and user-centred research traditions, namely the Domestication of Technology approach and the constructivist mediatization research tradition. Based on our preliminary findings and these theoretical frameworks, we highlight the main methodological advantages of the MeTag app for researchers who aim for a nuanced understanding of media practices and communication repertoires within different contexts and across various timeframes.

1. Conceptual description and evaluation

MeTag is an open source software application "for collecting, analysing and visualising data from digital media diaries" (MeTag | MeSoftware, n.d.) developed by Andreas Hepp, Florian Hohmann and Alessandro Belli at Zemki, Zentrum für Medien-, Kommunikations- und Informationsforschung at the University of Bremen, in collaboration with the Leibniz-Institute for Media Research | Hans-Bredow-Institut, Hamburg, and the Institute for Information Management Bremen and as part of a project whose goal is to develop a digital solution to "the sustainable provision of software for cross-media practices and digital traces research", funded by the German Research Foundation (DFG).

The software centres around a web-based app for data analysis and visualisation, MeTag Analyze (Version 1.2), which allows researchers to create and manage their projects; and a smartphone-based app, MeTag (Version 1.0.10), a data collection system, available for both iOS and Android. At the time of writing, both versions are supported by an updated manual (see Hohmann, Belli & Hepp, 2022). The two apps work together, since MeTag Analyze allows researchers to set up projects and calibrate research inputs that will then be made available to research participants through the MeTag interface. The latter is a system purely centred around inputting and editing data, while MeTag Analyze features include data downloading and visualisation.

MeTag is a valuable research tool for qualitative media researchers, especially those inspired by, and active in the Domestication of Technology (DoT) approach (Silverstone, Hirsch, & Morley, 1992) and the constructivist mediatization tradition (Couldry & Hepp, 2017). Both approaches are phenomenological; they rest upon the

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premise that the social world is socially constructed through communicative process-es, and that everyday life – its contexts and practices – is where the social is made and remade (de Certeau, 1984); they aim to understand how media artefacts and media practices are made meaningful and incorporated into diverse everyday life contexts.

Moreover, the DoT approach and constructivist tradition of mediatization research attend to both the symbolic and material dimensions of media. The "double articula-tion" of ICTs (Silverstone et al., 1992) as both material and symbolic, media and objects, is in fact a crucial component of the multiple ways in which the media are domesticated, socially legitimated, and normalised within the reciprocal expectations that govern social interactions, while at the same time they are rendered invisible, they dissolve into the banal and are taken for granted. The complex entanglement of the social, the digital, and the material, already emphasised by DoT scholars throughout the 1980s, has been further complicated by datafication (van Dijck, 2014), posing additional challenges to researchers interested in accounting for the materiality of the digital – the materiality of the media, their underlying infrastructures, but also the materiality of algorithms and data – in everyday life (Breiter & Hepp, 2018). In this light, media practices and media artefacts are always conceived of as socially situated, and contingent upon distinctive articulations of relations of power, cultural processes and material practices, human agencies, and technological artefacts.

The DoT approach emphasises the temporality of media use as a crucial dimension of its domestication: media are incorporated into the routines of the household's, the individual's or the peer network's everyday lives, while simultaneously generating new routines, and reconfiguring the social uses and social meanings of time (Haddon, 2004). Reconstructing the experience of time associated with distinctive media arte-facts and practices is not only indicative of their domestication, it is also illuminating if we approach the domestication of media from a *communicative figurations* perspective (Couldry & Hepp, 2017), as argued by the constructivist tradition of mediatization research. A communicative figuration is made up of a specific *constellation of actors* (such as a family or a household), shared *cultural frameworks* (including technological imaginaries), *communication practices* (and their combination within specific commu-nication repertoires), and a specific *media ensemble*. Understanding the temporality of media use—its frequency, duration, distinctive patterns over time, established rou-tines, etc.—can lead researchers to a richer analysis of the media ensemble and the communication repertoire of each communicative figuration.

