MIND and HEART: Measuring and designing for thicker qualities of user experience

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In this paper, we discuss our interdisciplinary approach to developing a new framework for evaluating how design elements of digital technologies interact with joy in user experience. We explain why this framework is needed, given a distinction between thin and thick engagement in user experience. We elaborate on our framework in light of four case studies we conducted or supervised, showing how cognitive and normative elements of user experience might be better engaged with in UX frameworks, and in the design and use of technology more generally.

Keywords: user experience, positive affect, joy, attitudes, survey, metrics, digital platforms, HaTS, HEART

Over a year ago, our team began work on an interdisciplinary project exploring joy in user experience of digital technology. As a computer scientist, Jennifer is passionate about using technology to support learning, inclusion, and accessibility. Matthew and Rachel, who are both philosophers, appreciate the beauty and ingenuity of their favourite videogames, and at various points have depended on virtual communities for encouragement and learning opportunities. Within User Experience (UX) and Human Computer Interaction (HCI), we have also been reading about design frameworks focusing on pleasure and delight, as well as values like wellbeing, virtue, humaneness, and justice.[1]

Despite our positivity, we spent a lot of time discussing concerns. We were living away from our home countries during tragic and unsettling

[1] Research centres and educational projects include the Center for Humane Technology (https://www.humanetech.com/), Humane by Design (https://humanebydesign.com/), and Data & Society (https://datasociety.net/). See also the list of initiatives in the appendix to Ruha Benjamin's *Race After Technology* (2019), including Allied Media Projects (https://alliedmedia.org/), Design Justice (https://designjustice.mitpress.mit.edu/), and Equality Labs (https://www.equalitylabs.org/).

events, and we were doing a lot of doomscrolling – devoting long hours to ever-updating feeds of negative news. One of us was brought to the point of physical pain, having strained their thumb through excessive scrolling. Another of us tried to reduce doomscrolling, but found that moving away from sources focused on news was still conducive to procrastination, despite (or maybe because of) the fact that it meant clicking into a stream of content which was crowded with trivial stories and bad actors seeming to thoroughly enjoy trolling, bullying, and spreading misinformation. A less intensely miserable experience, perhaps, but still lacking in deep engagement. We were also concerned about how frustrations seemed to be built into the design of devices, as we struggled to set up new phones which came fitted with branded junkware,[2] or received constant alerts on our devices which kept bringing us back to doomscrolling.

Digital technology is part of everyday life, but in both message and medium, it often caters towards low-quality engagements. Yet, in personal experience, and certainly in theory, it could support deeper social connections alongside normative and cognitive elements. Our project applies resources from our disciplines to explore this tension. In what follows, we set up a thin/thick user experience distinction and introduce our new joy-focused design framework. We discuss case studies which we conducted or supervised, using these to illustrate and develop our framework. We end by considering how cognitive and normative considerations can be supported within and beyond design.

Related work

In a previous paper (Robertson et al., forthcoming), we made the case for a design framework focused on joy. In this section, we will explain how we got to this framework.

Human Computer Interaction Framework

Human Computer Interaction (HCI) is the study of how humans interact with technology and designing technology with this in mind. User Experience (UX) is a subset or HCI and normally refers to the practical or design aspects of HCI. HCI frameworks have been produced to bring together various principles to be applied at different stages of the design process: Requirement Specification, Design, Implementation, and Testing/Evaluation, and iterating between these steps. One such HCI Framework is Working to Choose (Cockton, 2020, Heskett, 2005), applied by George (2016). It aims to establish a balance of worth across four

[2] Our attention was drawn to this kind of example by an article by software designer Danilo Campos (Campos, 2022).

design arenas: Beneficiaries (who the design is for and what matters to them), Evaluations (how successful the design is), Artefacts (what is being designed), and Purpose (why it is being designed).

A range of UX evaluation metrics have been developed to measure users' experiences, which includes the impact of both the medium of an artefact (the technological device itself and its design) and the message of an artefact (the content delivered through the device) (McLuhan, 1964).

If certain dimensions can be identified as being important for beneficiairies, then these frameworks provide a systematic approach to ensure that those dimensions are embedded as a requirement of the artefact and evaluated to ensure this requirement is met. Our task is to investigate these dimensions.

HEART and thin experience

We started with two frameworks from Google, as representative of typical approaches to collection and analysis of data on user experience (see the *Appendix* for survey questions).[3] HEART (Rodden et al., 2010) encompasses *happiness,* which can be measured by the Happiness Tracking Survey (HaTS, in Müller & Sedley, 2014). HaTS asks about "appreciated features of the project, satisfaction with various product attributes, tasks it is used for, satisfaction with those tasks, time spent using the product, and usage frequency)" (Robertson et al., forthcoming, p. 2). HEART uses behavioural and self-reported measures to study users' level of involvement with the product (*Engagement, Adoption*, and *Retention*) and how successful users are at using design features (*Task Success*).

