The Phenomenology of Remembered Experience: A Repertoire for Design

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ABSTRACT

There is a growing interest in interactive technologies that support remembering by considering functional, experiential, and emotional support to their users. Design driven research benefits from an understanding of how people experience autobiographical remembering. We present a phenomenological study in which twenty-two adults were interviewed using the repertory grid technique; we aimed at soliciting personal constructs that characterize people's remembered experiences. Inductive coding revealed that 77,8% of identified constructs could be reliably coded in five categories referring to contentment, confidence/unease, social interactions, reflection, and intensity. These results align with earlier classifications of personal constructs and models of human emotion. The categorization derived from this study provides an empirically founded characterization of the design space of technologies for supporting remembering. We discuss its potential value as a tool for evaluating interactive systems in relation to personal and social memory talk, and outline future improvements.

Author Keywords

User Experience; Memories; Remembering; Repertory grid; Interaction design.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

There is a growing interest in HCI in interactive solutions to support remembering [12]. Some of this work orients itself towards functional support or to augment our ability to remember, such as lifelogging initiatives [see 20]. Other work departs from a functional or performance oriented

consideration of memory, focusing on emotional and experiential aspects of remembering [e.g., 3,10,16,19]. A good understanding of the nature of remembering encompasses, besides functional and cognitive mechanisms [e.g., 2,7], also an experiential understanding. What do we feel when remembering and how could that affect the place the past occupies in our present life, and in particular, how may interactive systems support this?

Figure 1. We used repertory grids to elicit personal constructs on experiences from autobiographical memories. This word cloud shows responses for the theme Ceremony.

In this paper, we adopt an experiential perspective on remembering to highlight how people address their past as a remembered experience (as exemplified in Figure 1). Unpacking the essence of an experience lived by different individuals has been a core challenge for phenomenological research [17]. Yet, the phenomenological study of memory has historically swayed towards the recollective aspect of remembering and less to a perspective on such remembering as an experience in itself [21]. Designers of supportive systems for remembering work with photos and other media as their material to support the reconsideration of remembered experiences, so the motivation for this work is

found in the apparent lack of a vocabulary and categorization that will provide a foundation for design explorations.

RELATED WORK

A key purpose of autobiographical memories is to support a consistent narrative of one's identity [2]. By that logic, memory is a continually evolving phenomenon relevant to personal and social experience, which has piqued the interest of a growing number of HCI publications [see 12]. Common to many works on design for remembering are the interactions between past experiences and a personal sense-making process, perhaps facilitated through exposure to and experience with an interactive prototype. The nature of this talk is as diverse as the studies and prototypes but covers both the remembered experience (the past) and product-user experience (the present).

For example, the Family Memory Radio was a repurposed analog radio made to play back audio clips of family events [19]. It allowed families to engage in a shared exploration of sonic mementos, and come together thanks to the shared stories. The purpose of the device was to use evocative recordings of past experiences to create new experiences. Photobox [18] was an artifact placed at home that every now and then printed digital photos from an online account for people to encounter. The experience and perceptions towards such technologies were of primary interest.

If designers of similar systems could take the remembered experience into account it may be possible to optimize the choice of available content as memory triggers (e.g., which digital photo would be appropriate to show now?). Building a shared understanding of past experiences can benefit and steer the design process. However, the examples given (as is typical of similar HCI work we considered) often do not directly talk of remembered experiences giving their focus on experiences directly related to the design intervention. Notable exceptions include work on SenseCam use [6] and research that examined involuntary remembering in everyday life which noted the value of re-encountering things that bring back earlier experiences [24].

This non-focus on memory as a phenomenon of the past gets support from the argument by Harper et al. [6], who argue that memory should be seen as a product of the context in which it is retrieved, retold, and re-experienced. Yet, we believe that this view can match with the perspective of remembering as an experience, in which a deeper understanding of what feeds this experience (thus, present context and a past experience) can benefit the design of technology similar to the examples given.

Remembering and User Experience

In casting remembering as an experience, we align with thinking on user experience (in particular Hassenzahl's); namely, an ongoing reflection on events someone currently goes through [9]. Both are about making sense of what one is going through (now or in the past). Thus, personal memories can be thought of as past experiential events.

