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# DESIGNING FOR POSITIVE USER EXPERIENCE IN WORK CONTEXTS: EXPERIENCE CATEGORIES AND THEIR APPLICATIONS

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Abstract: *Experience categories describe repeatedly occurring qualities of positive experiences that can be used for the analysis and generation of new/further/more positive experiences. This paper describes experience categories for the workplace. Based on 345 reports of positive user experiences in the workplace, we identified 17 experience categories through qualitative content analysis and describe their necessary and optional attributes. We believe that experience categories can support analysis and design activities for the work place in three ways: (a) using the questions derived from experience interviews to analyze existing positive experiences in work contexts, (b) explaining the potential of positive experiences in work contexts as a formal analysis tool, and (c) showing the ways in which experience categories can inform the design of software concepts to foster/generate positive user experience. The experience category approach is thus a more actionable addition to other, mainly theory-driven, approaches.*

Keywords: *user experience, work, experience categories, positive design, interviews.*



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## INTRODUCTION

Experience categories (Zeiner, Laib, Schippert, & Burmester, 2016b) describe repeatedly occurring qualities of positive experiences. They can be used to study existing situations and to generate ideas and concepts that support positive user experience. In this paper, we investigate the literature regarding positive experience in general with the aim of applying these experience categories toward positive user experience with technology in the workplace. We achieve this by reanalyzing a data set on positive experiences in the workplace as well as the resulting experience categories in detail. Finally, we demonstrate how experience categories can be used to design new positive experiences in the workplace.

### User Experience

User experience (UX) is defined by Hassenzahl (2008, p. 12) as "a momentary, primarily evaluative feeling (good–bad) while interacting with a product or service….good UX is the consequence of fulfilling the human needs for autonomy, competency, stimulation (self-oriented), relatedness, and popularity (others-oriented) through interacting with the product or service (i.e., hedonic quality)." This definition significantly advanced the understanding of what UX is and how positive UX arises. Compared to the very broad definition in the ISO 9241-210 standard (International Organization for Standardization [ISO], 2010), Hassenzahl's (2008) definition clearly focused on the user's emotion and the fulfillment of psychological needs.

One direct application of this is experience design (Hassenzahl, 2010), which aims to describe how technologies can be designed to facilitate positive experiences (Hassenzahl, Diefenbach, & Göritz, 2010; Hassenzahl et al., 2013). Because technology is an integral part of modern work—and, according to Chui and colleagues, knowledge workers spend on average 28 hours per 40-hour workweek using technology (Chui et al., 2012)—an essential goal must be to better understand positive UX in the workplace. However, exactly this is seemingly neglected by UX research (see critiques in Bargas-Avila & Hornbæk, 2011, 2012). A recent exception is an in-depth analysis of need fulfillment in leisure and work situations by Tuch, van Schaik, and Hornbæk (2016). Furthermore, the limited research to date shows that users of enterprise software prefer software showing hedonic qualities (Schrepp, Held, & Laugwitz, 2006), as well as software inducing positive UX and improving the motivation to work on tasks (Kohler, Niebuhr, & Hassenzahl, 2007). Harbich and Hassenzahl (2008) proposed that technology in work contexts should be designed to execute tasks (usability), engage users, and be able to evolve and to expand from the original task. More recently, our research lab showed that the demanding work of field sales personnel can be improved by designing for positive social relationships with their customers and for expressing and receiving gratitude for contributions in their customer relationship management system (Burmester et al., 2015). Lu and Roto (2015) proposed a design approach for meaningful work based on the positive design framework (Desmet, Pohlmeyer, & Forlizzi, 2013) and a theory of meaningful work by Rosso and colleagues (Rosso, Dekas, & Wrzesniewski, 2010). Furthermore, they analyzed and explored designs for the experience of pride at work (Lu & Roto, 2016).

## Positive Psychology in Technology Design

Positive psychology and its idea of researching what makes people happy and contributes to their well-being are now used also in design. Positive design (Desmet & Pohlmeyer, 2013), for example, aims to design for human flourishing. This design approach suggests three ways to reach this goal:

- design for pleasure by creating positive emotions,
- design for personal significance by supporting people in pursuing their personal goals, and
- design for virtue by helping people be morally good persons.

Therefore, design of technology should either facilitate new positive experiences or foster already existing positive experiences through the design of technology. Positive technology (Botella et al., 2012) in turn investigates how technology can be used to improve personal experiences. Technologies are assigned to three categories according to their purpose:

- technology to improve the mood (hedonic),
- technology to support self-realization (eudaimonic), and
- technology to create and improve interpersonal bonds (social).

Calvo and Peters' (2014) approach to positive computing deals with designing technology to improve well-being and to support people in using their full potential. All three approaches support design for positive user experience in digital products.

## Designing for Positive Experiences

There are several ways to design for positive UX. This includes theories such as Hassenzahl's needs approach (Hassenzahl et al., 2010, 2013,) or the 25 positive emotions of product use by Desmet (2012; Yoon, Desmet, & Pohlmeyer, 2013). The wellbeing determinant cards of Calvo and Peters (2016) reflect a variety of theoretical approaches of positive psychology and can be used as inspiration for design ideas. However, these theory-driven approaches and tools might be too broad and, as a result, difficult to apply to specific contexts such as various work environments or tasks. In order to generate positive experiences for specific situations (e.g., smart kitchens), it helps to better understand the already existing positive experiences in the context of interest (e.g., cooking in general). Several approaches to this exist, for example, the experience reports (Hassenzahl et al., 2010), experience narratives (Tuch, Trusell, & Hornbæk, 2013), and experience interviews (Zeiner, Laib, Schippert, & Burmester, 2016a). All these methods are variations on Flanagan's (1954) critical incidents method. The difference between the former two approaches and experience interviews is that experience reports and experience narratives address the experiences under investigation as a tool to generate overarching experiences that allow researchers/designers to gain a better understanding of UX rather than trying to categorize the experiences to improve understanding of the experiences themselves. Experience reports show how the fulfillment of needs leads to positive experiences. Experience narratives are analyzed using both manual and automatic content analyses and reveal the relationships between experiences and technology use, situational aspects, emotions, and needs. Experience interviews, on the other hand, qualitatively explore structures within experiences, and thus underscore the fundamental importance of the experience, which may or may not lead to UX applications.

## Previous Work on Experience Interviews and Experience Categories

To inspire software design and to support positive UX with technology, understanding better the already existing positive experiences in similar contexts is paramount. An experience (derived from Hassenzahl, 2008, 2010) is an emotional episode related to a certain context; a positive experience is an emotional episode in a certain context with a positive valence (Russell, 2009). In the experience interview (Zeiner et al., 2016a), we developed a method that supports researchers in analyzing experiences within certain contexts and designers in understanding positive experiences that can be used to generate new ideas for positive UX.

### Experience Interviews

In these semistructured narrative interviews, participants were asked to tell the interviewer about a positive experience they recently had in a given context (here work). The interviewer then asked for any additional information that is needed to get a full understanding of the positive experience—for example, any feelings experienced ("How did you feel?"), specific work activity carried out ("What did you do?"), other people involved ("Who else was there?"), technology used ("Was your experience influenced by technology?"), time structure of the experience, potential factors driving the experience, and environmental conditions. To make the face-to-face interviews a shared activity with the participant, we developed a worksheet (see Figure 1; for a printable version see Appendix A) that the interviewer and participant completed together.

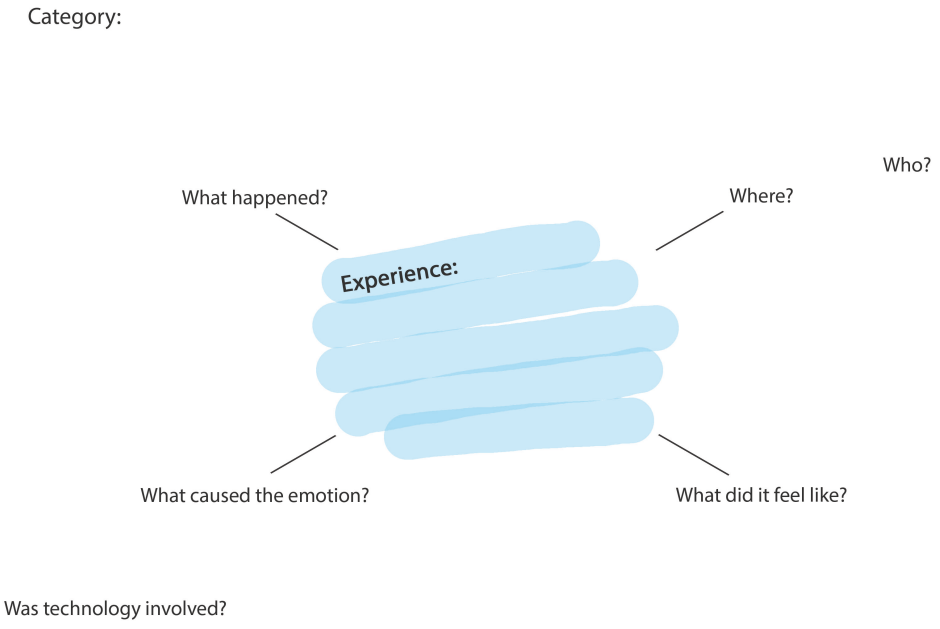


**Figure 1.** The experience interview worksheet. This worksheet can be used to support the experience interviews. The main questions of the interview are included, surrounded by white space to record additional information about the experience. In the middle the interviewer and interviewee can decide on a fitting title/description for the experience.

The worksheet allows participants to validate and complete the notes directly during the interview (see Figure 2a). An added benefit of documenting the interviews using a type of worksheet (as opposed to first recording the interview and then transcribing it) is that it greatly simplifies the analysis process. The interview worksheets can be compared and clustered based on the themes reported in the interviews (see Figure 2b)

Experience interviews need not be conducted only face-to-face. We developed an online version that produced comparable results as the face-to-face version; thus we have been using the two together. In the online version, participants are asked the same questions as in the face-to-face interview, but they complete the documentation themselves. While that eliminates the opportunity for a researcher's follow-up questions, the explicitness of the questions asked in both versions means there often were very few follow-up questions even in the face-to-face version. Participants of the online questionnaire were conscious that the descriptions they provided were our only data source and provided us with clear and precise descriptions of their experiences. For example, when asked about whether technology was involved in the experience, responses are often as precise as "*I used technology [our intranet] in this situation but the positive experience itself was not caused by the technology*" (PO226).[1]

Experience interviews can be analyzed in two ways. Information about the experiences is entered into a spreadsheet and analyzed using qualitative content analysis (Mayring, 2000), which is crucial when analyzing data to derive categories or other aspects needed for research. However, this method is not feasible for use by practitioners with limited time or other resources. Alternatively, the worksheets of all interviews can be analyzed as a whole. The project team can cluster the experiences to form categories of experiences, for example, according to their causation or according to the emotions they generated. This process can be easily integrated into creative design processes and illustrated in Figure 2b. We used this process for our research, and it is described in more detail in Zeiner et al. (2016a).

