



# MEMEories: Internet Memes as Means for Daily Journaling

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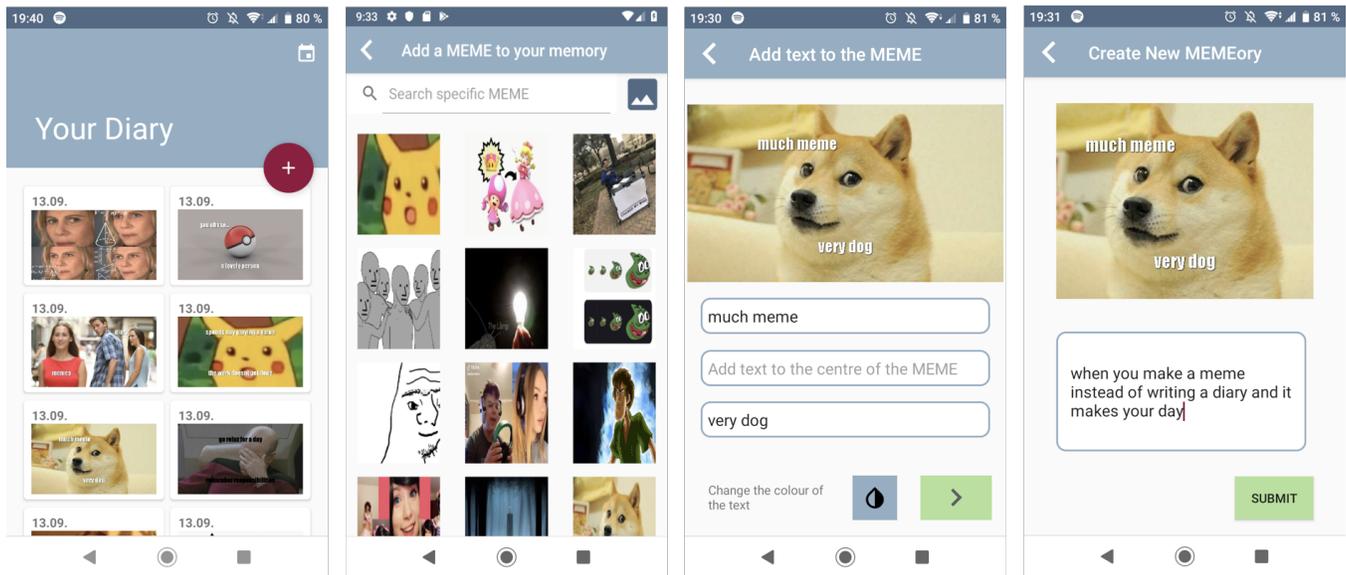


Figure 1: MEMEory: A mobile meme-based journal.

## ABSTRACT

Internet memes are (multi)media pieces, found all across the world-wide-web. Often disposing of a humorous component, they express and reflect on all kinds of local and global phenomena. Within our work, we explore how people can use internet memes to express and reflect on themselves. We built *MEMEory*, a mobile meme journaling app. We evaluated the prospect of meme journaling, nicknamed "memeing", alongside a written diary in a 2-week field study with 31 participants. Opposed to more neutral chronicle-style text entries, our results suggest that participants used memes to express specific single, rather negative events and emotions throughout

the day. When reflecting on daily events, the contained emotional and often humorous connotation of memes helped participants view negative events as more positive in retrospect. Although more difficult, memeing was perceived as significantly more motivating and enjoyable. Qualitative insights show that memeing can present a fun, engaging, expressive and memorable journaling experience.

## CCS CONCEPTS

• **Human-centered computing** → *Empirical studies in HCI*.

## KEYWORDS

Internet Memes, Diary, Journaling, Expression, Reflection, Empirical Study, Mobile App, Mixed-Method, Personal Informatics, Documentary Informatics

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## 1 INTRODUCTION

Journaling, i.e., everyday narrating of own experiences, thoughts and emotions in a diary, is a long-lived and fundamental human reflection activity. Benefits of journaling are multiple – for example, expressive writing can improve overall well-being [37, 49].

Rapid advances in digital technology enhanced the journaling process itself, outperforming written diaries. From web-based diaries (including blogs) to specific journaling mobile apps (e.g., *Day-One*<sup>1</sup>, *Daylio*<sup>2</sup>), entries within smart journals can be context and media enriched and subsequently (re)viewed [21]. Although smart journals can to a certain extent cut out the human in the loop when collecting and curating certain types of quantitative data (e.g., heart rate, physical activity etc.), it is user's active content creation and curating that is "valued for presenting a personally constructed and authored perspective" [21], resulting in more profound reflective processes [2]. Current research works discuss crafting visual, and somewhat artistic, forms of self-expression and self-presentation [8, 33, 59] for the sake of enjoyment and engagement [51]. This in turn may motivate people towards longer and deeper sessions of record inspections, furthermore lead to (re)interpretation of experienced events [33], more profound self-knowledge and ultimately, improvements in well-being [35].