Given the reconstructive nature of memories [2], when remembering one's past, the remembered experience may also be affected by the present experience (e.g., mood, social context). Interactive systems provide one aspect of this remembering context that can be designed to influence the experience. For example, a photo shown on a device can trigger someone to remember the event at which the photo was taken. The way such material is presented through a device could influence when, where, and how someone reviews and remembers the associated past experience. In this example, the remembered experience becomes part of (and the remembering itself an instance of) human-product interaction, similar to user experience [9]. Despite clear similarities between personal remembered experiences and product-user experiences, the UX literature has so far not addressed a more general experiential understanding of personal memories.

Because past experiences are often at the basis of designs that aim to support remembering (e.g., through showing photos of such past events), we argue that addressing this gap can serve as a leitmotif for future work to chart and compare experiences people have with new designs. Benefits include being better able to canvas people's experiences in future studies (helped by a phenomenological frame of reference) and improved evaluations of how systems designed to affect remembering actually influence such experiences.

Phenomenology of memory

We are not the first to turn to an experiential account (i.e., phenomenology) of autobiographical memory. It is an active area of research in cognitive psychology. Efforts to classify and capture the phenomenology of memory often take the form of questionnaire development, which can be used to survey one's recollection of a past event [22]. Typical questions relate to how well respondents can see and immerse themselves in the memory of a past event, and to what extent they believe the memory is a faithful representation of the actual event. For example, the Memory Experiences Questionnaire [21] covered ten aspects of a memory's phenomenology: vividness, coherence, accessibility, time perspective, sensory detail, visual perspective, emotional intensity, sharing, perspective taking, and valence. The Autobiographical Memory Characteristics Questionnaire [1] also considered notions like emotional distancing and inclination to share an event with others. However, the desire to develop a data driven and theoretically meaningful measuring instrument led to the exclusion of categories such as personal implications and emotional persistence, despite their potential usefulness in HCI practice. More problematic still is that most work builds on existing classifications, rather than a bottom-up, participant-driven phenomenology of personal memories.

In contrast, personal construct theory builds on the idea that people make sense of their world in their own terms [14]. Thus, any experience can be explained in terms of several personal constructs interacting with each other. A personal

construct comes in the form of a single dimension of meaning with two dichotomous poles such as light/dark or pleasant/annoying. A construct allows a person to reason about a phenomenon as (dis)similar to another one [13].

Gap
Deriving how people construe their remembered experience offers an avenue for an empirically grounded vocabulary of participants' experiences. We developed a repertory grid study to identify constructs that people use to describe their remembered experiences, which can inform the design of supporting technology. In doing so, we propose a design space for interactive systems that support remembering.

REPERTORY GRID STUDY
In a repertory grid interview, a vocabulary develops from a participant generating personal constructs to describe a set of contrasted elements [13]. Typically, someone is shown three elements from a larger set (e.g., a book, a top hat, and a movie ticket) and asked to identify which two are similar and different from a third one. According to personal construct theory [14], a person's reasoning reveals how she construes reality in terms that make sense to her. For example, the book and movie ticket both allow this person to escape reality whereas wearing an unusual top hat would make her self-aware. A participant may express the perceived similarity and difference as a dimension between contrast pairs (e.g., Self-aware/Escapist), which consequently can be used to rate each element on this scale (akin to a Likert scale). Thus, the book and movie ticket would be rated towards the Escapist pole, whereas the top hat gets rated towards the Self-aware end of this scale. Repeating this with varying triads of elements fills a grid of construct pairs and ratings, and enables a researcher to elicit participants' personal constructs in a systematic way [13].

Over the past years a number of HCI studies have employed the Repertory Grid Technique (RGT), for example to canvas how people think about abstract concepts such as usability [11], user experience [4], emotional attachment to products [23], and to explore the design space of shape changing interfaces [15]. Its attraction lies in the reliable and precise acquisition of personal constructs while analysis is flexible.