To date, our group has conducted more than 1,000 experience interviews in various contexts, both professional and personal. The contexts include work environments, cooking, train stations, friendships, and interactions with products (e.g., apps and online shopping platforms) or 3D software. This paper, however, narrows the focus to the work context.

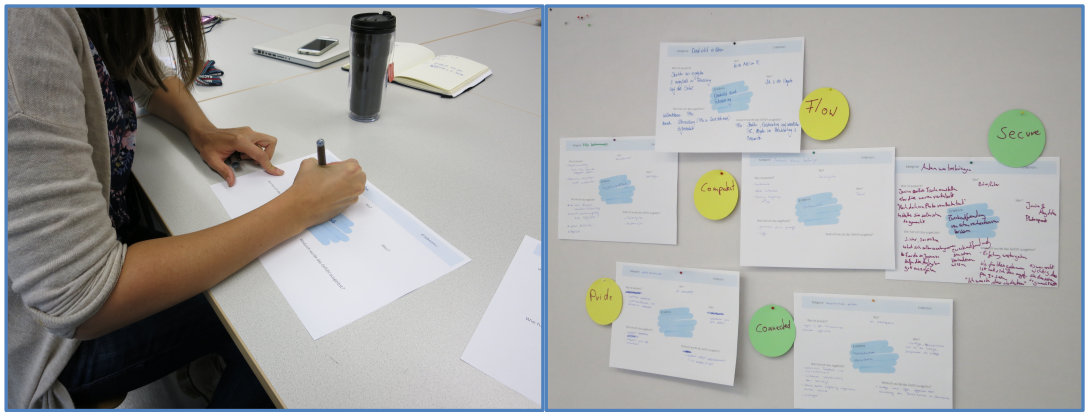


**Figure 2.** (a) Interviewer using the worksheet from the perspective of an interviewee, and (b) clustering the collected experiences after several interviews have been conducted.

## Data Collection

In relation to positive experiences at work, 349 descriptions of positive experiences at work were collected. Of these, 223 were collected face-to-face and 126 online. The face-to-face interviews were all conducted in German. The online version was available both in German and English. Of the collected experiences 320 were reported in German, 29 in English. Twenty-nine of these reported experiences contained multiple individual experiences that were separated into smaller, self-contained experiences (several the reports contained more than two experiences and were split accordingly). Of these now 381 experiences, 32 were excluded because they either described usability or were not positive. The remaining 349 experiences were analyzed and classified. Because the sample was very diverse, we decided not to compare the descriptions based on sociodemographic factors but treat the sample as one large group. We are planning to explore the sociodemographic factors further in a future study.

Participants represent a wide range of occupational and educational backgrounds, such as various types of engineers, academics, landscape gardeners, teachers, therapists, military personnel, and students. The vast majority of our participants spent at least part of their workweek in office environments.

In a previous publication (Zeiner et al., 2016b), we identified 21 experience categories for work contexts from this data set. In this current paper, we reanalyze the data set with the goal of specifically exploring the qualitative aspects of the categories and gaining a fuller understanding of how the different categories relate to each other.

The experiences were categorized separately by three members of our lab (including Zeiner & Laib) using Mayring's (2000) step model of inductive category development. In a final step, either the pattern with the highest proportion of agreement was chosen or, in cases of disagreement, the ratings were discussed among the raters to reach consensus. We found no significant differences in the occurrence of categories between the two language groups using a two-sample Kolmogorov–Smirnov test, $D(320,29) = 0.23$, $p = 0.12$. Furthermore, we found no systematic qualitative differences, so we decided to treat them as one sample.

## Prior Findings

In our previous analysis, we found that nearly 80% of the reported positive experiences involved other people (see Zeiner et al., 2016b, for more detail). However, technology seemed to play a larger role in positive experiences when participants were alone (67% of experiences alone vs. 27% of experiences with others), suggesting that there might be potential for creating positive experiences with other people and technology at work. There also seems to be a strong effect of hierarchical structures at work on the descriptions. For example, more positive experiences were reported for interactions with colleagues than with superiors or externals such as customers.

Although this original analysis allowed for the experience categories to be extracted, it was by no means an in-depth analysis. What soon became apparent was the need for a more detailed description that included specific information about the different categories. That is the intention of this paper. Thus, the reanalysis aimed to answer the following questions:

1. How do the different experience categories relate to each other?
2. What are the reoccurring aspects noted in Zeiner et al. (2016b)? Can these aspects be described as "must-have" and "optional" attributes?

# EXPLORING THE RELATIONSHIPS AND STRUCTURES OF EXPERIENCE CATEGORIES

## Definition and Structure of Experience Categories

Participants repeatedly reported similar experiences that formed the basis for experience categories. We define experience categories as follows:

- Experience categories describe qualities within positive experiences that occur either in every experience or in a high percentage of them.
- These qualities are described as activities because experiences are rooted in activities (Hassenzahl et al., 2013), and this description allows for a more direct application.
- Within an experience category, similarities appear frequently in the qualities of the facilitating factors (e.g., presence of others, special activities, technology).

Thus the categories describe the essence of clusters of positive experiences. Each experience was assigned to a category that described the situation. We identified 17 experience categories, which are listed in Table 1. These experience categories (described on a superficial level in Zeiner et al., 2016b) differ in their reported frequency. The differences in frequency correspond to the differences between experiences alone and those with others. We do not believe this implies that certain categories are easier to elicit per se. Rather, we believe that this reflects the environment and structures in the work context and that most categories could be elicited by creating the structures that support them.

Several categories seemed related and could be grouped together, such as Giving Feedback, Receiving Feedback, and Appreciation. The common aspect of these three experience categories is that people respond to each other in a positive way that we called Resonance. Social Support is a group of experience categories consisting of Helping Others, Receiving Help, and Teaching Others. The common element in this grouping is the mutual support at work that is experienced in a very positive way. The group termed Challenges represents a very important set of experience categories: Rising to a Challenge and Being Given a Challenge. Solving a Problem and Experiencing Creativity are experience categories contributing to engagement and flow and thus are grouped within Engagement. The group Organization combines experience categories related to managing and finalizing one's work. The experience categories in this group are Finishing a Task and Keeping Track of Things. The final group, Communication and New Experiences, is a combination of communication aspects and one's striving for the new (both alone and with others), which are the categories Connecting with Others, Exchanging Ideas, Stimulating Experiences, Creating Something Together, and Contributing to Something Greater.

## Distilling the Structures of Experience Categories

### Data and Analysis

The data set presented in this content analysis was the same as the one used for the original analysis in Zeiner et al. (2016b). Although the categories described in Zeiner et al. (2016b) allowed for insights when analyzing experiences and designing for new experiences, the goal in the current analysis was to provide a more structured approach. To do so, the qualitative data

**Table 1.** Consolidated Experience Categories Including Frequency and Number of Experiences. Related Categories Are Clustered into Groups.

| Experience Category | Percentage | Experiences | Group |
|---|---|---|---|
| Receiving feedback | 13.9% | 79 | Resonance |
| Giving feedback | 1.2% | (22.9%) | |
| Receiving appreciation | 7.8% | | |
| Helping others | 5.2% | 35 | Social Support |
| Receiving help | 3.5% | (10.1%) | |
| Teaching others | 1.5% | | |
| Rising to a challenge | 21.7% | 88 | Challenge |
| Being given a challenge | 3.8% | (25.5%) | |
| Solving a problem | 1.7% | 14 | Engagement |
| Experiencing creativity | 2.3% | (4.1%) | |
| Finishing a task | 4.3% | 37 | Organization |
| Keeping track of things | 6.4% | (10.7%) | |
| Connecting with others | 4.1% | 92 | Communication and New Experiences |
| Exchanging ideas | 4.6% | (26.7%) | |
| Experiencing something new | 7.0% | | |
| Creating something together | 8.4% | | |
| Contributing to something greater | 2.6% | | |
| **Total** | **100.0%** | **345** | |

*Note*. The original data set contained 349 responses. However, during reanalysis, the researchers perceived that four responses were less positive experiences than the absence of negative experience. Thus, these four responses were eliminated from further evaluation.

collected as experience stories in the interviews of the categories were examined more closely and analyzed for the experiences contained within them. This was done using the following procedure:

1. Using qualitative content analysis (Mayring, 2000), themes in the reported experiences were identified and clustered accordingly.
2. The factors contributing to the positive experiences were isolated.
3. The experiential outcomes (i.e., the emotions participants reported rather than our interpretation of what they might have felt) were analyzed.
4. From this qualitative analysis, we compiled a list of recurring descriptions and attributes.

This list of descriptions was then discussed by a team of three experts (Zeiner, Schippert & Haasler) with in-depth knowledge concerning experience interview data. Rather than arriving at separate lists and calculating inter-rater reliability, we employed a collaborative approach. The various lists of descriptions were compared and combined into a final list on which all experts agreed. This was done to reduce over-interpretation of the data. During this stage of the analysis, four experiences were excluded from the data set because all raters agreed that they

were not truly positive experiences but rather descriptions of an absence of negative experiences. This means 345 experiences formed the final data set.

During the qualitative content analysis, we noticed that some aspects and attributes were reported in each experience of a category while others were reported less frequently but still repeatedly. This led us to derive a list of "must-haves" and "optional attributes" for each of the categories. Must-haves are attributes that occur in some form in every experience reported within that category. Optional attributes occur in some form in several of the experiences reported within that category but not in all. Sometimes these attributes are concrete behaviors or actions; sometimes these are a focus/intent of an action or its emotional result. Participants frequently reported the emotions they felt during the experience. Although not systematically collected, these emotional descriptions were useful in gaining a better understanding of the category. In future data collections, such information might allow for a comparison between positive emotions and the categories. This comparison would bridge the gap between the positive emotions (Yoon et al., 2013) used in positive design and the experience categories. At the moment, however, sufficient data are not available to address this issue systematically. Therefore, we chose to simply report the experiential outcome. We hope to supplement this with an in-depth analysis in a future study.

For each category, a social index was calculated—a number that described to what extend the category was experienced with others. The index represents the number of experiences with others divided by the number of all experiences (i.e., whether alone and with others). If only experiences alone were reported, then the social index would be 0. The social index would be 1 if only experiences with others were provided by the respondents. It should be noted, however, that we rarely find categories with a social index lower than 0.5 in our studies on positive experiences in our lab. For each specific experience category, the social index is a means of describing how important social interactions are for the category. This is useful for analysis purposes (in that some categories are more social than others) or concept generation (e.g., if a designer is working on a concept that involves interactions between several users then the categories with a lower social index might be harder to design for than ones with a higher social index).