However, measuring the temporal experience of media use has always proved challenging. In fact, media studies have traditionally adopted written, time-use media diaries that participants were asked to fill in on a daily basis to record their media practices generally, or, alternatively, each instance of specific media use or individual media practices (see, among others, Couldry, Livingstone & Markham, 2007; Silver-stone, Morley, Dahlberg & Livingstone, 1989). Yet, many participants return only partially completed diaries, as this activity is often time-consuming and disruptive to the flows of everyday life.

MeTag aims to help researchers deal with these challenges by making media-diaries more immediate, easily accessible, and less time-consuming for study participants while assisting the researcher in their analysis of diary entries. It helps researchers to materialise both the temporality of media use and the communication repertoires of distinctive communicative figurations, as we will discuss with practical examples in the following section. In so doing, MeTag responds to the major challenge for media studies researchers, and for sociologists in general, who are faced with the

invisibility of media artefacts and practices in everyday life. In this respect, MeTag diary entries stimulate participants' reflexivity over their communication repertoires, helping them (and the researcher) de-construct the taken for grantedness (Ling, 2012) of digital media in the context of their everyday life. The MeTag media diaries produce valuable data through their core functions, as well as complimentary data with which to integrate interview findings, and create stimuli for follow-up interviews.

2. The user experience

Both MeTag (Android and iOS app) and MeTag Analyze (browser application) are offered as a free service under an Open-Source licence and are supported by the ZeMKI (University of Bremen; in co-operation with Leibniz Institute for Media Research | Hans-Bredow-Institut, Hamburg, and Institute for Information Management, Bremen) which guarantees long-term support.

The MeTag Analyze browser application was tested in the following environment: MacOS 11.5.1., using the Firefox browser (version 99.0.1.). At a later stage, the browser application was also tested on a Windows Vista PC, with Firefox browser updated to a recent version (98). The testing environment of the MeTag application was equally varied. Initially, the application was installed and tested on an Apple device (iOS version 15) and then on an Android device (Android version 11), owned by each researcher respectively.

The MeTag app is downloaded to the research participants' own smartphones, while being safe by design and in compliance with the General Data Protection Regulation (GDPR). All collected data (namely, participants' emails and their diary entries, including the medium used, the time of media use and other information such as the context of media use, their motivations, other communication partners, etc.) is securely stored on a database on a separate server housed at the "Zentrum für Netze" at the University of Bremen. Data can only be viewed by the researchers responsible and the system administrator and are treated anonymously for scientific purposes alone. Research participants who have voluntarily downloaded the app can edit and delete the entries of their media diary throughout the study period.

Our testing of the MeTag software and the corresponding control platform, MeTag Analyze, initially took place as part of an assignment within an undergraduate course taught in English at Università Cattolica del Sacro Cuore. Students were asked to use the app as a media diary to record their daily media routines for seven days. MeTag was also integrated into the methodological framework of a three year longitudinal and mixed methods research project on the datafication of Italian families (N = 20) with children aged 0–8.

First, we present the steps that involved setting up the app and the browser application with both students and families so as to describe the main features of the application. We then present and address some of the findings from the research project on datafication to illustrate how MeTag Analyze supports an in-depth and comparative analysis of media practices. It is important to note that our familiarity with both the app and the browser application increased after our initial testing phase with university students, so for each step, we will emphasise the insights we gained and how these have informed our methodological approach.
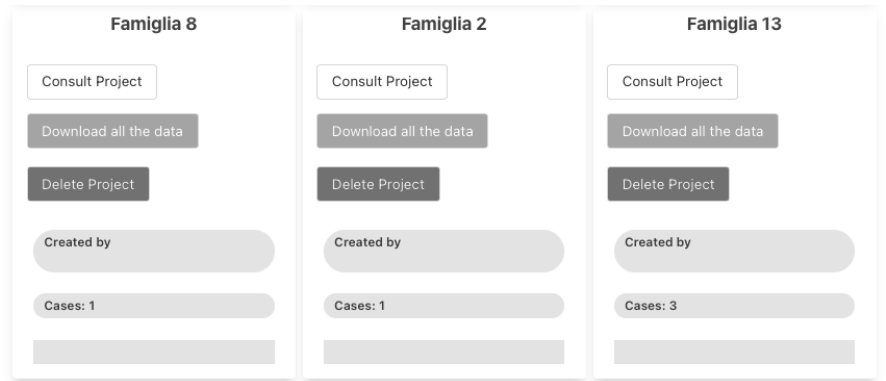
First, the researchers created a project through the browser application MeTag Analyze. The platform allows the user to set a project title, a short description and a series of inputs that project participants have to complete – either by following a