In the quest of finding enjoyment and fun in journaling, we turn to its obvious source – *humor*. Although the benefits of humor are multiple, most prominently boosting our overall quality of life [44], the research corpus on humor in HCI is surprisingly sparse [32]. One of the main carriers of humor in the virtual world are *internet memes*: "inside jokes or pieces of hip underground knowledge, that many people are in on" [9]. New online communities emerged, with the aim of creating and exchanging memes around certain topics, such as the Facebook group "*High impact memes for PhD fiends*"<sup>3</sup>. In the meantime, internet memes have turned into profound commentators of serious societal phenomena, among others politics, gender or the refugee crisis in Europe [36]. In some ways, the virtual community is already reflecting on itself and its surroundings via internet memes [56]. Complementary to that premise, within our work we ask:

*To what extent can people express and reflect on themselves through the means of internet memes?*

In particular, we investigate:

- (1) What types of insights do internet memes facilitate?
- (2) How do people create and review memes for journaling?
- (3) What benefits and challenges arise for memes in journaling?

To address these questions, we developed *MEMEory*, a mobile journaling app, whose basic unit of input is an internet meme. The app assists users in crafting internet memes and provides a feed of their previous meme entries. We tested *MEMEory*, and consequently the concept of using internet memes as journaling input, in a mixed-method field study with  $N=31$  participants over the course of a week, using written diaries as point of comparison for another week.

<sup>1</sup><https://dayoneapp.com/>

<sup>2</sup><https://daylio.webflow.io/>

<sup>3</sup><https://www.facebook.com/groups/MemingPhD> - a topic the authors can well identify with too

Furthermore,  $N=7$  participants from the field-study participant pool gave in-depth interviews at the end of the study.

We provide an empirically rich data set of analyses, consisting of app usage, meme content (i.e., reported topics, sentiment and event granularity in the diary entries), questionnaires (i.e., at the beginning, the middle and the end of the study), and concluding in-depth interviews with a subset of participants from the field study. Conceptually, we contribute the novel idea and first exploration of using internet memes as an alternative visual and humorous expression form to promote self-reflection and engagement in daily journaling. As such, we expand the sparse field of HCI research on internet memes and examine the role of humor in daily journaling.

Our results indicate that memes offer out-of-the box emotional processing of specific, rather negative events, with a humorous note. As such, they can facilitate a fun, engaging, expressive and memorable journaling experience. We discuss arising opportunities and challenges for journaling and related technology in this context.

## 2 BACKGROUND AND RELATED WORK

Despite their worldwide popularity, research on internet memes within the HCI body of work is surprisingly sparse. Mekler and Hornbæk [41] briefly list memes as an example of positive technology offering momentary pleasure. Gleason et al. investigated how to make image-macro memes [26], and gifs [25] accessible on the Internet. In a more recent study, Kaltenhauser et al. [34] propose a novel netnography method – *MEMEography* – that uses internet memes, posted on social media, as subject of inspection to learn about user groups that are difficult to access. In what follows, we draw upon research in communication and social media research to present related work on *internet memes*. We then review the area of journaling and self-reflection with visuals in HCI.

### 2.1 Internet Memes

The Oxford English Dictionary defines *meme* as "*an element of a culture or system of behaviour passed from one individual to another by imitation or other non-genetic means.*" [1]

The Internet, with its far-reaching nature, has set a perfect breeding ground for the spread of memes, so today, a meme is commonly an internet-meme. An internet-meme is characterized by two components: first, it is a unit of information, and second, it replicates by passing on among people via Internet [16]. As such, it gains momentum very quickly, being passed by email, instant chat, forums, blogs or social media, while continually being copied and modified [16, 24, 27]. Research has investigated how internet memes "go viral", in general [61] and in certain countries/cultures [36]. Content-wise, internet-memes originally started as image-macros<sup>4</sup> [13], but later evolved to include a diffuse class of text-image-forms (e.g., catchphrases, gifs, videos etc.), usually including humorous components [24]. Overall, memes cover various topics or "genres", including politics and societal issues, as well as more personal themes and experiences [56].

Specialized internet-meme databases, such as *knowyourmeme.com* or *memebase.com*, have dedicated themselves to collecting internet-memes, providing information on their meaning and evolution.

<sup>4</sup>Image-macros consist of a static image with interchangeable text on it. In many cases the text is divided into two parts: a setup at the top and a punchline at the bottom.

Wikipedia devotes entire entries for popular internet-memes, such as Success Kid or Pepe the Frog. Such databases also facilitate further distribution and use of the included memes. Indeed, the act of replication, inherent to internet-memes, is typical for communication [54]: thoughts can be expressed through memes. On social media, memes are a crucial instrument of self-portrayal [40] and a common means for everyday communication between people to express emotional reactions [24].

Overall, the combination of humor and self-expression and reflection often present in how internet memes are currently used by many people everyday motivates us to explore their use as a medium for daily journaling. For the purpose of simplicity, we will further solely use the term meme, implying that we are talking about internet memes.

## 2.2 Smart Journals in HCI

Smart journals, lifelogging, self-tracking - all these terms are used in HCI to refer to a broad class of computing systems and belonging research works that collect, integrate, interpret and display personal data on a wide range of topics. Whereas most users are interested in tracking physical activity, health or general well-being [17], recent works have looked into a more broad spectrum, such as finances, visited places [22], or self-care in the contexts of multiple-sclerosis [6, 7], diabetes [19] or future mood [31]. These systems rose to prominence with mobile devices being able to sense and thus generate and analyze quantitative contextual data over a broad spectrum of users' behavior - coining the term "personal informatics" (PI) in HCI [38]. PI systems conceptualize self-tracking as a five step, data-driven iterative process, starting at data collection preparation and execution, followed by data integration and organization, next leading to reflection on data and ultimately to the development of an actionable plan for behavior change, according to the data.