## Findings: Description of Experience Categories

In this section, we present details on the groups and categories by describing their similarities and differences. Each group description is followed by a table that lists the must-have and optional attributes within the categories, their experiential outcome, and the social index. The tables are intended to be used as a quick guide when comparing the different categories.

### Group: Resonance

Resonance combines three similar categories related to the experience of feedback. Feedback is fundamental to nearly all the other categories but nowhere more so than in this group. The difference between these categories lies within the type of feedback. The Receiving Feedback category represents situations where someone comments on one's competency. A typical type of positive feedback could be, "Thank you for compiling the spreadsheet. The way you organized things made it really easy for me to continue working on the project." On the other hand, Receiving Appreciation involves more personal feedback, such as "Thank you for helping me

with this presentation. I know you did not have to help me," thus making clear that the sender is commenting on the receiver's personal traits. Finally, Giving Feedback can involve feedback given to another about performance, but it seems that it often also has an appreciation component. Here we hypothesize that, for a person to experience giving feedback as positive, it has to contain an emotional aspect, thus making situations that involve appreciation more likely to be described. The category Earnings (i.e., financial compensation) that was found in the previous analysis of the data was merged with the category Receiving Feedback upon reanalysis.

All Resonance situations lead to similar emotional responses. People feel pride in their work or themselves; they feel connected to their surroundings, as well as feeling validated and vindicated. As is to be expected with these categories, their social index is fairly high: The social index for Receiving Appreciation was 0.90; Giving Feedback and Receiving Feedback were both 1.0. This information is summarized in Table 2.

### Group: Social Support

The group Social Support comprises the categories Helping Others, Receiving Help, and Teaching Others (see Table 3). Unsurprisingly, the social index for each of the categories is 1.0. The aspect uniting these categories is support that is either given or received and experienced as positive. When people are helping others—particularly when giving support or advice—they often see themselves in a mentoring role. However, the main goal of this support is not to assist or teach the recipient so he/she can solve whatever problem is confronted currently without assistance in the future. Rather, Teaching Others can embody altruistic intentions. Some of the collected experiences suggested that teaching and helping others also is used to show off one's own skills and knowledge. Receiving Help has the most positive effect of the three categories in this group. Because help is perceived as positive when people have identified a problem or a question themselves, they feel connected to the person who helped them.

**Table 2.** Experience Categories of the Group Resonance. Listed are Must Have and Optional Attributes, the Experiential Outcome, and the Social Index for Each Category.

| Must Have | Optional | Experiential Outcome | Social Index |
|---|---|---|---|
| | **Receiving Feedback** | | |
| Positive feedback about performance<br>Focus on competency | Praise<br>Feedback through, other people, technology, or through own impression | Relief<br>Pride<br>Validation/affirmation | 0.93 |
| | **Giving Feedback** | | |
| Giving positive feedback about performance | Showing appreciation | Feeling of connectedness | 1.00 |
| | **Receiving Appreciation** | | |
| Feedback about appreciation of one's self | Stronger effect if unexpected<br>Competence | Feeling vindicated<br>Pride | 0.90 |

**Table 3.** Experience Categories of the Group Social Support. Listed are Must Have and Optional Attributes, the Experiential Outcome, and the Social Index for Each Category.

| Must Have | Optional | Experiential Outcome | Social Index |
|---|---|---|---|
| | **Helping Others** | | |
| Responding to problems or questions by imparting support or advice | In response to a request or through initiative of one's own, or with customers or colleagues<br>Mentoring role | Joy over the received appreciation<br>Feeling competent & self-confident,<br>Pride | 1.00 |
| | **Receiving Help** | | |
| Receiving support or advice in response to problems or questions | Before: uncertainty, distress | Appreciation<br>Relief<br>Connectedness | 1.00 |
| | **Teaching Others** | | |
| Acting as a mentor, supervisor, or leader<br>Sharing experiences and knowledge<br>Intention: teaching others | Receiving appreciation<br>Feeling responsible for others<br>Perceiving own professionalism | Feeling Competent<br>Pride | 1.00 |

### Group: Challenge

As presented in Table 4, the categories Rising to a Challenge and Being Given a Challenge are related to the feedback categories. When someone has been working on a difficult problem or project, some kind of feedback makes them notice that they have completed it. Unlike in the Giving Feedback category, however, the other person (if involved) recedes into the background over the sense of achievement in completing the challenge successfully. This is reflected in the low social index of 0.68. Being Given a Challenge describes experiences that occur when people are given a demanding task by their superior, by someone from outside one's work hierarchy, or by technology. People perceive this challenge as positive if it stretches their abilities but is achievable. Here the social index is higher at 0.85.

### Group: Engagement

The Engagement categories Solving a Problem and Experiencing Creativity (see Table 5) are more inward-facing, which is reflected in their low social indices (0.50 and 0.38, respectively). A core requirement seems to be that, although the goal is clear, there is freedom of choice as to how the goal is reached. Both categories require a level of competence, meaning that all the skills needed to perform the task are available. The difference between the two categories is the level of skills. When solving a problem, the task is doable but is perceived as a stretch. When a worker experiences creativity, however, he/she is more certain of his/her skills. In such situations, the worker starts playing with the problem, which can lead to taking unconventional paths and responding to changing requirements. Sometimes the process leads to the experience of flow (Csikszentmihalyi, 1990). For example, participant PO322 described a situation where she experienced creativity with her line manager in a meeting: They were talking about their research

and were spinning ideas. As a result, "*stuff just flowed*." The focus of the meeting was not productivity or the result. (Indeed, the participant stated that the meeting was not even the "*most productive*" she had attended in her career). Rather, the focus of the meeting emphasized the experience itself.

### Group: Organization

Organization combines experience categories around managing and finalizing the work. As provided in Table 6, the experience categories in this group are Finishing a Task and Keeping Track of Things. As with engagement, these categories are inward-looking, and thus with low social indices (0.47 and 0.50, respectively).

**Table 4.** Experience Categories of the Group Challenge**.** Listed are Must Have and Optional Attributes, the Experiential Outcome, and the Social Index for Each Category.

| Must Have | Optional | Experiential Outcome | Social Index |
|---|---|---|---|
| | **Rising to a Challenge** | | |
| Uncertainty about results<br>Completing a difficult task<br>Positive feedback about performance<br>Satisfaction with results<br>Relief if things worked out | Tension or skepticism in the beginning<br>Rising to their own demands<br>Working alone or in a team | A sense of achievement<br>Pride<br>Feeling of being needed<br>Self-confidence | 0.68 |
| | **Being Given a Challenge** | | |
| Given a (new) difficult task | From a customer or supervisor<br>Uncertainty in the beginning<br>Situation is interpreted as a show of confidence | Motivation<br>Pride<br>Excitement about new experiences | 0.85 |

**Table 5.** Experience Categories of the Group Engagement. Listed are Must Have and Optional Attributes, the Experiential Outcome, and the Social Index for Each Category.

| Must Have | Optional | Experiential Outcome | Social Index |
|---|---|---|---|
| | **Solving a Problem** | | |
| Goal is clear<br>Road to the goal is open<br>Competence (skills needed to complete task are present) | Time becomes less important<br>Exploring new things<br>Assessing different possibilities | Pride in the Results | 0.50 |
| | **Experiencing Creativity** | | |
| Trying out one's self and new ideas<br>Time becomes less important<br>Goal is clear<br>Road to the goal is open<br>Competence (skills needed to complete task are present) | Non-rigid structures'<br>Experiencing freedom<br>Taking unconventional paths<br>Responding flexibly to changing requirements | Flow<br>Motivation | 0.38 |

**Table 6.** Experience Categories of the Group Organization. Listed are Must Have and Optional Attributes, the Experiential Outcome, and the Social Index for Each Category.

| Must Have | Optional | Experiential Outcome | Social Index |
|---|---|---|---|
| | **Finishing a Task** | | |
| Completing tasks and parts of tasks<br>Competence (skills needed to complete task are present)<br>Goal is clear<br>Task is not challenging | Initiating the activity might take some effort<br>Before: feeling of stress and tension<br>Positive feedback about performance | Relief<br>Pride<br>Feeling productive | 0.47 |
| | **Keeping Track of Things** | | |
| Keeping track of things | Perceived efficiency<br>Functioning communication within a group<br>Having a plan<br>Setting priorities | Feeling of competence<br>Pride over what has already been achieved<br>Relief<br>Feeling of connectedness within groups | 0.50 |

## Group: Communication and New Experiences

Finally, Communication and New Experiences involves both activities allowing a feeling of being related to others and one's exploring new things. Although this might sound like distinct types of categories, a large amount of overlap is apparent in their optional attributes (see Table 7). The categories Connecting with Others, Exchanging Ideas, and Creating Something Together are incredibly social (social index of 1.0). In these categories, the aspect of doing something with another person is most important and a great source of positive emotions. On the other hand, the categories Experiencing Something New (social index 0.52) and Contributing to Something Greater (social index 0.78) have lower social indices. The Experiencing Something New category describes stimulation through something novel. The category Aesthetics that was described in the previous analysis (Zeiner et al. 2016b) was merged with this category upon reanalysis. In comparison, Exchanging Ideas comprises stimulating experiences where the focus is on the connection with another person. Connecting with Others is very similar to exchanging ideas but without the focus on stimulation. Creating Something Together shares similarities with the Engagement categories but has a much stronger focus on the connections with others. Contributing to Something Greater also involves creating things, but here the focus is not on the connection with others but rather the connection with an outcome or development that is notable or valuable for the person. This can be religion (PS57) or other metaphysical or transcendent value, but typically in the work context, the more common experience tends to involve more practical efforts, such as on open source projects (e.g., PO299) or research (e.g., PC20).