Participants
Twenty-two adults were recruited via personal networks of the authors and university notices, via social network posts, emails, and in person. Participants were told the purpose of the study was an interview on comparing past personal events. Using purposive sampling, respondents were selected to maximize diversity. They were offered light snacks in turn for their participation. Participants were aged 22 to 70 (M=43 years, 60% female) and most were affiliated to the university of the first author as postgraduate student or staff. Half were native speakers and others had comparable language skills.

Memories as elements
Personal memories were used as elements for participants to compare and contrast. Participants were invited to write down six memories for later use during the interview. To help participants come up with a variety of memories, we gave six keywords to define stable themes: *Rejection*, *Childhood*, *Theme party*, *Ceremony*, *Fleeing*, and *Chocolate*. We settled on these keywords after piloting to ensure diversity (e.g., inclusion of negative stories via Rejection, inclusion of distant memories via Childhood), without being overly restrictive. Participants were encouraged to write down one specific event per theme to avoid overly broad memories that are less easily compared with other events.

By using personal memories as elements we risk that these elements used for generating a grid would be unique to an individual and thus not generalize across participants. A *Childhood* memory on being disciplined would have little in common with building sandcastles on the beach. Yet, it was key to have participants describe and contrast their own experiences in their own vocabulary. Thus, we preferred having constructs generated by our participants. However, to facilitate making inferences across participants we supplemented these with a common set of constructs [similar to 23]. Assuming a shared understanding of these constructs (i.e., everyone interprets a construct in a similar way and rates elements accordingly), other constructs generated by participants can be interpreted relative to the common set.

Seven supplied constructs were selected to capture a range of experiential qualities: Lively/Dull, Personally relevant/Personally irrelevant, Meaningful/Meaningless, Positive/Negative, Intense/Mild, Mixed feelings/Clear or single feeling, and Satisfaction/Disappointment. This selection is based on relevant questions found in existing phenomenological questionnaires [1,22], RGT studies [23], and our own observations from pilot interviews. No participants expressed difficulty in comprehending the contrast pairs. To avoid influencing participants prematurely, these constructs were not introduced until after exhaustion of the participant's ability to generate their own.

Procedure
The interviewer would meet with the participant at a quiet space on campus. The topic and procedure were introduced and participants were asked for their consent. The repertory grid procedure was illustrated using an example with cat toys, highlighting that the focus was not on item properties (i.e., color or texture), but rather the personal experience that results from playing with these different toys. Next, the participant filled in a brief demographic survey (i.e., age, sex, occupation), and wrote down a summary of one personal memory per theme. For this purpose, 6 A6-sized cards were provided, which explicitly asked to *'briefly describe the event,'* and *'describe your experience, how you felt, at that time.'* Participants were given ample time to relive and write down their stories in any preferred order (typically this took ten minutes). When done, the researcher invited them to talk briefly about each story to supplement their written summaries and form a common understanding.

With the memories-as-elements established, elicitation of personal constructs commenced. We used a standard

procedure to elicit constructs, in which the researcher would take a triplet from the six cards with a participant's personal stories [13]. The selection order of triplets was randomized across participants to balance for even encounters of all elements. Participants were asked to consider which two of these three memories are alike in some way, and different from the third, in terms of their experience at the time. They were asked to come up with a personal construct to differentiate between the memories, typically in the form of a contrast pair (e.g., two were Happy, the other Sad). The researcher made sure elicited contrast pairs were indeed clear opposites, self-explanatory, and if needed, he discussed suitable alternatives if only one side of a pair was identified.

Participants were invited to rate each of the six elements on the newly identified dimension using a scale from 1 to 7 (e.g., a very Happy memory would be rated 1, very Sad 7). For this, contrast pairs were recorded using a digital grid sheet on a tablet device[1]. Each row of the grid represented one dimension, and the stories' keywords were used to denote the columns on which to enter the ratings. Once a round completed, a new triplet was chosen and another construct would be elicited. This continued until the participant was unable to generate new constructs. At this point the researcher introduced the seven common constructs for rating by the participant. Each element would then be rated for all supplied constructs, unless a participant had already generated an identical contrast pair beforehand.