Within these systems, the user enters the loop after the data collection step, for the goal of reflection, i.e. to draw conclusions from the passively generated data with the goal of change. As continuance of the PI process, two movements emerged: "lived informatics" [22, 52] and "documentary informatics" [20], with both offering insights into nuances of journaling itself and the overall goal being *beyond total capture* [55]. We adhere to that classes of journaling systems, that deliberately include the user in the loop one step ahead. As such, we consider as related those works that looked into *authoring and curating personal records with different media forms*, further narrowing it down to journals, i.e., a repetitive activity of recording everyday life (compared to one-time, special occasions, such as creating a time capsule [50]).

## 2.3 Reflective Journaling

In the context of personal informatics, recent works are moving towards more reflection-oriented approaches in journaling - that is, tools that favor more unconstrained self-expression forms, intentional breaks for the sake of reflective self-inquiries [10, 11], and remembering [20] over performance and preciseness as preached in personal informatics.

As one of the first works in HCI of such an example, Cordeiro et al. [18] examined a lightweight photo-based food journal, with

the goal of capture and subsequent reflection on nutritional behavior. On a more general note, Elsdén et al. [21] investigated the practice of journaling as their study subject. Among others, they found that active authorship encourages self-reflection and boasts self-knowledge - with different media, most prominently photographs and text, complementing each other as "layers" in users' self-expression. Nonetheless, they did not go into details regarding what types of media are more appropriate for what kind of personal insight.

Carter & Mankoff [15] investigated the usefulness of different media (i.e., visual, aural, haptic and context), resulting in photos being the easiest to capture and recognize - in the latter case, even better if shortly annotated. Their results support the proposal of transitioning from telling stories about photographs, to telling stories with photographs [43].

The move from photographs to abstract self-representations may be seen as a far-reaching one, however, we find it necessary due to findings that personalized visuals, and their construction, can lead to more profound self-reflective thoughts [33]. As such, meaningful, visual self-expression and the reflective nature of hand crafting are central to bullet journals [8, 58], with HCI research works examining the possibilities of their transfer from analogue to digital tools. Thudt et al. [59] looked into the process of crafting self-representations with building blocks in physical 3D spaces. The authors envision future explorations of visualizations as input - a thought we very much identify our work with. Murnane et al. [45] tied user's progress in physical activity to a multi-chapter narrative, seeking for "more qualitative schemes for encoding personal information". Avrahami et al. [5] examined the effect of recording text-based single highlights of the day, in order to promote awareness of success instead of, mildly spoken, colloquial indifference. More recently, Romat et al. [51], began to question the enjoyment of existing visualizations, hypothesizing that fun can lead to greater engagement with the visualization. We consider these works as motivation for internet memes as means for self-expression. As Jung [33] points out, *"Different reflective forms have varying qualities to facilitate engagement in reflection and transformation, which could be considered in creating and evaluating new reflective forms."*

We contribute to this body of research by introducing a new media form into the process of journaling - internet memes - which ultimate goal is to implicitly include humor as both a mean of self-expression, as well as motivator for the journaling process itself.

## 3 METHODOLOGY

In what follows, we first briefly describe the functionality of the implemented *MEMEory* mobile app. We then delve into the user study design. We conclude the section by listing the data collection methods.

### 3.1 The *MEMEory* Mobile App

*MEMEory* is a mobile app developed and implemented in Android. Its main functionality is twofold: (1) it enables creating new meme entries and (2) it displays a feed of already created memeories (see Fig 1).

To create a meme-based entry, users could either select an image-macro template from a pool of 605 app-contained memes or upload



Figure 2: The MEMEory mobile app in text-only mode

their own meme image from the phone’s library. We chose to provide this possibility as to not limit users in their expression. We acquired the meme templates by web scraping knowyourmeme.com<sup>5</sup>, a commonly cited resource in the field of meme research [9]. Here, we included memes from the “confirmed views” subsection, additional to and the 16 most popular meme templates from the years 2016 to 2018. We then manually revised the scraped memes to exclude sensitive content (such as homophobic or racist memes), orienting on the content warnings provided by the meme database.

### 3.2 Participants

Initially, 53 people responded to our call via a university mailing list, with 33 successfully finishing the study. We excluded those participants who failed to create diary entries more than once in a week. Two more participants were excluded during the analysis due to apparent problems with understanding the task. Thus, the data collected from 31 (M=12, F=18, D=1) participants is included in the analysis and results. As compensation, these participants received a 20€ Amazon gift card or two MMI credit points (some students are required to participate in a certain amount of studies to obtain their degrees).

The mean age of the participants was 24.2 years (SD=7.25, range: 18-56). Almost 2/3 ( $n=20$ ) of the participants were reportedly still students at university. The same number of participants reported having previous experience with keeping a diary, with  $n=6$  still doing so by the time of starting the study.  $n=7$  participants kept a diary for longer than a year. Others cited several reasons for termination, including a lack of motivation and time ( $n=6$  &  $n=4$  respectively), as well as disliking the experience ( $n=4$ ) and only keeping a diary in specific circumstances such as on vacation ( $n=1$ ).