**Table 7.** Experience Categories of the Group Communication and New Experiences. Listed are Must Have and Optional Attributes, the Experiential Outcome, and the Social Index for Each Category.

| Must Have | Optional | Experiential Outcome | Social Index |
|---|---|---|---|
| **Connecting with Others** | | | |
| Shared activity (online or in person) | | Feeling of connectedness<br>Feeling appreciated | 1.00 |
| **Exchanging Ideas** | | | |
| Being interested in the other person<br>Showing interest<br>Talking to others | Expressing one's self<br>Knowing each other or getting to know each other<br>Sharing tasks<br>Staying in touch<br>Motivating each other | Empathy<br>Connectedness | 1.00 |
| **Experiencing Something New** | | | |
| Interest and fascination in new things (stimulation)<br>Active or passive exploration of something new | Leaving familiar surroundings behind<br>Making new connections<br>Responding flexibly to new situations<br>Collecting impressions, experiences, knowledge | Is experienced as enriching<br>Joy, fun, curiosity, | 0.52 |
| **Creating Something Together** | | | |
| Working towards a shared goal<br>Clearly defined tasks<br>Agreeing with others on the plan of action | Motivating each other<br>Learning from each other<br>Finishing tasks towards the main goal<br>Relaxed working atmosphere<br>Acquiring new skills | | 1.00 |
| **Contributing to Something Greater** | | | |
| Doing something meaningful<br>Acting on one's own principles<br>Acting of one's own volition | To stand up for something | Confirmation<br>Satisfaction | 0.78 |

## Discussion Regarding Experience Categories

The primary goal of this reanalysis was to explore specifically the qualitative aspects of the categories and to gain a fuller understanding of how the various categories relate to each other. In this subsection, we discuss the findings for each group of categories. Because the experiences were analyzed using inductive qualitative content analysis, the categories differ somewhat from the 21 categories reported our original analysis (Zeiner et al. 2016b). For example, in our earlier study, Competition, Earnings, and Aesthetics were very small categories, containing two experiences each. Although the first analysis suggested that these were individual categories, our more in-depth analysis that extracted the must-have and optional attributes uncovered that, in reality, they were instances of the larger categories

Receiving Feedback, Rising to a Challenge, and Experiencing Something New, respectively. Thus, they were incorporated into these categories.

### Group: Resonance

The categories within the group Resonance represent situations that lead to similar emotional responses. People feel pride about their work or themselves; they feel connected to their surroundings as well as validated and vindicated. As can be expected with these categories that integrate significant interpersonal interaction, their social index is high (ranging between 0.90 and 1.0). Representing nearly 23% of the reported experiences, Resonance-related situations are experienced frequently.

### Group: Social Support

The group Social Support, unsurprisingly, contains categories each with the social index of 1.0. They represent just over 10% of the reported experiences. A key rationale for uniting these categories is the aspect that the support, given or received, is experienced as positive. There appear to be strong links between these categories and the psychological need for popularity (Hassenzahl et al., 2010). We are currently exploring this connection further.

### Group: Challenge

The categories within this group are related to the feedback categories in the Resonance group because it is feedback that initiates the realization that a challenge has been completed or that being given a challenge was perceived as a form of positive feedback. Because the focus of the Rising to a Challenge category is more inward-facing, it has a lower social index of 0.68. However, Being Given a Challenge has a higher social index of 0.85. This does not necessarily have to reflect that Being Given a Challenge means that someone has to actively give the challenge but more likely reflects the fact that by the time one has completed a task or problem and has risen to the challenge that whoever/whatever gave them, the challenge has become less important by comparison and the focus has shifted to the fact that the challenge has been completed. Challenges are perceived as positive if they are stretching the person's abilities but only to the extent that appears achievable. A similarity exists between this group and aspects of goal setting and the high performance cycle (Locke & Latham, 2002). This group also mirrors the concept of accomplishment in Seligman's PERMA model (Seligman, 2011). This group represents more than 25% of the reported experiences.

### Group: Engagement

The Engagement categories focus on the individual, which is reflected in the categories' low social index (0.50 and 0.38, respectively). They share a large number of elements with the origins of flow (Csikszentmihalyi, 1990), such as the clear set of goals and balance between the perceived challenge and the perceived skill. The main difference between these two categories is the (self-)perceived skill. While solving a problem might feel like a task, creativity is experienced when the individual feels like he/she is playing with the problem. But in both cases,

the person is engaged in the task at hand. We are currently exploring the nuances between these two categories in a follow-up study. They represent just over 4% of the reported experiences.

### Group: Organization

The Organization group contains categories that address structure and the activity of work. As with the categories in Engagement, these categories are inward-looking, with low social indices (0.47 and 0.50, respectively). They represent just below 11% of the reported experiences. The attributes of these categories suggest a strong link to the psychological needs for competence and security (Hassenzahl et al., 2010), which both turned out to be salient of positive technology experiences at work (Tuch et al., 2016).

### Group: Communication and New Experiences

The Communication and New Experiences group is the largest group, representing over 26% of reported experiences and involves both activities and processes that allow a feeling of being related to others and the activity of exploring new things. Both aspects can be related to the psychological needs for relatedness and stimulation, as described by Hassenzahl and colleagues (2010). The three categories that involve interaction, idea exchange, and collaborative work, unsurprisingly, are incredibly social (each with a social index of 1.0). But the other two categories represent experiences that are more individualized, with Experiencing Something New having a social index of 0.52, and Contributing to Something Greater having a slightly higher social index of 0.78.

A common thread ties this group together. For example, stimulation is the foundation for both the Experiencing Something New and Exchanging Ideas categories. However, the stimulation in the former is primarily on the experience whereas in the latter it is in the shared connection in the activity. Similarly, Connecting with Others corresponds to Exchanging Ideas but without the focus on stimulation. Here similarities to the idea of Love 2.0 (Fredrickson, 2013) emerge. Creating Something Together shares similarities with the Engagement categories but has a much stronger focus on the connections with others. Contributing to Something Greater also involves creating things, but here the focus is not on the connection with others but rather the contribution to a valued goal or outcome (see Seligman, 2011), incorporating one's attachment to meaning and value oriented activities. Here parallels to awe (Keltner & Haidt, 2003) emerge.

### Social Index

As mentioned earlier, a social index was calculated for every category. The social index indicates to what extend the category is experienced with others. This measure of social interactions in a given category represents the status quo at the workplaces of our participants, not a representation of all possible experiences in a given category. The social index was calculated as an aid for designing new interactions. For example, if an interaction (that is being designed) already involves several people, it is more straightforward to create a situation where an individual might receive feedback (social index = 0.93) than one where an individual might experience creativity (social index = 0.38). This does not mean that it is

impossible to create a situation where a person receives help that involves no other person even though the category Receiving Help has a social index of 1.0. It means that current workplaces do not facilitate this kind of experience (or at least it has not been reported to us so far). So, because the social index is a reflection of the status quo, it might be harder to create these situations given the restraints of current workplaces. What this also means, however, is that choosing a highly social category for a solitary activity and designing for it could also be used as a way to create unusual and thus highly stimulating experiences.

## APPLICATIONS OF AN EXPERIENCE-CENTRIC APPROACH

The experience categories were developed with a clear purpose: Beyond gaining a better understanding of the structure of positive experiences in work contexts, the goal was to develop tools and methods that could be used to create positive UX by researchers and practitioners alike. This section is intended to give an overview of how the experience categories can be used and how they have been used within our own research group.

The experience categories can be used in several ways. The experience interviews that were used originally to establish the experience categories in themselves can be directed by focusing only on a few experience categories rather than all possible experiences. The categories can be used as an inspirational aid during the design process, or they can be used to analyze task and situational aspects in order to reveal potentials for new positive experiences with a product or service. While it would be possible to focus on experience categories during the entire design process, we successfully have been using the categories at various points within a larger process. We now provide examples of how the categories can be applied. We begin with an explanation of the original version of the experience interview as a comparison to the short version.

### Original (or Long) Version of the Experience Interview

The original version of the experience interview (Zeiner et al., 2016a, 2016b) was developed by our group as a means to better understand positive experiences. In its original form, it is similar to narrative interviews and it was used to collect the data in this paper. It also has been employed in several other projects in our and other labs (e.g., Zeiner et al., 2018). Here we will describe one of them to visualize the process and its results here.

Together with a small software company that, among other things, produces project management software, we used the experience interviews to design concepts (for products) with positive UX for their project management software. The project was part of a larger course project with students at Stuttgart Media University. In order to develop the concepts, project managers and project leaders were interviewed about their positive experiences at work. Several participants in the interviews mentioned teamwork on a larger project as positive experience, and especially the feeling of working together to contribute to something greater. This led to the concept of a project meeting point, a virtual table at which each user is represented by a profile picture. The group's progress is visualized as a pie chart in the middle of the table. The project meeting point supports these experiences by providing visuals on the group's overall progress and supports a feeling of connectedness within the team. This was supposed to fulfill the psychological need for relatedness (Sheldon, Elliot, Kim, & Kasser, 2001).

Another type of positive experience common among the project managers was finishing tasks (or parts of them). To support this, the milestone tower concept was developed. In use, a project is broken down to self-contained tasks that are visible on a screen. Once a task has been completed, it can be dragged to the side of the screen. One by one the tasks add up, building a tower that provides visuals of which parts of the project have been completed. A third aspect that the interviews revealed involved features that can support a feeling of meaning at work. For example, one project manager described identifying with his company when seeing beyond-the-work-environment images of his company's products. Thus, the milestone tower additionally connects each completed milestone with photos of the products.

This student project highlighted several features of the experience interviews. The most prevalent was how quickly the interviews led to actionable ideas. The students worked in groups and each group interviewed three participants. The interview data were already sufficient for generating ideas for concepts. The experience categories also proved useful as a tool for communicating within the teams and when presenting concepts to a broader audience, such as clients or other researchers.

When designing for specific work contexts, we found it helpful to better understand how positive experiences of a certain category are structured concretely and within context-specific ways. In this student project we also found that the bottom-up strategy of the open, original version of the experience interview often required larger numbers of interviews to get an overview of experiences. A faster, top-down (theory-driven) strategy can be advanced using the short version of the experience interview, which we discuss next.

## Short Version of the Experience Interview

Knowing the experience categories a priori allows one to conduct a more concise version of the experience interview. Rather than asking for any positive experiences, the interviewer can ask only for experiences from a specific category or group of categories. Using this approach, it is possible to collect positive experiences related to preselected experience categories. This is beneficial because the process of collecting experience reports from specific categories as inspiration for design requires less time. Rather than learning about positive experiences in a given context, the main purpose of the interviews is now the familiarization with the context based on previously validated experience categories. For example, if a designer is working in a slightly different context from a past one (e.g., power tools rather than large machines), he/she might want to familiarize him/herself with that given context. If he/she wants to create situations where the user will feel competent and secure, the designer will not be interested in how well the user might work together with others but more on the individual tasks at hand. This means the designer might want to focus on categories such as Rising to a Challenge or Keeping Track of Things rather than Creating Something Together. Another reason might be that the interviewer is inexperienced or there simply is not enough money/time to conduct and analyze the broader full version of the interview.

For example, if the design team wanted to allow users to notice if they had completed a challenging part of a task, they could focus on specific aspects of the respondent's experience. Thus, if the interviewer then focused on experiences in which the interviewee completed a challenge, a typical question would be, "When you think back over the last two weeks, can you think of a positive experience where you felt like you successfully completed something

challenging?" The short version can be analyzed the same way as the full version, as described in Zeiner et al. (2016b) and briefly above. For design processes, the use of the face-to-face interview in combination with the experience interview worksheet (see Figure 1; Appendix A) supports the design processes because the clustered worksheets with experience stories can be used in creative sessions as inspiration for design ideas.