prompt received by a smartphone notification or by autonomously deciding when to enter the information. A start date and duration can be set for each project.

Testing MeTag and MeTag Analyze with a large group of students (62 students organised in 12 groups) required a number of preliminary decisions to be made to design and organise the workflow and to guarantee user participation. First, students were provided with a detailed, step-by-step tutorial – adapted from the one offered by MeTag's developers (Hohmann et al., 2022) – on how to install the MeTag app and access the MeTag Analyze browser application. Both the app and browser application were successfully installed and accessed by all students and on a variety of Apple and Android smartphones and Apple and Windows computers. In our research project, families with children were similarly introduced to the app and its affordances at the end of the second interview and family visit, out of the three scheduled for the project. The participating families were requested to use only the MeTag app (and not the MeTag Analyze platform) to produce a media diary related to the activities of a designated child. Families were reassured about the app's security and its capacity to process data in compliance with GDPR requirements. From our preliminary tests with students, we realised that families with a lower level of digital literacy needed guidance in installing the app and activating their account, which we provided by keeping in contact with them in the days following their initial visit.

Users are invited to access MeTag via an email sent through the MeTag Analyze web platform. The link guides each individual user to a page where they can set up a personal account that grants access to the app. As both MeTag and MeTag Analyze support multiple users, we acknowledged that every research activity requires preliminary choices with respect to managing the number of active projects (which can contain several users) and the number of active cases for each project (where each "case" corresponds to a participant). While students were divided into twelve working groups of four to five people ("cases") who entered data via the app into the same dataset (a "project"), we decided to create a project for each family and to activate only one account ("case") managed by one of the parents who would respond for their child so that we could guarantee an analysis of each family's media activity independently from that of others (see Figure 1).

Figure 1: Each family ("Famiglia") corresponds to a Project. Each family member corresponds to a "Case".

Concerning data entry, the platform requires by default that users complete a first "input" field that specifies which medium has been used, when and for how long (see Figure 2). The project admin can provide a predefined list of media.

MeTag enables different kinds of supplementary inputs (a text box, a multiple or single-choice question, a scale, and an audio input). In our testing workshop, students were questioned for the following: the type of medium used; a second medium used at the same time (as a multiple-choice question); the platform used (as a text entry, but examples were provided, such as Instagram, TikTok, YouTube, etc.); and the activity carried out with the first medium (as a multiple-choice question, e.g. "school work", "watching videos", etc.).