Our participants could opt-in for a subsequent in-depth interview. Seven participants (M=2, F=5) opted-in. Participants were between 20 and 34 years young. Five of the seven participants reportedly wrote diaries in their past, but none continued to the day of the interviews. For participating in the voluntary interviews, participants were gifted an additional 5€ Amazon gift card.

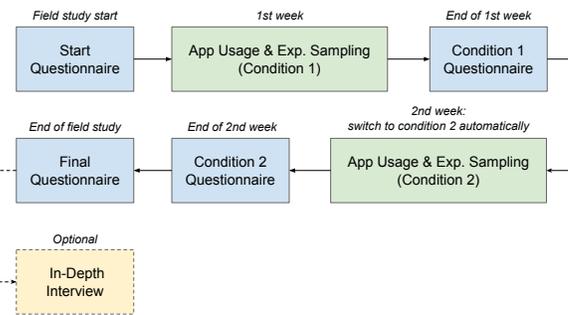


Figure 3: Procedure of the field study followed by the optional in-depth interview.

### 3.3 Procedure

Figure 3 presents a graphical overview of the procedure. We asked participants to create diary entries every day during a course of two weeks. During one week, the entries participants created were text-only whereas during the other, meme-based. Both kinds of diary entries were created using the app presented in section 3.1. In text-only mode, the app offers a large text-field instead of a meme (see Fig 2). We counterbalanced the order of conditions, meaning that half of participants started with the text diary, and the other half with memes (randomly assigned). Aside from collecting the anonymised diary entries, the app collects meta data such as time of entry creation.

We instructed participants to create an entry *at least* once a day, representing their day in a diary-like fashion. However, we encouraged them to create additional entries whenever they felt like it *during* the day.

We collected metadata about the app usage: we registered the exact time, date, duration and location (via wifi network) of creating an entry. After creating an entry, the app would pop an experience-sampling [60] alert asking for participant’s in-the-moment emotional, physical, social and task context. Participants could either chose from a list of answer options, or provide their own answer. Answering these questions was optional.

Each participant filled out four questionnaires during the field study. At the start of the study, we asked for demographics and previous experience with journaling and memes. After each condition, we asked three 5-point Likert-scale questions on the perceived enjoyment, motivation and difficulty to journal, as well as five open-end text questions on the benefits and drawbacks of journaling with that condition. At the end of the field study, participants gave feedback on the overall journaling experience (including four open-end text questions) and their preferred way of journaling (i.e., meme, text, both or undecided), also asking for the reason behind participants’ preference.

In the end questionnaire, participants could check whether they wanted to be invited for a final, in-depth interview. The interviews were semi-structured and adapted individually to the participants. Topics covered in the interviews ranged from self-reflection to assessments of the app. The interviews lasted for around 15-minutes and were audio-recorded.

<sup>5</sup><https://knowyourmeme.com/memes?sort=views>, accessed April 10, 2019.

## 4 ANALYSIS AND RESULTS

We present both a quantitative and qualitative analysis of our resulting data set, focusing on data about participants' experiences with the journaling types. First, we present the analysis of data collected with the MEMEory app, namely the app usage and the content of created text and meme entries. We complement these results with quantitative results on participants' subjective perception of journaling, i.e. perceived enjoyment, motivation and difficulty of keeping a written diary and meme journal. We conclude our results with a joint qualitative thematic analysis of the open-end questions from the two post-condition questionnaires and the final questionnaire, as well as the in-depth interviews.

### 4.1 App Usage

We registered 492 journal entries, 243 meme-based and 249 text-based. On average, participants created between 7 and 8 memes ( $M=7.84$ ,  $SD=1.65$ ) and 8 text ( $M=8.03$ ,  $SD=2.79$ ) entries, for an average of  $n=16$  entries ( $SD = 3.44$ ) in total over the full course of the study. Participants spent more time on creating a meme entry ( $Mdn=125$  s) than on a text entry ( $Mdn=77.5$  s). The creation of entries reaches its maximum frequency in the evening with around 2/3 of the entries being created at home.

Participants used own images in 31 of the 243 created meme entries. The remaining entries were split among 119 different given templates. The top 3 most popular templates were 'one-does-not-simply-walk-into-mordor' ( $n=7$ ), 'flipping-tables' and 'success-kid-i-hate-sandcastles' ( $n=6$  each).

We furthermore analyzed data on retroactive interactions with already created entries. Participants viewed memes 206 times in retrospect, compared to 100 views for diary entries. Participants viewed some entries up to five times. In total, participants viewed 79 different memes and 64 different diary entries after creation. 25 participants viewed memes and 23 viewed diary entries after creation. The experience-sampling results revealed that 18.5% of participants (meme 17.2%; diary 20.0%) reported actively reflecting on the events represented with the entry as the reason for (re)viewing an already created entry.

### 4.2 MEMEories Content

We analyzed the content of created MEMEories with respect to the covered topics, included *emotional sentiment* and *granularity* of reported events. We followed a closed-coding approach. Initially, the first two authors coded the entries of the interviewed participants, resulting in a code-book for the three categories above. The remaining pool of created journal entries was evenly split and then coded among the first two authors.