The short version of the experience interview has already been successfully used in several final-year student projects. For example, one student studied positive UX in the smart kitchens, with a focus on millennials (for a full description see Zeiner et al., 2018). This is in line with earlier conducted interviews about positive experiences while cooking that resulted in identified experience categories for cooking/kitchen-related experiences. In working with the student on the project, we felt that, in order to gain a better understanding of the target group and the differences between the millennials and previous generations (Zeiner et al., 2018 included millennials but had participants from a much wider range of generations), the student should focus on a few categories. This approach produced a number of design ideas comparable to the original version of the interviews in the same amount of time. However, because the interviews were more focused, so were the ideas (M. Ackermann, personal communication, June 22, 2016).

## Experience Cards

The goal when developing the experience categories was not only the categories themselves but also the development of tools and methods in addressing the needs and opportunities surfaced from the analysis of the related experiences. One of these tools was the Experience Cards that, using the insights of the 17 experience categories, can support the creation and testing of a positive UX. An image of the cards is shown in Figure 3 and the full, printable set of the cards can be found in Appendix B.

Similarly to other card sets, such as Emotion Granularity Cards (Yoon et al., 2013), Need Cards (Hassenzahl et al., 2010), or Wellbeing Determinant cards (Calvo & Peters, 2016), no prior knowledge about theoretical models is necessary in applying the cards, and the preparatory work to use the experience categories is minimal. (However, we have found that an understanding of the differences between UX and usability really helps when using the cards).

To date, we have used the Experience Cards in more than 20 workshops, each with 5–20 participants from small and medium software companies. Feedback from these workshops emphasized that the cards were easy to understand, apply, and use—especially for people with little or no experience regarding UX. One participant mentioned how not having to make the step from abstract descriptions to the context for which she was designing made the experience categories more actionable for her. Compared to working with other frameworks, she felt that she was able to produce more and better ideas because she spent less time trying to understand the framework she was designing with, thus "wasting less time" (B. Bannert, personal communication, July 2, 2016).

One way the cards are used in workshops is to have participants design for positive experiences freely, before introducing the categories. Figure 4 shows photos from a workshop


**Figure 3.** An overview of the Experience Cards that were developed as an ideation aid for an experience-centric design process. Each card is structured in the same way. The name of the experience category is printed on top of the card, next to its group. Each category is then described using the must have and optional elements. The social index is provided at the bottom of the card, as well as a visualization showing which type of individual the experience category was proportionally experienced (superiors, equals, subordinates, external, alone; see Zeiner et al., 2016b, for a detailed description of the relationship between hierarchies at work and the different experience categories).

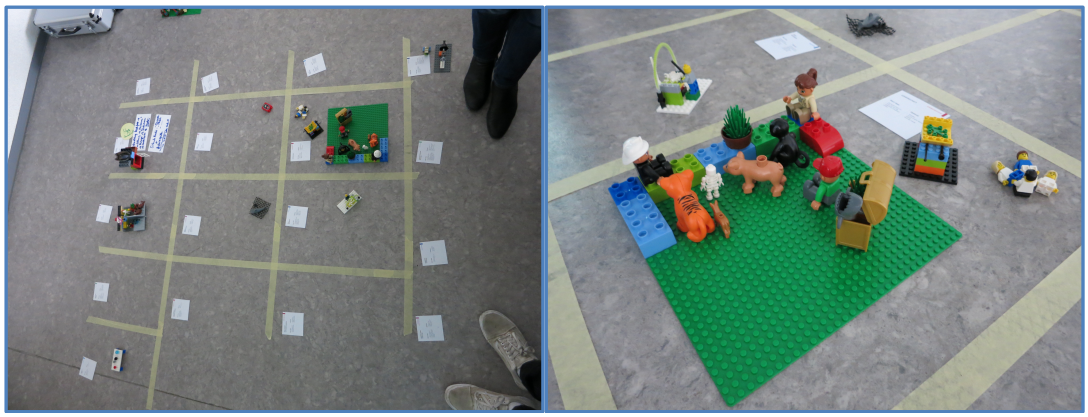

**Figure 4.** Images from a workshop where we used the Experience Cards to generate new concepts. The left image shows a grid for the 17 experience categories with several Lego models that have been assigned to the experience category they were built for. The right image shows one such model in more detail.

where participants had already designed experiences using Lego bricks. We then introduced the categories and assigned the concepts to the different categories. Participants then went back and developed new concepts for the categories that had been empty in the original design process. In this process, we used the cards to first clarify the categories for participants and to then guide them through their second round of designing experiences by giving them easy access to both the must-have and optional attributes of the category they were designing for.

## The Analytical Experience Potential Analysis

When using the experience categories to generate new concepts, the structures within the categories can be compared with the intended activity and used to shape it further. For the analytical experience potential analysis (Laib, Burmester, & Zeiner, 2017), tasks and interactions can be analyzed and compared to the attributes of the experience categories. Designers can ask themselves the following questions:

- Is the situation experienced alone or is there an interaction with other people? Based on the social index, this answer makes some categories more likely than others.
- Where can we find a number of similarities to one or more categories in order to increase the potential for those categories?
- Where is our product or service already creating possibilities for certain categories? Can we "boost" them?
- If a product is already creating possibilities to express appreciation, can we highlight to users that they are showing their appreciation? Or can we make it easier for them to do so?
- Is one category repeatedly facilitated? If so, can we turn the category into a theme for the entire interaction?

By asking these questions and comparing patterns from the work environment with the experience categories, one can either find potential for categories that could be easily generated or potentials for less-likely categories.

## Discussion

In the previous subsection, we described the various applications of the experience categories and their use in practical settings. The short version of the experience interviews streamlines the interview process when investigating a domain from which the categories have already been extracted. The Experience Cards are a tool that allows the designer or researcher to apply the categories when designing new positive experiences or as an inspiration tool in workshops. Finally, the experience potential analysis is an approach that formalizes the application of the experience categories when designing new experiences or working with already existing patterns.

In our own work and based on the feedback of workshop participants, the three applications presented here are easy to use. In particular, the Experience Cards are very popular in our workshops. We believe this is partially because any kind of card set allows the designer, developer, or other user of the cards to interact with the concepts behind the cards more easily. For example, other card sets such as the Emotion Granularity Cards (Yoon et al.,

2013), Need Cards (Hassenzahl et al., 2010), or Wellbeing Determinant cards (Calvo & Peters, 2016) are also popular in workshops organized by our research group. However, we believe that the experience categories lend themselves better to this kind of work because they describe concrete activities that are relevant for work.

For application of all cards, a good understanding of the difference between usability and positive UX is necessary (Burmester, Laib, & Zeiner, 2017; Burmester et al., 2015). Furthermore, Desmet and Hassenzahl (2012) pointed out that the most established approach to designing technology is oriented toward a problem-driven model: Technology is seen as the solution to a problem. So, if the way to a certain destination is not apparent, a navigation system is the solution. When designing for positive UX, they proposed possibility-driven design in order to find and use possibilities to design for positive experiences. For example, the application of the experience card Creating Something Together requires looking for ways all members of a team to get to know each other, to clarify the shared goals, and to demonstrate the activities and results of the team. Therefore, we created a special workshop to establish the basic understanding of possibility-driven design and design for positive experiences before starting using Experience Cards in design processes (Zeiner, Burmester, Fronemann, & Krüger, 2017).

## GENERAL DISCUSSION

This study into positive experiences at work and possible clusters within these experiences was originally motivated by our observation that the research literature focused largely on the consequences of a situation one might experience, such as need fulfillment (e.g., Hassenzahl, 2008; Hassenzahl et al., 2010) and ensuing positive emotions (e.g., Desmet, 2012). This research also has resulted in a number of methods that can be used when designing for positive experiences. However, the abstractness of needs and positive emotions also can feel limiting in the design process. Experience categories describe aspects of the situations that seem to fulfill informants' needs, resulting in positive emotions. This means the categories are intended to fill this gap between experiences and their consequences by giving concrete descriptions of activities that are experienced as positive.

It is important to note that the experience categories approach was developed bottom-up rather than theory-driven. Thus, for a deeper understanding of the theoretical impact, further studies are needed. We plan to analyze how the experience categories are related to other theoretical models of positive UX, such as the need-oriented model of Hassenzahl (2008; Hassenzahl et al., 2010) and the model of positive emotions of Desmet (2012). We suspect that some categories might fulfill only a few needs and are related to specific emotions while others might integrate a variety of needs and emotions.

As with other generative approaches that can be used for design, the experience categories have to be applied appropriately. If, for example, categories are assigned to experiences or designed for only based on the heading rather than the must-have and optional attributes, then it is unlikely that they will result in a design concept that originates in the categories. Or when the experience potential analysis is not performed appropriately and the ideas that are being generated are only recorded as bullet points. While other groups that have

used the categories have not reported this issue, we have come across it when working with student groups (for a discussion of this see, e.g., Laib et al. 2017).

We are continuing to collect experience data from other contexts—such as cooking for the design of smart kitchen equipment and work places using 3D-oriented software tools (computer animation and engineering)—in order to extend the experience category approach. Additional tests and evaluations with small- and medium-sized software enterprises are already underway by employing experience interviews, experience potential analysis, and Experience Cards, as well as these in combination with other UX methods, such as the valence method (Burmester, Mast, Jäger, & Homans, 2010) and UX concept inspiration (Fronemann & Peissner, 2014). The results of these studies will lead to further improvement and validation of the experience category approach. We currently are evaluating whether the must-have and optional elements are more useful for the design process in their concrete form or in a more abstract form.

## IMPLICATIONS FOR RESEARCH AND APPLICATION

Approaches such as Hassenzahl's (2008; Hassenzahl et al., 2010) need-oriented definition of UX, the system of positive emotions in product use of Desmet or the approaches inspired by positive psychology as in positive design (Desmet & Pohlmeyer, 2013), positive technology (Botella et al., 2012), or positive computing (Calvo & Peters, 2014) focus significantly on basic psychological theories. This includes motivation theory, emotion theory, and theories of positive psychology, such as flow theory (Nakamura & Csikszentmihalyi, 2000), PERMA theory (Seligman, 2011), or broaden and build (Fredrickson, 2004). As an alternative approach, the experience category approach is focused more on describing various types of positive experiences related to a specific context. As a result, they are more comparable to the happiness activities of Lyubomirsky (2007; Lyubomirsky, Sheldon, & Schkade, 2005), which are tested activities that lead to increased well-being. The primary differences between the experience categories approach and the happiness activities are that the experience categories are related to work activities and used to inspire technology design in order to promote positive experiences at work.