The participating families, who were asked to fill in the media diary through the app every evening for one week, were provided with similar questions relating to media use (through a predefined list), the type of activity carried out (single-choice predefined list), in the company of whom (multiple-choice list), and in what place (multiple-choice), as shown in Figure 3.
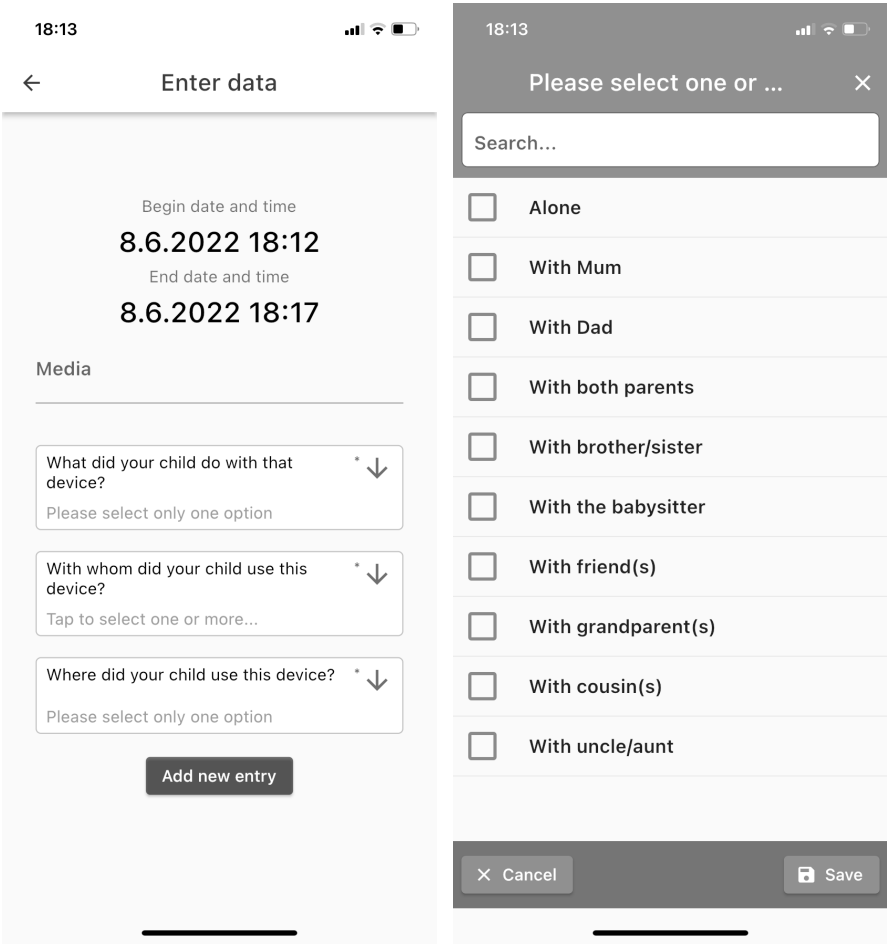
After the data entry period ended, the students were given access to the MeTag Analyze platform through another email invitation from the researchers. While the first invitation allowed student participation as respondents, the web platform allows the project organisers to include the students as fellow administrators of their project, authorising them to view, edit and download the collected data. Students were asked to find patterns in their communication and media repertoires, and to reflect on the media diary method in their assignments. By contrast, in our research project on the datafication of childhood and family life, participants had no access to MeTag Analyze. However, the researchers will share the data as a stimuli for the third family visit.

Turning to the analysis of the diaries through the MeTag Analyze app, the "Consult Project" function (see Figure 4) provides several options for data management. Specifically, MeTag Analyze offers three different options: 1) to create a visualisation of the entries; 2) to download the entries as an Excel table or in other formats; 3) to delete the case and the corresponding data.

MeTag Analyze allows project administrators to create a timeline visualisation of all the entries in a few simple steps. The web platform can produce two types of visualisation: a grouped entries graph (Figure 5) which combines all complete data for each entry including the answers given by the user for each entry; and a distinct entries graph (Figure 6), which focuses on individual answers and produces a corresponding graph. Distinct entry diagrams also support more granular visualisations of the data by simply reconfiguring time parameters. Both visualisations can be downloaded in different formats (PNG, JPEG, SVG, and PDF).