Afterwards, participants were asked to share any insights that were not touched upon before. This completed the interview. Sessions lasted 60 to 90 minutes and were audio recorded.

Analysis
To arrive at a meaningful synthesis of the data, we used both qualitative and quantitative approaches in our analysis. However, the quantitative analysis is not reported on in this text. For the qualitative analysis, three coders (two of which unfamiliar with the data) clustered the contrast-pairs through inductive coding (i.e., with pairs printed on paper strips, an affinity diagram was generated). The seven supplied pairs were kept in this analysis. The aim was to establish clusters and condense those into clear categories, with a minimum of miscellaneous constructs. This process allowed for ample discussion and resulted in eleven categories with each given a definition. Later, another coder unfamiliar with the data classified the constructs using the established categories. The two independent coding sessions achieved an inter-rater reliability of K=.75, suggesting substantial agreement.

RESULTS
First, we give an overview of the personal memories used as elements. We discuss the elicited constructs and obtained categories, followed by other observations.

Memories as elements
Because elements were provided by participants based on their personal memories we see variation in the events reported. This was certainly true for a broad theme like *Childhood*, which gave stories on first days in school, being locked in church as a kid, or undergoing collective punishment in a boarding school. In contrast, themes like *Ceremony* and *Theme party* appeared fairly stable content-wise (e.g., stories on weddings, graduation ceremonies, and indeed themed parties). Stories relating to *Chocolate* were often fairly recent and dealt with the pleasure of making, eating, being given, or sharing chocolate. *Rejection* memories were diverse, including stories on broken relationships, rejected manuscripts, failed presentations, and not being selected for a sports team on unfair grounds.

It should be noted that all participants were able to recollect an appropriate personal event for a given theme. For two participants this was not possible for respectively *Fleeing* and *Theme party*, which were omitted from their elicitation phase. Others interpreted *Fleeing* in several ways: getting out from a bus catching fire, eloping one's marriage, or taking a break from daily worries through running.

Construct categories
Participants reported an average of 10 personal constructs (SD = 2.8, range 4-15, when excluding supplied contrast pairs), for a total of 337 contrast pairs (of which 207 were unique pairs). By coding for similarity, constructs/contrast pairs were grouped into twelve categories (Table 1). We shall briefly exemplify these categories.

About a fifth of the constructs concerned *Contentment*, for example Happy/Sad, Pleasant/Unpleasant. This category appears to capture the level of enjoyment with regard to a remembered experience. *Fulfillment* is related but subtly different from the first category in that it relates to how participant valued the (non) fulfillment of wishes and expectations, which places the memory in a wider personal perspective than just in-the-moment contentment. *Intensity* concerns constructs that classify the experiential involvement and interest of the participant.

Contemplating past memories as our participants did is reflective in nature and this shows for a quarter of the responses and their categories. *Reflective* constructs would relate the experience to one's life story, relevance to the self, and how well a participant was able to reflect and see the past experience as a moment of personal development. *Self-appraisal* constructs seem to relate one's experience and/or conduct to a normative standard. *Motivation* constructs also appear to take a future perspective. It is this enabling of perspective that groups the reflective categories.

Confidence & (un)ease and *Agency* constructs emphasize an in-the-moment sense of confidence, tranquility, or insecurity

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[1] We used a custom web application on a tablet to ease recording data: http://dvangennip.github.io/repertory-grid-tool/