Compared to the theory-based approaches, the advantage in using experience categories is that they describe authentic activities relevant for workers leading to positive experiences. Designing on the basis of needs or emotions requires a contextualization and interpretation, for example, what it means to fulfill the need for stimulation at a certain workplace. The process of conducting experience interviews and distilling experience categories from the collected positive experiences outlined in this paper can be used as a research method to describe and understand categories and structures already existing in context-specific, positive experiences.

## ENDNOTE

1. The participant codes used here indicate both the data collection batch and the overall interview number within our data set. Thus, PO denotes the source was an online questionnaire, and the number indicates the participant was the 226th interviewed.

## REFERENCES


Bargas-Avila, J. A., & Hornbæk, K. (2011). Old wine in new bottles or novel challenges? A critical analysis of empirical studies of user experience. In *CHI Conference on Human Factors in Computing Systems* (CHI '11; pp. 2689–2698). New York, NY, USA: ACM.

Bargas-Avila, J., & Hornbæk, K. (2012). Foci and blind spots in user experience research. *Interactions*, *19*(6), 24–27.

Botella, C., Riva, G., Gaggioli, A., Wiederhold, B. K., Alcaniz, M., & Baños, R. M. (2012). The present and future of positive technologies. *CyberPsychology, Behavior, and Social Networking*, *15*(2), 78–84.

Burmester, M., Laib, M., & Zeiner, K. M. (2017). Positive Erlebnisse und Wohlbefinden in Arbeitskontexten durch Gestaltung der Mensch-Computer-Interaktion [Positive experiences and well-being in work contexts through the design of human computer interaction]. In M. Brohm Badry, C. Peifer, & J. M. Greve (Eds.), *Positiv-Psychologische Forschung im deutschsprachigen Raum—State of the Art* (pp. 158–175). Lengerich, Germany: Pabst.

Burmester, M., Mast, M., Jäger, K., & Homans, H. (2010). Valence method for formative evaluation of user experience. In *Proceedings of the 8th ACM Conference on Designing Interactive Systems* (DIS '10; pp. 364–367). New York, NY, USA: ACM Press.

Burmester, M., Zeiner, K. M., Laib, M., Hermosa Perrino, C., & Queßeleit, M.-L. (2015). Experience design and positive design as an alternative to classical human factors approaches. In C. Beckmann & T. Gross (Eds.), *INTERACT 2015 Adjunct Proceedings* (pp. 153–160). Bamberg, Germany: University of Bamberg Press.

Calvo, R. A., & Peters, D. (2014). *Positive computing: Technology for wellbeing and human potential*. Cambridge, MA, USA: MIT Press.

Calvo, R. A., & Peters, D. (2016). *Wellbeing determinant cards*. Retrieved July 1, 2016, from http://www.positivecomputing.org/p/projects.html

Chui, M., Manyka, J., Bughin, J., Dobbs, R., Roxburgh, C., Sarrazin, H., Sands, G., & Westergren, M. (2012). *The social economy: Unlocking value and productivity through social technologies.* Retrieved January 13, 2016, from www.mckinsey.com

Csikszentmihalyi, M. (1990). *Flow*. New York, NY, USA: Harper and Row.

Desmet, P. M. A. (2012). Faces of product pleasure: 25 positive emotions in human product interactions. *International Journal of Design*, *6*(2), 1–29.

Desmet, P. M. A., & Hassenzahl, M. (2012). Towards happiness: Possibility-driven design. In M. Zacarias & J. V. de Oliveira (Eds.), *Human–computer interaction: The agency perspective* (pp. 1–27). New York, NY, USA: Springer.

Desmet, P. M. A., & Pohlmeyer, A. E. (2013). Positive design: An introduction to design for subjective well-being. *International Journal of Design, 7*(3), 5–19.

Desmet, P. M. A., Pohlmeyer, A. E., & Forlizzi, J. (2013). Design for subjective well-being [editorial]. *International Journal of Design*, *7*(3), 1–3.

Flanagan, J. C. (1954). The critical incident technique. *Psychological Bulletin*, *51*(4), 327–358.

Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, *359*(1449), 1367–1378.

Fredrickson, B. L. (2013). *Love 2.0: How our supreme emotion affects everything we feel, think, do, and become*. New York, NY, USA: Penguin Putnam.

Fronemann, N., & Peissner, M. (2014). User experience concept exploration: User needs as a source for innovation. In *The 8th Nordic Conference on Human–Computer Interaction* (NordiCHI '14; pp. 727–736). New York, NY, USA: ACM.

Harbich, S., & Hassenzahl, M. (2008). Beyond task completion in the workplace: Execute, engage, evolve, expand. In C. Peter & R. Beale (Eds.), *Affect and emotion in human–computer interaction* (pp. 154–162). Berlin, Germany: Springer.

Hassenzahl, M. (2008). User experience (UX): Towards an experiential perspective on product quality. In *Proceedings of the 20th International Conference of the Association Francophone d'Interaction Homme-Machine* (pp. 11–15). New York, NY, USA: ACM.

Hassenzahl, M. (2010). Experience design: Technology for all the right reasons. *Synthesis Lectures on Human-Centered Informatics*, *3*(1), 1–95.

Hassenzahl, M., Diefenbach, S., & Göritz, A. (2010). Needs, affect, and interactive products: Facets of user experience. *Interacting with Computers*, *22*(5), 353–362.

Hassenzahl, M., Eckoldt, K., Diefenbach, S., Laschke, M., Lenz, E., & Kim, J. (2013). Designing moments of meaning and pleasure: Experience design and happiness understanding experiences. *International Journal of Design*, *7*(3), 21–31.

International Organization for Standardization [ISO]. (2010, March). Ergonomics of human-system interaction - Part 210: Human–centred design for interactive systems (ISO Standards No. 9241 – 210). Geneva, Switzerland: ISO.

Keltner, D., & Haidt, J. (2003). Approaching awe, a moral, spiritual, and aesthetic emotion. *Cognition and Emotion*, *17*(2), 297–314.

Kohler, K., Niebuhr, S., & Hassenzahl, M. (2007). Stay on the ball! An interaction pattern approach to the engineering of motivation. In C. Baranauskas, P. Palanque, J. Abascal, & S. Diniz Junqueira Barbosa (Eds.), Human–Computer Interaction – INTERACT 2007 proceedings. *Lecture Notes in Computer Science* (Vol. 4662; pp. 519–522). Berlin, Germany: Springer.

Laib, M., Burmester, M., & Zeiner, K. M. (2017). Erlebnispotenzialanalyse – Mit Systematik zu positiven Erlebnissen [Experience potential analysis: Creating positive experiences systematically]. In S. Hess & H. Fischer (Eds.), *Mensch und Computer 2017 – Usability Professionals.* Regensburg, Germany: Gesellschaft für Informatik e.V. und die German UPA e.V. Retrieved from https://dl.gi.de/handle/20.500.12116/5773

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *The American Psychologist*, *57*(9), 705–717.

Lu, Y., & Roto, V. (2015). Evoking meaningful experiences at work: A positive design framework for work tools. *Journal of Engineering Design*, *26*(4-6), 99–120.

Lu, Y., & Roto, V. (2016). Design for pride in the workplace. *Psychology of Well-Being*, *6*(1), Art. 6.

Lyubomirsky, S. (2007). *The how of happiness: A scientific approach to getting the life you want*. London, England: Penguin.

Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology*, *9*(2), 111–131.

Mayring, P. (2000). Qualitative content analysis. *Forum Qualitative Sozialforschung /Forum:Qualitative Social Research*, *1*(2), Art. 20.

Nakamura, J., & Csikszentmihalyi, M. (2000). The concept of flow. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 89–105). Oxford, England: Oxford University Press.

Rosso, B. D., Dekas, K. H., & Wrzesniewski, A. (2010). On the meaning of work: A integration and review. *Research in Organizational Behavior*, *30*, 91–127.

Russell, J. A. (2009). Emotion, core affect, and psychological construction. *Cognition & Emotion*, *23*(7), 1259–1283.

Schrepp, M., Held, T., & Laugwitz, B. (2006). The influence of hedonic quality on the attractiveness of user interfaces of business management software. *Interacting with Computers*, *18*(5), 1055–1069.

Seligman, M. E. P. (2011). *Flourish: A visionary new understanding of happiness and well-being*. New York, NY, USA: Free Press.

Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology*, *80*(2), 325–339.

Tuch, A. N., Trusell, R. N., & Hornbæk, K. (2013). Analyzing users' narratives to understand experience with interactive products. In *Proceedings of the CHI Conference ofn Human Factors in Computing Systems* (CHI '13; pp. 2079–2088). New York, NY, USA: ACM.

Tuch, A. N., van Schaik, P., & Hornbæk, K. (2016). Leisure and work, good and bad: The role of activity domain and valence in modeling user experience. *ACM Transactions on Computer–Human Interaction*, *23*(6), Art. 35.

Yoon, J., Desmet, P. M. A., & Pohlmeyer, A. E. (2013). Embodied typology of positive emotions: The development of a tool to facilitate emotional granularity in design. In *Proceedings of the 5th International Congress of International Association of Societies of Design Research* (pp. 1195–1206). Tokyo, Japan: International Association of Societies of Design Research.

Zeiner, K. M., Burmester, M., Fronemann, N., & Krüger, A. E. (2017). Evaluation von Methoden zur Gestaltung positive r User Experience [An evaluation of methods for the design of positive user experience]. In S. Hess & H. Fischer (Eds.), *UP 2017*. Regensburg, Germany: Gesellschaft für Informatik e.V. und die German UPA e.V. Retrieved from https://dl.gi.de/handle/20.500.12116/5816

Zeiner, K. M., Henschel, J., Schippert, K., Haasler, K., Laib, M., & Burmester, M. (2018). Experience categories in specific contexts: Creating positive experiences in smart kitchens. In A. Marcus & W. Wang (Eds.), DUXU 2018, *Lecture Notes in Computer Science* (Vol. 10918; pp. 306–324). Cham, Switzerland: Springer Nature.

Zeiner, K. M., Laib, M., Schippert, K., & Burmester, M. (2016a). Das Erlebnisinterview – Methode zum Verständnis positiver Erlebnisse [The experience interview: A method for understanding positive experiences]. In S. Hess & H. Fischer (Eds.), *UP 2016*. Aachen, Germany: Gesellschaft für Informatik e.V. und die German UPA e.V. Retrieved from https://dl.gi.de/handle/20.500.12116/5448

Zeiner, K. M., Laib, M., Schippert, K., & Burmester, M. (2016b). Identifying experience categories to design for positive experiences with technology at work. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems* (pp. 3013–3020). New York, NY, USA: ACM.