Results from our research project on the datafication of childhood and family life provide an interesting account of different households' media repertoires and demonstrate the benefits the MeTag app can provide to researchers in need of useful tools for the analysis of digital media use in domestic contexts. Figure 7 shows the media practices of two male children who use video games very frequently in a basement room – which the parents identify as their "game room" since it is home to two gaming consoles and two displays. The diagram illustrates how their play is structured as a recurring activity across time (during weekdays) and space (always in the basement). Interestingly, the graph shows how weekends might provide children with the opportunity of extending their digital play activities to include other family members (in this case, their cousins and uncle), while maintaining the centrality of

Figure 2: Entering data in the MeTag app

Users can access this view and insert data by pressing a blue button on the app's home screen. Every participant can edit or delete all their entries within the duration of the project (established by project administrators). We created an ad-hoc translated project to provide an English version of the original version. The original project's language (Italian) thus differs from the images above and below.

the "game room" as the main site for specific media practices. The graph also depicts how children's media activity includes, albeit residually, watching YouTube videos on a smartphone in the living room area. Taken together, these findings suggest that domestic spaces and routines play an important role in establishing media practices and repertoires. Similarly, the topology of the home becomes a structuring factor in shaping the distribution of children's media agency: children can play away from adult supervision for most of the week in a separate setting that stands in opposition with the convivial area of the home, traditionally represented by the living room.

297

Figure 3: The inputs set for the research project on the datafication of children's lives
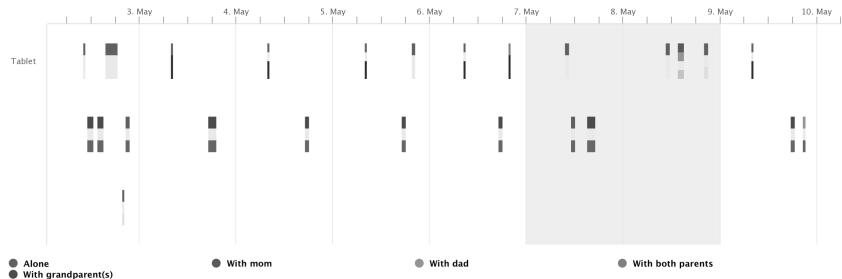

We created an ad-hoc translated project as to provide an English version of the original version. The original project's language (Italian) thus differs from the images above.

Figure 4:   The "consult project" button prompts various forms of data management for each case (participant).

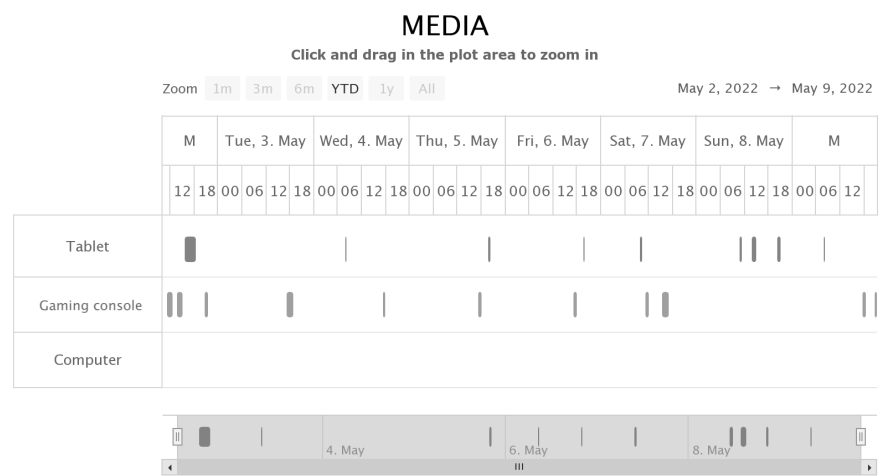Here, the participant's data has been anonymised.