**4.2.1 Topics.** The top 6 topics our participants recounted are: 1) work/productivity (feeling productive or lazy, preparing exams, long day at work, etc.) 2) social (friends, family, partnership, social events) 3) hobbies and free time (working out, watching TV, reading a book, etc.) 4) health and well-being (all around physical and mental well-being) 5) weather and 6) food. Figure 4 displays some exemplary memes, that our study participants created. There was no difference in the narrated topics based on the entry type, i.e. these topics occurred in this ranking in both text- an meme-based



Figure 4: Some examples of memes that our participants created, on the coded topics (recreated for the paper).

entries. The remaining entries evolved around transportation and technology (issues), everyday chores, finances, politics and society and sexual.

**4.2.2 Sentiment.** We furthermore observed the emotional sentiment the entries transmitted. From the pool of entries that transmitted a sentiment, most were negative ( $n = 184$ ), followed by positive ( $n = 160$ ) and those with both ( $n = 46$ ). Entries that depicted multiple events, of which some were positive and some were negative, as well as entries that showcased a "bittersweet" single event, were coded as both. In 72 entries we registered no sentiment.

We used a Quasi-Poisson model for this count data [47]. We used Quasi-Poisson regression instead of Poisson regression due to overdispersion (i.e. variance > mean). We applied Bonferroni correction. The type of diary entry (i.e. meme vs text) was a significant predictor (only) in the models for *negative* sentiment ( $p < 0.005$ ) and for *both* positive and negative sentiment ( $p < 0.01$ ): Concretely, the model coefficients ( $\exp \beta$ ) show that creating an entry as a meme compared to text increased the chance of it being an entry with a negative sentiment by 65.33%, and decreased the chance of it being an entry with both positive and negative sentiment by 76.92%. In other words, these results indicate that memes lend themselves to be used for negative experiences, or negative experiences were chosen when creating memes. In contrast, text lends itself to be used for mixed experiences, or mixed experiences were chosen when creating a text entry. Overall, these results also fit to the known focus of memes on one particular sentiment or mood, whereas text presumably better affords including multiple aspects.

PI4 gave an example of frustration caused by bad weather, which as consequence had not going to the beach. P31 contemplated on reporting positive and negative events: "Either I studied [.. and then ...] I could go party again at the weekend and was then particularly happy about it. Or maybe some stupid things happened once or twice. So I had this little accident with the car and [...] I was able to express that [with a meme] because I was angry."



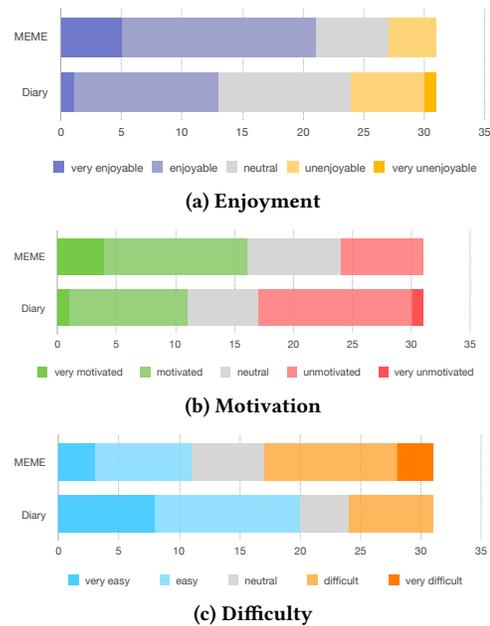
**Figure 5: Frequency of created diary entries according to sentiment (a) and granularity of events (b)**

**4.2.3 Granularity.** We coded the journal records based on the granularity of the portrayed events, i.e. whether the record presents a single happening or sums multiple events. A little bit over 2/3 ( $n = 210$ ) of single events were meme-based. According to our participants, these showcased the most prominent or unusual event of the day. Text entries recounted multiple events in their majority ( $n = 140$ ), captivating a more chronicle style, i.e., *where I was with-what I was doing* (s. Fig. 5 for summary). A small fraction ( $n = 16$ ) of both forms of entries embodied a somewhat general remark about life. For instance, P17 annotated a meme with *"Sometimes ... life is ... [like] a pony farm and such a day is today."*

We again used a Quasi-Poisson model for this count data, with Bonferroni correction. The type of diary entry was a significant predictor (only) in the models for the granularities *single* ( $p < 0.005$ ) and *multiple* ( $p < 0.0001$ ): Concretely, the model coefficients show that creating an entry as a meme instead of text increased the chance of it relating to a single event by 110.00%, and decreased the chance of it relating to multiple events by 86.21%. Again, these results fit to the focus of memes on one visual scene, whereas text may better afford including multiple aspects.

### 4.3 Perceived Enjoyment, Difficulty and Motivation

We compared the Likert ratings on perceived enjoyment, difficulty and motivation (s. Fig. 6) between meme journal and written diary with Wilcoxon signed rank tests: People rated the meme journal as significantly more difficult than the written diary (median "neutral"/3 vs "easy"/4;  $Z = -2.27$ ,  $p < 0.05$ ). At the same time, the meme journal was rated as significantly more enjoyable than the written diary (median "enjoyable"/4 vs "neutral"/3;  $Z = 2.26$ ,  $p < 0.05$ ). Moreover, people rated their motivation as significantly higher for the meme diary than for the text diary (median "motivated"/4 vs "neutral"/3;  $Z = 2.1$ ,  $p < 0.05$ ).



**Figure 6: Comparison of 5-point Likert-scale ratings on perceived enjoyment, motivation and difficulty to journal with memes and text respectively.**

Yet, participants' responses around their preferred way of journaling were split: 13 participants preferred the meme journal, 11 preferred text and 6 liked them both equally (one could not decide).