## Authors' Note

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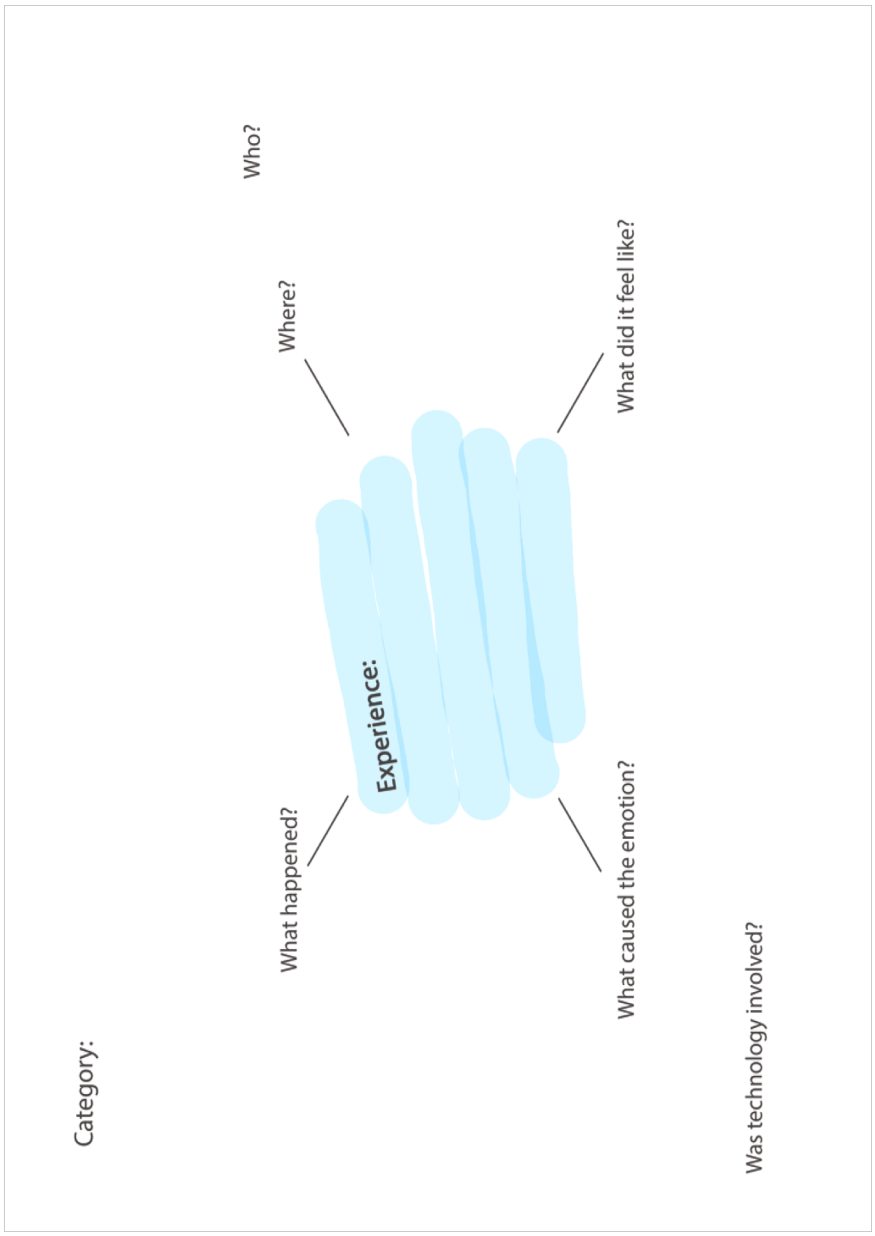
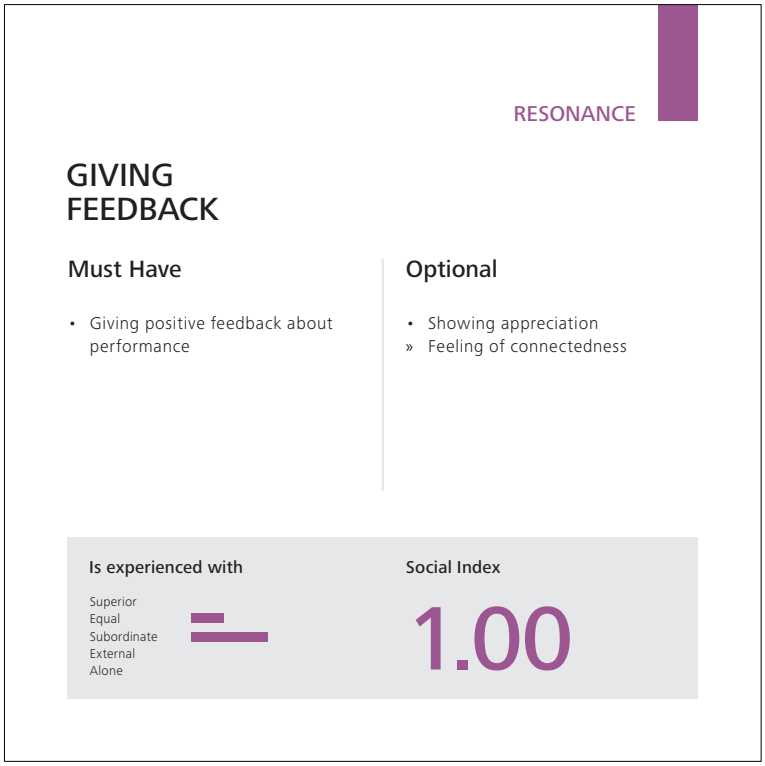
## Appendix A

This interview worksheet can be printed and used for interviews in multiple domains and work environments. It allows the interviewer to work collaboratively with the interviewee in assembling the fullest possible picture of the experience.



## Appendix B

This Experience Cards set can be printed and used as described in the Applications section of this article.

RESONANCE

## RECEIVING APPRECIATION

### Must Have

- Feedback about appreciation of one's self

### Optional

- Stronger effect if unexpected
- Competence
- » Feeling vindicated
- » Pride

**Is experienced with**

Superior
Equal
Subordinate
External
Alone

**Social Index**

0.90

SOCIAL SUPPORT

## HELPING OTHERS

### Must Have

- Responding to problems or questions by imparting support or advice

### Optional

- In response to a request or through initiative of one's own, or with customers or colleagues
- Mentoring role
- » Joy over the received appreciation
- » Feeling competent & self-confident
- » Pride

**Is experienced with**

Superior
Equal
Subordinate
External
Alone

**Social Index**

1.00

SOCIAL SUPPORT

## RECEIVING HELP

### Must Have

- Receiving support or advice in response to problems or questions

### Optional

- Before: uncertainty, distress
» Appreciation
» Relief
» Connectedness

Is experienced with

Superior
Equal
Subordinate
External
Alone

Social Index

1.00

SOCIAL SUPPORT

## TEACHING OTHERS

### Must Have

- Acting as a mentor, supervisor, or leader
- Sharing experiences and knowledge
- Intention: teaching others

### Optional

- Receiving appreciation
- Feeling responsible for others
- Perceiving own professionalism
» Feeling competent
» Pride

Is experienced with

Superior
Equal
Subordinate
External
Alone

Social Index

1.00

CHALLENGE

## RISING TO A CHALLENGE

### Must Have

- Uncertainty about results
- Completing a difficult task
- Positive feedback about performance
- Satisfaction with results
- Relief if things worked out

### Optional

- Tension or skepticism in the beginning
- Rising to their own demands
- Working alone or in a team

» A sense of achievement
» Pride
» Feeling of being needed
» Self-confidence

**Is experienced with**

Superior
Equal
Subordinate
External
Alone

**Social Index**

0.68

CHALLENGE

## BEING GIVEN A CHALLENGE

### Must Have

- Given a (new) difficult task

### Optional

- From a customer or supervisor
- Uncertainty in the beginning
- Situation is interpreted as a show of confidence

» Motivation
» Pride
» Excitement about new experiences

**Is experienced with**

Superior
Equal
Subordinate
External
Alone

**Social Index**

0.85

ENGAGEMENT

## SOLVING A PROBLEM

### Must Have

- Goal is clear
- Road to the goal is open
- Competence (skills needed to complete task are present)

### Optional

- Time becomes less important
- Exploring new things
- Assessing different possibilities

» Pride in the results

**Is experienced with**

Superior
Equal
Subordinate
External
Alone

**Social Index**

0.50

ENGAGEMENT

## EXPERIENCING CREATIVITY

### Must Have

- Trying out one's self and new ideas
- Time becomes less important
- Goal is clear
- Road to the goal is open
- Competency (skills needed to complete task are present)

### Optional

- Non-rigid structures
- Experiencing freedom
- Taking unconventional paths
- Responding flexibly to changing requirements

» Flow
» Motivation

**Is experienced with**

Superior
Equal
Subordinate
External
Alone

**Social Index**

0.38

ORGANISATION

## FINISHING A TASK

### Must Have

- Completing tasks and parts of tasks
- Competency (skills needed to complete task are present)
- Goal is clear
- Task is not challenging

### Optional

- Initiating the activity might take some effort
- Before: feeling of stress and tension
- Positive feedback about performance

» Relief
» Pride
» Feeling productive

**Is experienced with**

Superior
Equal
Subordinate
External
Alone

**Social Index**

0.47

ORGANISATION

## KEEPING TRACK OF THINGS

### Must Have

- Keeping track of things

### Optional

- Perceived efficiency
- Functioning communication within a group
- Having a plan
- Setting priorities

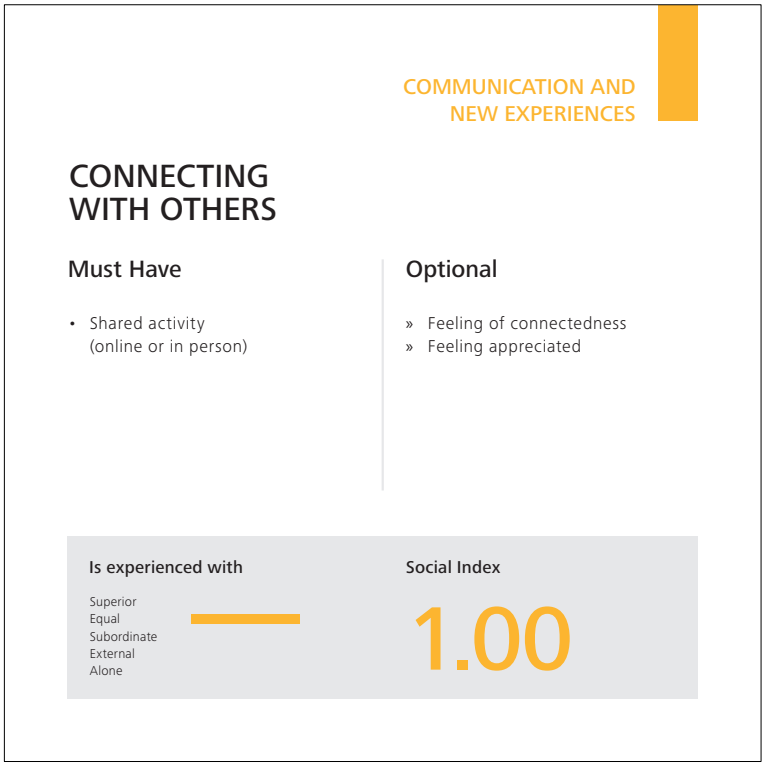
» Feeling of competence
» Pride over what has already been achieved
» Relief
» Feeling of connectedness within groups