Category	Explanation	Example constructs	N	%
Contentment	Contrast pairs that relate to emotional valence and that have a strong positivity and negativity direction to them.	Happy/Sad, Exciting/Frustrating, Pleasant/Unpleasant	40	19,3%
Confidence & (un)ease	This category deals with how confident and at ease, or alternatively, how sure unsure and anxious a participant felt. Constructs typically do not include the perceived ability to act of influence the situation.	Confident/Anxious, Helpless/Feeling of Security, Certainty/Uncertainty	28	13,5%
Social	Interactions with others and/or their influence, such as level of social connectedness, openness towards others, and the appraisal of others.	Companionship/Lonely, Secretive/Open, Effect on self/Other	28	13,5%
Reflective	Contrast pairs concern a reflective stance towards the remembered experience, for example through expression (or lack) of depth, changed perspective, personal growth, or importance.	Frivolous/Life changing, Not evolving/Growth, Original/Changed perspective	26	12,6%
Intensity	Constructs that attest of the intensity of the participant's experience and feelings. One or both words concern levels of arousal, (emotional) involvement, and expressed interest.	Exciting/Calm, Sense of wonder/Emptiness, Visceral/Intellectual	19	9,2%
Self-appraisal	Constructs that express judgment of the self, such as on one's authenticity, perceived privilege, and normative appraisal (e.g., guilt in a moral frame). What counts is that the experience is self-assessed or provides an example towards a personal or normative standard.	Guilty/Proud, Performing/Acting naturally, Says good things about me/Says bad things about me	16	7,7%
Fulfillment	One or both terms in this category specifically deal with how a participant valued the fulfillment of wishes, expectations, or needs, and the pleasure (not) derived from this.	Achievement/Loss, Satisfied/Disappointed, Fulfilled/Unfulfilled	12	5,8%
Descriptive	Constructs in this category are descriptive of the memory and attributes of its context. The terms do not relate to emotions of the participants or how they relate to the world.	Formal/Informal, Novel/Familiar, Work/Leisure	12	5,8%
Agency	This category relates to the sense of agency someone experienced, that is the sense of control and autonomy one perceives to have in a situation, or alternatively that one is passive.	Active/Passive, Empowering/Not in control, Pleased with own creation/Pleased by someone	9	4,3%
Motivation	Constructs concern with how an experience relates to personal motivation, encouragement, and how a remembered experience instills or detracts from an orientation towards the future.	Gives energy/Exerting, Unsupported/Encouraged, Future oriented/Archived	9	4,3%
Reliving	This category specifically covers the extent to which people would like to relive or move on from a past memory.	Sweet/Bitter memory, Nice to revisit/Never to go there again	6	2,9%
Ambiguity	This category concerns the clarity of the remembered experience, typically in terms of the clarity of one's feelings.	Mixed feelings / Clear or single feeling, Tangible/Intangible	3	1,4%

Table 1. Categories with explanations and example constructs. Doubles were omitted, leaving 207 unique pairs (including the supplied pairs). Each pair could only be allocated to a single category.

(e.g., Confident/Unsure of outcome). These constructs place the participant's experience in relation to aspects beyond the self (e.g., the unknown response of others, a difficult or restrictive environment). These categories thus have a contextual nature. Another key category that places the participant in relation to others is *Social*. Nearly all participants generated constructs that relate to both the idea of being alone or social and the social context of a memory, including the appraisal of others.

Personal stories can be ambiguous or bitter sweet, such as a happy event that may now be viewed through a troubled lens due to more recent events. This *Ambiguity* is captured by constructs such as mixed feelings versus single feeling. Although the amount of captured constructs was low (1.4%), the idea of ambiguity was mentioned by most participants during the interviews. Also infrequently captured, perhaps due to the nature of the interview's focus on the written events rather than relating such events to the current self, *Reliving* entails a small number of constructs (3%) related to the desire to relive a memory. This desire to (not) relive appears a generally valid way of thinking about one's personal memories.

Other observations

Constructs that receive extreme scores from participants may represent particularly important and/or more primary dimensions of construal [13]. We obtained a total of 1992 ratings, of which 48% were at the extreme ends (1 or 7). When looking at principal component analyses for individual participants, the obtained most significant dimensions show similarity to the *Contentment* and *Fulfillment* categories of the qualitative analysis. Other significant dimensions relate to *Intensity* and *Reflection*. The picture that emerges this way overlaps with the findings reported above.

Based on the ratings per memory theme, some of these themes overlap in terms of the constructs people associate with them. *Rejection* and *Fleeing* stories are particularly close together. A similar observation can be made for *Ceremony* and *Theme party* ratings, which are perhaps related in scoping potential personal memories. *Rejection* memories were universally regarded as bad experiences. In contrast, *Childhood* encompasses a much wider range of possible stories to recollect and as a result this theme is mixed in terms of its relation to other themes. The latter implies any numerical analysis may have been affected by variation between participants, yet our quantitatively derived dimensions match the qualitatively derived categories. For this reason, as well as brevity, other quantitative results will not be discussed.