### 4.4 Thematic Analysis

We conducted an open-coding thematic analysis of the answers from the open questions (from the two post-condition and the final questionnaire), together with the in-depth interviews. We first transcribed the audio-recordings of the interviews. The first author then analyzed the data and proposed themes that were further discussed and iterated with the remaining authors. This resulted in four main recurring themes regarding meme journaling: 1) memeing includes an *editorial process* of event selection and reporting; 2) memeing can present a *fun* and engaging activity; 3) memes contain an emotional connotation and thus offer *expressiveness out of the box*; and 4) memes can encourage subsequent *reminiscence*. In what follows, we present the benefits and drawbacks of each theme in a separate section.

**4.4.1 Editorial Process.** The meme construction process required more time (see Sec. 4.1) than creating a text entry - participants confirmed this effort in their qualitative statements too. Questionnaire and interview answers showed that meme journaling required an editorial work, which can make it more time and cognition consuming than a written diary. In the written diary, participants mostly described multiple day-to-day activities *"with less of a filter"*, i.e., *"whatever was on [their] mind"* (P18). In contrast, when memeing, participants filtered their daily happening and as result reported single events, activities or emotions *"important enough or special*

enough or funny enough to be represented as a meme.” (P8). To select a happening “worth” memeing, some participants went the extra mile for the single one event that described the day best, was the most special or most intense one (such as “something funny or frustrating” (P10)). P7 remarked, “I either chose one special thing about the day or tried to think about what was “the essence” of the day (perhaps more related to how I felt and less to what I did)”. P7 emphasized that this effort benefited reflection. “In forcing me to summarize the day in a picture, it [made] me think about whether the overall “outcome” [of the day] was good or bad”. “[I thought about] what were the highlights, good and bad. Especially the memes made me reflect a bit more to think about how I could fit my day into a meme I knew.” (P7)

Others were more spontaneous, and simply reported whatever occupied their mind at the moment of creating an entry, e.g. (P5, P26). Commonly, participants cared about perfectly matching the happening onto the meme. This perfect match was at times the motivation itself behind the event selection. For example, P27 stated choosing “only one experience, that fit the best on the picture”. Similarly, P4 “tried to find the activity that would make the best meme”. Although quick at expression, the timely and cognitive effort of finding a meme to the picked event was for some participants burdensome.

**4.4.2 Fun and Enjoyment.** Essentially, most participants liked the idea of memeing and the process of crafting memes itself. As P20 commented: “It’s a fun way to remember and to evaluate your day.” In the quest of finding “the funny little things” (P4) to journal about, P4 described being “more attentive to small details” that happened throughout the day. Similarly, P18 wrote: “It really made me think about everything that happened in detail in an effort to find a meme-worthy event.” As consequence of the fun factor, a number of participants perceived to have a more profound self-reflection affair. P8 observed: “I [reflected] even more with the memes, because you more or less take an event and then present it as a meme, whereas you can simply write more with the text. When I was thinking: what is now important enough or special enough or funny enough to be presented as a meme.” The added level of humor memes provided made some participants perceive their experiences differently than originally thought. P21 “found it funny to pick an event or feeling [...] and try to express it in an ironic, degenerate way.” Our quantitative finding on memes expressing rather negative events and emotions (see 4.2.2), was confirmed in participants qualitative statements. However, participants did not find this as a drawback, on the contrary. Some participants argued that memeing helped in distancing themselves from the negative, turning it into (more) positive experiences. P29 simply put: “I took bad stuff with more humor than usually”. Following, P8 “gave the bad things a new frame and then [the bad thing] was funny.”. Nonetheless, P31 wondered whether these negative events can have a bad impact on the person after a long time: “If you look at [the diary] again after a long time and then somehow only negative things come to mind ... So that of course also depends on the person, how they always perceive something.” P15 found the joy of memeing itself, as a means to deal with a somewhat bad day, stating “even though the day might’ve been tough, memeing about it still makes you somewhat happy ... [it] somewhat brightens up your day”. Thanks to the fun-factor, P28, a self-proclaimed “non-journal

person”, might imagine keeping a meme diary, being, however, skeptical until when: “I think [a meme journal] tends to be more fun for non-diary people like me. I wouldn’t say it’s fun but it’s more fun. In the beginning I enjoyed it. Towards the end it was more of a burden to have to stick to it.”

However, some participants complained about feeling pressured into being funny and reporting fun things only, “which is just not always the case” (P9). P18 added: “When journaling with a meme I tried to look at my day from a more entertaining perspective to then choose a meme to emphasize that, but it didn’t always work.” This in turn led to self-criticism: “I also felt like [my memes] weren’t really funny and I was quite disappointed in my meme-ing abilities.” (P18) As consequence, P18 preferred text over memes: “With the memes I felt like they had to be entertaining in some way, because that’s what I would personally expect when looking at a meme. The [text] journaling felt less restricted and more liberating.” P14 speculated which meme would have been appropriate in case someone passed away, “because memes always somehow have a funny component in them that is sometimes not appropriate ...”.