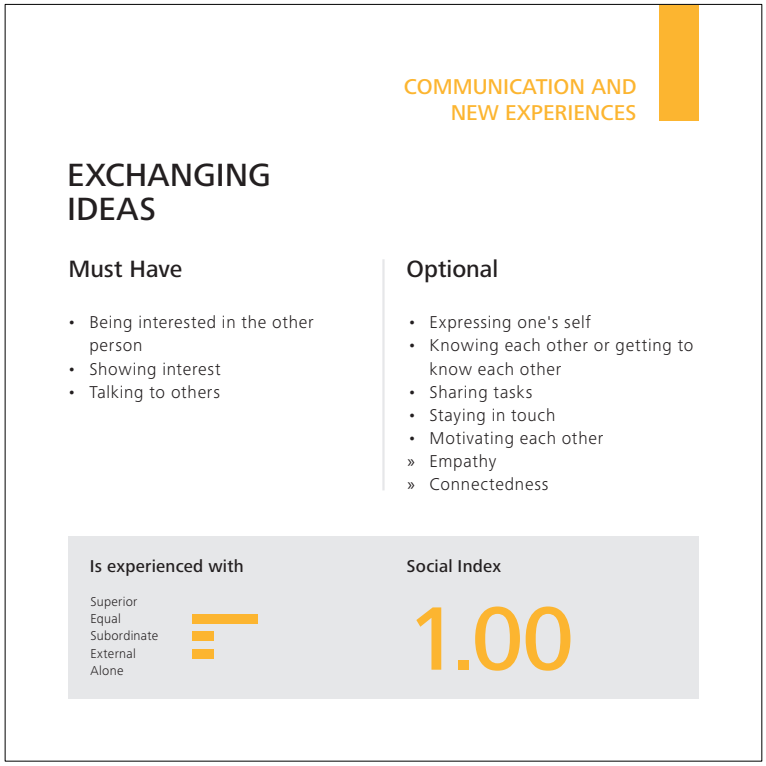
**Is experienced with**

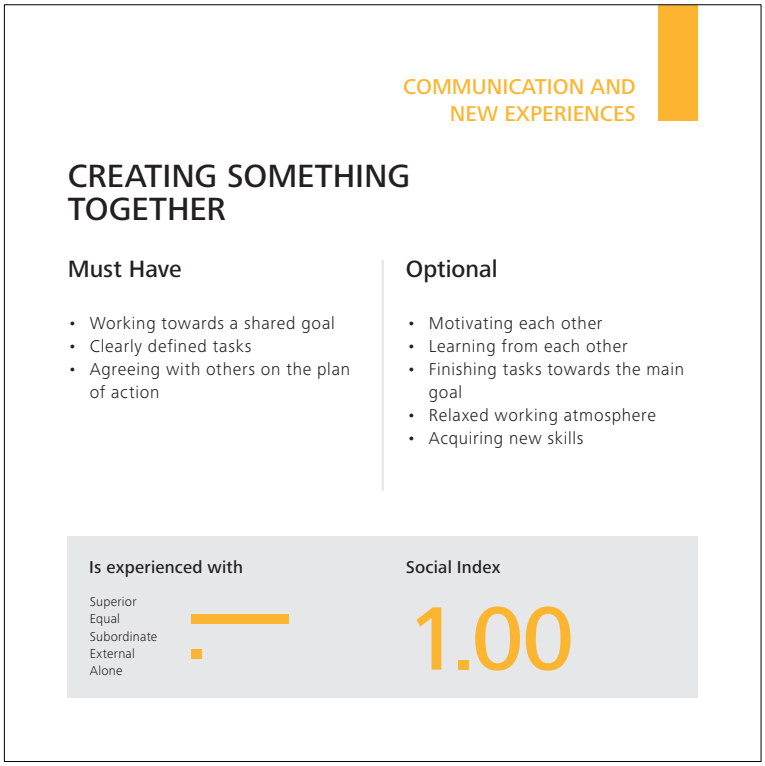
Superior
Equal
Subordinate
External
Alone

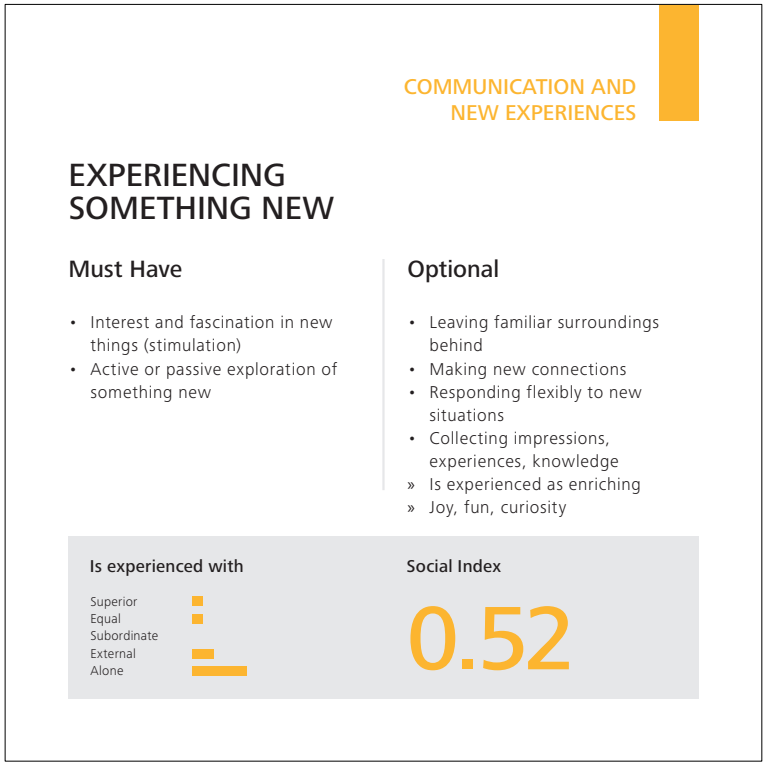
**Social Index**

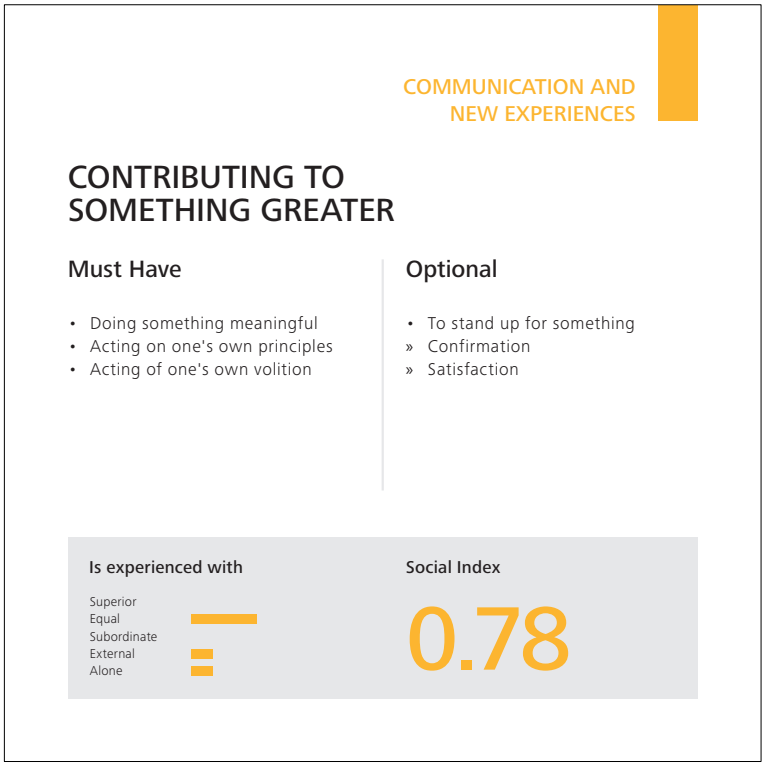
0.50


COMMUNICATION AND
NEW EXPERIENCES
CONNECTING
WITH OTHERS
Must Have
• Shared activity
(online or in person)
Optional
» Feeling of connectedness
» Feeling appreciated
Is experienced with
Superior
Equal
Subordinate
External
Alone
Social Index
1.00


COMMUNICATION AND
NEW EXPERIENCES
EXCHANGING
IDEAS
Must Have
• Being interested in the other person
• Showing interest
• Talking to others
Optional
• Expressing one's self
• Knowing each other or getting to know each other
• Sharing tasks
• Staying in touch
• Motivating each other
» Empathy
» Connectedness
Is experienced with
Superior
Equal
Subordinate
External
Alone
Social Index
1.00


COMMUNICATION AND
NEW EXPERIENCES
CREATING SOMETHING TOGETHER
Must Have
• Working towards a shared goal
• Clearly defined tasks
• Agreeing with others on the plan of action
Optional
• Motivating each other
• Learning from each other
• Finishing tasks towards the main goal
• Relaxed working atmosphere
• Acquiring new skills
Is experienced with
Superior
Equal
Subordinate
External
Alone
Social Index
1.00


COMMUNICATION AND
NEW EXPERIENCES
EXPERIENCING SOMETHING NEW
Must Have
• Interest and fascination in new things (stimulation)
• Active or passive exploration of something new
Optional
• Leaving familiar surroundings behind
• Making new connections
• Responding flexibly to new situations
• Collecting impressions, experiences, knowledge
» Is experienced as enriching
» Joy, fun, curiosity
Is experienced with
Superior
Equal
Subordinate
External
Alone
Social Index
0.52


COMMUNICATION AND
NEW EXPERIENCES
CONTRIBUTING TO
SOMETHING GREATER
Must Have
• Doing something meaningful
• Acting on one's own principles
• Acting of one's own volition
Optional
• To stand up for something
» Confirmation
» Satisfaction
Is experienced with
Superior
Equal
Subordinate
External
Alone
Social Index
0.78