DISCUSSION

We developed a classification of participants' own descriptions of remembered experiences. This was done via the collection of personal constructs brought to the table to explain and differentiate between a number of personal memories. In this section, we reflect on the method and the applicability of our findings in HCI.

Reflections on the study

To capture a person's own understanding of their remembered experiences, we used participants' autobiographical memories as elements for our grid elicitation. People were able to to generate personally meaningful, yet comparable elements. Although the level of depth of these stories varied, most participants shared their personal stories willingly and without withholding painful experiences. Being able to include such non-trivial events has greatly helped to get at meaningful personal constructs. We regard this approach as successful.

Personal memories were initially written down and later discussed verbally. This process included some brief storytelling. Both forms of expression may have influenced the reconstruction of remembered experiences. It should also be acknowledged that talking to a researcher about personal stories is different from doing the same with friends and relatives. While for most participants the method revealed a meaningful vocabulary of their experiences, in some instances the session fell short of capturing a richer verbalization. Some participants, when asked to differentiate between elements, would give a richer description of experiential qualities than what they agreed upon as being relevant constructs to fill in the grid and rate. This is a pitfall of the current method, as was participants' occasional difficulty in identifying a suitable term for opposite contrast poles. Typically, forming a construct to express how one element is similar or different from two other elements came fairly easy. Finding its opposite sometimes required help from the interviewer, as potential terms were not evident or not clear opposites.

The highly structured and therefore straightforward nature of RGT lends itself well to generate both individual and consensus views of users on a topic of interest, which can be valuable early in a design process. RGT is well suited to capture ambiguous responses. The notion of mixed feelings (or changed appraisal of remembered experiences) would be difficult to capture otherwise with singular measures. For example, some experiences were labeled as 'satisfaction & guilt,' two terms that appear paradoxical together. Evaluating individual grids allows for such responses to be picked up upon. It must be noted that a consensus analysis across participants would not reflect such notions very well. This is because construal of (aspects of) one's experiences is subjective and relative to one's other constructs. The latter argument also applies to our categorizations of constructs, which cannot be regarded as objective outside their own context. Thus, the identified categories are meaningful relative to the complete set of categories.

Our categories do show, however, a high degree of overlap with the personal construct classification scheme by Feixas et al. [5]. Most of our categories would fit into that scheme, apart from *Descriptive* and *Reliving* that characterize details and appraisal of past events. Our work underlines that remembered experiences are also qualified, given meaning, and compared in terms of a participant's personal value system.

The above may explain why participants would sometimes construe one of their memories as negative but their later ratings may not reflect the earlier qualification. While the event had been negative (hence the construct), their perspective on that memory had since shifted. Something good may have come from it or it no longer had negative connotations for them. Other research on memory phenomenology found comparable results for negative events [1,22]. Indeed, the reconstructive nature of our memory system is biased toward the present and suggests people might put a positive spin on negative events to maintain a coherent narrative of the self. Work on SenseCam also showed a similar use of the past as a means to reason about one's present self [6]. This implies that evaluations of past events are variable over time, which for any designed system building on such events means that older data (on e.g. appraisal, or favourite imagery) may need to be invalidated after a while.

The obtained categories highlight the emotional and reflective aspects of a remembered experience. These also

point to a unique aspect: the desire to relive (i.e., to re-experience) a particular memory. What sets our categorization apart from the aforementioned views on UX [9,25] is foremost that we discussed a relived past experience, separate from any user-product interaction. User experience, as memories of user-product interactions, may be considered a subset of our more general approach to remembered experiences. Perhaps due to the nature of our interview method, minutiae of the experience were less prevalent as compared to reflections on the felt emotions, satisfaction, personal consequences, and ultimately the desirability of re-experiencing a personal memory. It allowed our participants to put a particular story into the perspective of other life events both past and present.

Relating findings to design
Our work has captured a categorization of people talking about past experiences. Although this did not include human-computer interaction directly, we argue that having this classification is of value to the design community.