For some participants, the enjoyment was so strong, their biggest complaint was the immaturity of the app to use it on a daily basis, outside of a study setting. “I think it would be cool if [the app] actually existed... I really enjoyed it.” (P8)

**4.4.3 Expressiveness out of the Box.** The contained expressiveness of memes, i.e. “emotional connotation ... without having to specifically express it” (P14), was experienced as both a benefit and drawback. Some praised the possibility to simply and quickly express themselves by selecting an existing meme instead of going through the process of translating feelings into written words. “Before I describe “yes, and I felt really good there and I was proud of myself” I know there is this meme with this little child who happily sticks his fist in the air and it expresses the whole thing situation in which I feel without having to describe myself.” (P14) However, P28 remarked: “... the [meme] must not be arbitrary, because memes have a very strong meaning that is already predefined. [Yet,] You can express yourself with fewer words when it comes to describing the day, since the meaning already emerges from the picture.”. As consequence, some reported creating an entry more quickly, within “a few minutes” (P31). The speed of creation, and ubiquity of smartphone device, led P14 to create memes within or right after events they noticed as memeable. On the other hand, some participants perceived a higher cognitive effort, due to finding the one suitable meme, which ultimately led to longer creation times - and participants’ frustration. “I wasn’t motivated to scroll through the whole list of memes every day and think of which one is the most suitable but I couldn’t spontaneously come up with one either.” (P10) At times, the app failed to provide sufficient assistance, e.g., with the search bar. More often, participants simply felt limited by the templative meme form and thus struggled to express what happened, which led to settling for half-hearted solutions. “For example, the day I used “success kid” for “went to coffee meetup, made a new friend” I ended up choosing a good thing about the day [that] was easy to express with a meme, but left many other things aside, and I’m not sure if it helps me recall the most important events of that day.” (P7). P31 agreed that a certain level of detail was getting lost: “So if you just use the meme then you can’t necessarily go into certain events in more detail, but you keep it

*relatively superficial or then only refer to a certain part of the day.” “[Sometimes] I’m usually too lazy to write something forever and then a meme would be better, but [I like text because it is] somehow more precise and I want to go into my day more precisely.”* This finding aligns with our quantitative granularity finding, suggesting that memes are suitable for reporting rather single, encapsulated and less complex events 4.2.3.

Whilst more expressive, P19 found memes “*somewhat depersonalized*”, stating “*Sure I wrote something on [how] my day was, but at the same time I just used a photo, which I know has already been used thousand times.*” Nonetheless, participants valued the visual stimulus memes offered, compared to text. P8 and P27 explicitly used the proverb, that a picture says more than thousand words.

**4.4.4 Reminiscence and Memorability.** Despite the field study lasting two weeks only, some participants already reminisced about their entries within that time frame. “*I got reminded of accomplishments and progresses of my past days. I also chuckled seeing some memes I created and this improved my mood temporarily.*” (P21)

In the subsequent in-depth interviews, almost all participants stated reminiscing their entries at some point after the field-study, mainly the ones created with memes, as quantitative findings on subsequent viewings also show (see 4.1). The motivation behind it varied across participants. P26 thought it was nice reading through written word again. P8 reminisced for the sake of doing it, “*but only the memes, not the text [entries]*”. P22 “*didn’t find it necessary to look through the old memes, but it was fun to look through the [chosen] pictures...*”. For P19 and P31, it was a matter of social interaction with other people. “*... I showed [my friend] some of the memes I made. Well, I think that’s a plus for the memes, because if you have some that you think are cool, then you show them off too. And you don’t do that at all with a text form.*” (P19)

Additionally, P19 claimed to better, if not solely, remember the events they recorded with memes: “*I remember that because that was the week I did the memes ... Yes, I think I still remember pretty much everything from the week. The essentials. But mostly from the [meme week] I believe.*” Yet, P19 wondered whether they’d still be able to recall memes created some longer time ago. P14 added that the memes’ visual nature, thus the reduced amount of expression, were the anchor they hold on to in remembrance: “*Because I need fewer words to explain how I felt at the moment and I can also remember the things I did better in the meme diary than with the written one. I can just see ... the picture and I still have some memes in my head that I used and then I know what I wrote about the memes.*” P22 agreed: “*... You can also see the memories ... and it is more visual [with] the pictures than just reading what you wrote for your day.*”

## 5 LIMITATIONS

The collection of private content in a field study can lead to hesitation in participants to express themselves openly. Two participants expressed this: P4 wrote that they tried to keep details vague e.g. left out names in order to not “*be to[o] personal and [...]traceable*”. We cannot exclude that other participants confined themselves in a similar manner.

Although we did our best to exclude sensitive content in the meme images provided in the app, due to the ambiguity of visual content, there remains a chance that some remaining items might

have triggered a negative response for some participants. However, we did not receive such feedback. On the other hand, this might have reduced our pool of offered memes. Yet, we do not claim completeness and thus offered participants the opportunity to upload whatever memes they liked by themselves.

Furthermore, our sample is not representative of the general public. Yet, we show the idea’s potential with our student sample reflecting the young adult population, keen on social-media pop-culture, where memes originate from.

Finally, diaries usually unfold their full potential if used long-term. In that sense, two-weeks is a rather short time span. We cannot tell how keeping a meme diary for an extended period of time affects participants and for how long they would continue to keep a meme diary without the incentive of participating in a study. Yet, the results of perceived enjoyment and motivation, as well as some participants stating they would like to further use MEMEory as a product, are encouraging regarding deployments with longer use in the future. We provide some implications and application cases for future work in the following section, in particular for the sake of long-term engagement.