Figure 5:   Grouped entries graph for Family 13

The legends and labels in the image have been translated directly into English using editing software, so the screenshot is slightly altered.
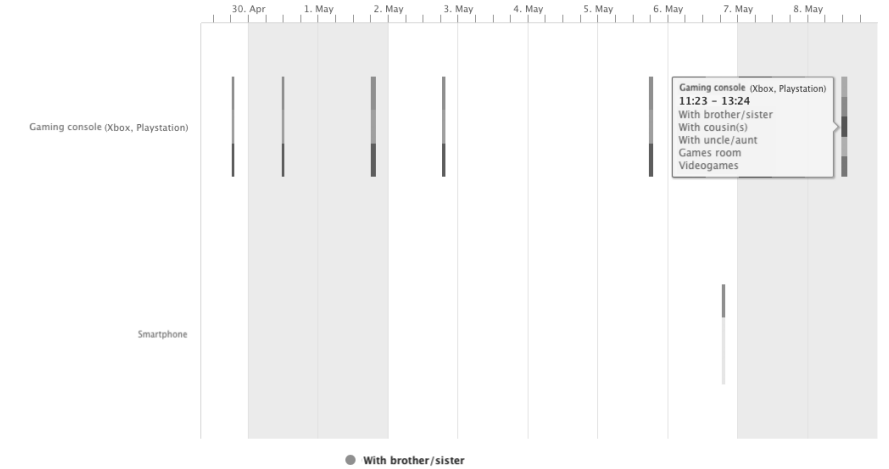
Figure 6:   Distinct entries graph

The legend in the image has been translated directly in English using editing software so the screenshot is slightly altered.

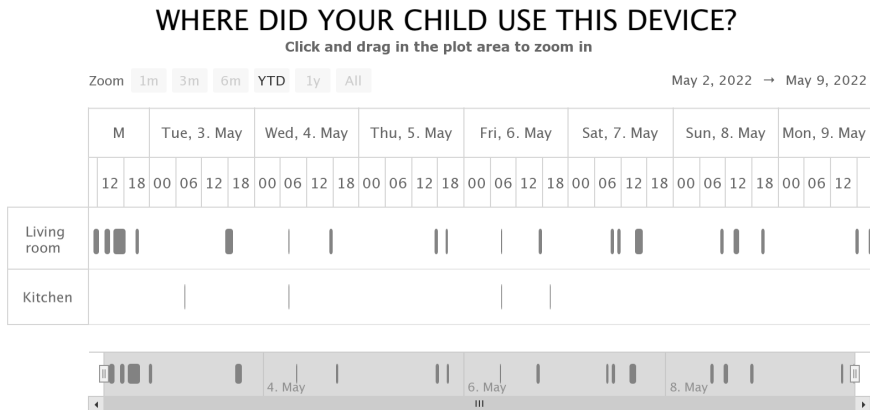*Figure 7:   Grouped entries graph for Family 11*

The legends and the labels in the image have been translated directly in English with editing software, so the screenshot is slightly altered.

Similarly, Figure 8 highlights the spaces where several devices – namely a tablet, a computer, and a video gaming console – are frequently used by a child (Family 13) consuming high levels of digital media throughout the entire week. In contrast to Family 11, the living room incorporates the media ensemble of the household and enables media-based communicative practices. This result is of particular interest

when combined with interview data in which the mother recognises and reflects on the living room as the focal point for all the family's "technological" matters.

Figure 8: *Distinct entries graph reporting the locations (living room and kitchen) where the child from Family 13 uses the devices*

WHERE DID YOUR CHILD USE THIS DEVICE?

The title and the legend in the image have been translated directly in English using editing software, so the screenshot is slightly altered.

Conclusion

Our review of the MeTag app and the MeTagAnalyze web application is based on an initial test run and, later, its adoption as part of a mixed-methods and longitudinal methodological framework. We highlight the main methodological advantages of the MeTag app for researchers who aim for a nuanced understanding of media practices and communication repertoires within different contexts and across various timeframes. After contextualizing the importance of media diaries as a research tool consistent with the Domestication of Technology (Silverstone et al., 1992) and constructivist mediatization (Couldry & Hepp, 2017) research traditions, we report on all the steps involved in creating a project, entering data and analysing them. Our review highlights how the app and the web platform can be adopted for the needs of a qualitative research project that requires ease of use, flexibility, and input customisation. In conclusion, we recommend the app to researchers and others who are interested in analysing how media artefacts and media practices acquire various meanings and become taken-for-granted within diverse everyday life contexts and experiences.

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