First, we see value in supporting designers in their understanding of people and exploration of memories. In particular, our classification is helpful to chart and relate reported experiences. For example, a recent diary study on involuntary remembering in everyday life explored such experiences [24]. Expectedly, the way participants wrote and talked about their experiences aligns well with our classification. In particular, we noted a similarity in how people position themselves within and relative to the reported experiences. The involuntary nature of how memories came back to people captures a sense of surprise, often delight, and sometimes a bittersweet sentiment. The latter reflects the notions of *Agency*, *Motivations* towards past memories, and other *Reflective* constructs. Diary contents of cued memories were not classified for sentiment and underlying experiential qualities (as we aimed to surface here), yet such an analysis (using our classification as a framework) could yield a richer description of the collected material in [24]. Doing so could address (or provide an alternative perspective on) the questioned relation between past experiences and how those may play a role in everyday life. In particular, matching participants' input in such a study against a classification as developed here can improve the interpretation and juxtaposition of such diary entries and experiential statements. For the present example, it may deliver clearer mapping between involuntary memory cues (i.e., those things that bring up memories) and their reflective or reminiscent qualities, which could benefit the design of systems with similar aims.

Thus, our classification can be used as a coding scheme in the analysis of remembering-related HCI work, in particular where memories or the response to these are of interest. The categories agree with prior work and expose a commonsensicalness, which eases its adoption. We see such application as a necessary step to further develop the value of this categorisation. Therefore, the present work should be

considered as a first step towards this methodological goal. Until then, some caveats apply. During our study people discussed their experiences in isolation from any product interaction, so future work is necessary to be able to reflect on the usefulness in relation to the experience with interactive systems. For example, as an extension on the above diary evaluation example, it would be interesting to consider how different interactions may influence how people relate to their personal memories (and, e.g., reflect this in 'memory talk'). Using our classification as a guideline to chart any changes in experience can keep the focus on those memories and how people relate to those, in favor of a narrower focus on just user experience (e.g., using AttrakDiff [8]). If developed in this way, it answers our motivation to develop a useful vocabulary for the evaluation of interactive systems that aim to support remembering. In other words, our contribution is primarily methodological.

Second, we considered our categories as a (proto) design space. Our phenomenological charting of experiences is suited to the generation of further questions and insights, rather than a strictly evaluative approach. Although it exposes no parameters for designers to consider in building interactive systems, it may well highlight areas of experiential qualities that are typically given less attention. For instance, boring, awkward, insecure, or frightful experiences are for understandable reasons not commonly touched upon. Yet, if design for remembering is to support people in reflecting on and coping with their past, such experiences should not be eschewed. Story Shell [16], in co-designing a memorial for a bereaved mother, underlines this sentiment. Its development outlined strong and conflicting experiences (e.g., laughing and crying). We noted similar patterns for some of our participants. Yet, our classification aimed to place constructs of experiences in certain clusters, which may deny richness in the interplay between felt emotions. For this reason, we kept the small but significant *Ambiguity* category.

Finally, discussing personal memories is a social experience and is as much as about what happens between people as it is about the memories [6,19]. Our participants talked about and construed their past experiences in a very individual manner whereas many interactions with the past happen in a social context. It would therefore be relevant to see if our findings can be extended to a more social setting, for example by exploring how well our categories hold up in a classification of social memory talk.

CONCLUSIONS
In this paper, we reported on a study on the experiential understanding of autobiographical memories. Through contrasting and talking about such memories we derived how our participants construed their past experiences. Via a phenomenological exploration we obtained a wide range of personal constructs and categorized these. This categorization highlights that people consider their remembered experience largely in a positive/negative

dimension, in which reflection on the self is important. In line with previous work on 'memory talk,' we are keen to note that past experiences are reconstructed and retold in relation to the present ideas of the self. Reinterpretation and construal of one's past is an ongoing process of self-reflection, a strong motivation for recollection of and reminiscing on our memories. Our findings provide a handle to approach the study of past experiences by charting an experiential vocabulary to inform future design work to support remembering.

ACKNOWLEDGMENTS

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