## 6 DISCUSSION & FUTURE WORK

*“If life gives you lemons, make a meme.”* (P29)

### 6.1 Memes as an Emotion Regulation Tool

Our results indicate that memes are suitable means of expressing one’s own events, experiences and emotions without thematic limitations. Compared to the standard of written diary, both our quantitative and qualitative results point out that memes are more suitable for presenting single, special events, i.e., highlights. This makes memes comparable to Avrahami et al.’s text-highlights [5], yet, with a broader thematic scope. Congruent to the findings of Kaltenhauser et al. [34], our participants expressed rather negative events with memes. Our qualitative results enroll that both memes, as well as their creation process, helped participants to overcome such negative events. These events became more positive in the eyes of the participants than they initially really seemed. These results are in line with research on humor, which says that practicing humor can turn the negative into (more) positive [46]. This is interesting from the point of designing technology for self-reflection with the purpose of self-acceptance, mindfulness [14] (e.g., [57]) and emotion regulation [29, 30, 37]. Indeed, recent works from psychology [3, 4] have shown that the humorous effect of internet memes on negative life episodes can be beneficial for people suffering from depression and anxiety. Future work could explore the benefits and challenges of MEMEory with that particular target group.

### 6.2 Memes as an Additional Form of Self-Expression in Journaling

The line between fun and ridicule is thin [12], so in designing such technology, caution is wanted as our reaction to humor happens on an individual level. Our qualitative analysis confirmed that memes were not suitable in all cases, which is why a running digital journal app could offer other forms of expression next to

memes, text being the most obvious example. Furthermore, recent works (e.g., [48, 51, 59]) consider alternative visualization forms for self-expression and self-presentation. These forms offer a higher degree of personalization, striving to rather convey data in its quality (i.e., the overall atmosphere), than its quantity. On the other side, some of our participants struggled more with compressing all facets of the experience into a meme, especially considering that memes are expressive by itself. Whereas we acknowledge the need of users for a more detailed, comprehensive expression, we consider memes as an additional form of self-expression, that journals might benefit from. Our results match with findings of Elsdén et al. [21]. They pointed out that the various journaling forms in "smart" journals, e.g. pictures, text, sensor data etc., are as "layers, each validated each other." Accordingly, future work could explore the interplay of memes not only with text, but also with other forms of self-expression, such as the ones previously listed.

### 6.3 Automatic Suggestion of Memes

Participants cared about finding perfect memes for their events, both for the sake of short-term sense of reward and pride, as for the long-term pleasure of reminiscing the created gallery. However, the search for the perfect meme seems not to be a trivial task, which often ended in frustration due to its long duration, as indicated by the app usage results and confirmed by participants' statement. The proverb "If I had more time, I would have written a shorter letter" seems to be valid here. For future work, we propose a *meme suggestion* machine. This machine might, for example, ask the user for a short textual description of an event and automatically propose one or more fitting memes. We believe that particularly users without much knowledge on memes might benefit from it. Nonetheless, our participants were more motivated to journal with memes than with textual entries.

### 6.4 Memes and Self-Reflection

Our qualitative results primarily describe the *process* of journaling with internet memes. To a certain extent, they confirm and extend findings on the reflective motivation to journal by Elsdén et al. [21]. We have too found that journaling is a reflective process itself, nonetheless amplified with memes. Whereas within a written diary participants could *write* more in detail, reported by Elsdén et al. [21] too, when journaling with memes participants *paid more attention* to details. Furthermore, some participants considered memes' suitability as journal entry both during the event, as in retrospect. For these participants, the contained emotional connotation a meme bears [56] favored a quick composition of a meme entry. Together with the quantitative results on the more even distribution of creating meme journal entries over the day, this indicates that memes spark as well *reflection-in-action*, as *reflection-on-action* [53]. In that sense, future work could explore the role of humor on, e.g., different levels of reflection by Fleck and Fitzpatrick [23].

### 6.5 Meme Journaling as Meaningful and Celebratory Technology

The majority of our participants did *look back* for the pleasure of reminiscence, almost exclusively with memes. Participants suggested having a stronger memory of events they memed about,

which aligns with the effect visuals have in general. A stronger authorship feeling in the case of memes could be compared to a carefully taken photograph. Our participants shared their meme diaries with family and friends. In that sense, memes could be viewed as part of celebratory technology [28]. Furthermore, this finding is congruent to that of Mekler and Hornbaek [41], who report on participants interacting with friends and family by sharing memes. In their work, memes were depicted as a momentary experience of pleasure. Opposed to it, future work might consider exploring whether internet memes could be perceived as a more meaningful [39, 42] technology by the means of *MEMEory*.

## 7 CONCLUSION

We presented a mobile journaling concept and app that enables people to express daily experiences and reflections as memes instead of text entries.

We evaluated this idea in a two-week field study with 31 participants. Overall, "memeing" can provide a fun, engaging, expressive and memorable journaling experience. People tended to use memes to express specific events and emotions throughout the day. The memes' inherent emotional expressions, often humorous, particularly helped to reflect on and cope with negative events. Creating memes was seen as more motivating and enjoyable than text, and we identified design implications to further improve the creation UI and process.

In a broader view, our work and lessons learned here contribute to a growing set of alternative approaches in technology use for (re)presentation and reflection of personal experiences.

Additional resources for this project are available on the project website: <https://osf.io/dzqcm/>

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