Our concern was that HEART optimises for thin qualities of user experience. First, *addictive* tendencies come with dramatic highs and lows of emotions, as with compulsively checking phones and social media updates (Beyens et al., 2016; Kuss & Lopez-Fernandez, 2016). Second, *mindlessness* comes with low-level emotions and low-level attention, as with passively scrolling through newsfeeds (these may be low-level positive emotions, as explored in Baughan et al., 2022; Baym et al., 2020; or low-level negative emotions, as in Levy, 2016; or generally ambivalent, as in Lupinacci, 2020). Third, *maliciousness* can support pleasure, especially in activities like trolling (Buckels et al., 2014; March & Steele, 2020). In each case, users can be engaged for a long time, successfully use design features, and even take satisfaction in this use. These kinds of

[3] Many other design frameworks focus on positive user experience (see e.g., Blythe & Monk, 2018; Norman, 2007). We chose the Google frameworks as they apply widely.

engagements may result in no negative impact, or even higher scores, on HEART/HaTS assessments.

Some frameworks focusing on positive user experience try to tackle this problem by introducing normative notions like wellbeing, virtue, value, personal significance, or humaneness (Calvo & Peters, 2014; Klein, 2022; Le Dantec et al., 2009; Peters et al., 2018; Pohlmeyer & Desmet, 2017). However, there is still room to explore dimensions of wellbeing, and how seemingly intangible normative and cognitive dimensions can be captured within a UX framework.

MIIND and thick experience

We proposed the notion of joy as encapsulating thick experience, particularly the kind of joy involving "an intense feeling of fulfilment and a deep alignment between some good in the world, and oneself and others" (Robertson et al., forthcoming, p. 1, see also Johnson 2020a, 2020b). Drawing on research within positive psychology (Arnett, 2022; Casioppo, 2020; Johnson, 2020b, 2020a; Watkins et al., 2018) and developmental psychology (Fredrickson, 2004, 2009; Fredrickson & Levenson, 1998; Huppert et al., 2004), we proposed a UX framework with five dimensions.

Motivation explores drives and conditions for using the product and how well the product supports motivations for joy: feelings of safety, freedom, ease, and creativity, as well as opportunities for self-actualization, gratitude, or even seeking joy itself. *Integrity* evaluates another condition for joy – how well the product enables a user to integrate properly with the world, themselves, and others. *Intensity* measures the strength of experience (e.g. calm vs. high-energy), which goes towards screening out low-level mindlessness and addictive highs. *Normative* concerns moral and aesthetic features connected with joy (beauty, gratitude, and social connection). *Dependent* examines end-user awareness of how external factors contribute to their wellbeing, as a mark of greater cognitive engagement and a sense of gratitude (which is closely connected to joy, as in Watkins et al., 2018).

The MIIND framework employs the rich emotional and cognitive profiles of joy, allowing for more granularity when it comes to assessing affect and motivation, and going beyond behavioural data by considering normative and cognitive dimensions.

Piloting the MIIND framework

MIIND is a general framework, within which surveys and measurements can be developed. Over the last year, we conducted or supervised our own series of case studies. We now turn to how these illustrate and expand on the MIIND framework.

Case study 1: News aggregators

As an introductory example, we begin with a study of doomscrolling. We conducted an autoethnographic exploration of news aggregators – apps which redistribute content from news organisations "either in full, as a digest or as a heading with a link to the original source" (Bakker, 2012, p. 635; Chowdhury & Landoni, 2006). Studies of doomscrolling suggest that careful curation of news is one method of curtailing excessive news consumption (Aharoni et al., 2021; Bakker, 2012; Mannell & Meese, 2022, p. 311). Therefore, we explored whether our habits of doomscrolling could be combatted through the curation capacities of news aggregators.

Starting in August 2022, we began to use one or two news aggregators. We took notes covering personal background for news reading, and our experience of setting up the aggregators and using them in daily life. We shared notes and discussed experiences during team meetings, as a way of approaching a co-constructed autoethnography (Cann & DeMeulenaere, 2012; Ellis & Bochner, 2000). Some of the patterns we identified help to fill out the MIIND framework.

Our reflections on the background for our news reading habits revealed ways in which our motivations were being shifted, pushing us towards doomscrolling. We each noted a gap between what we started reading the news for, and how things ended up: "*What I end up normally reading is not what I should be, whether it be for my area of work that I need to stay on top of, or my wellbeing. […] My phone also recommends 'Top Stories', 'Missed this?' and 'trending' notifications which I […] do click through if I am particularly procrastinating*"; "*I feel like I start off with good intentions when I read the news, but I waste a lot of time clicking on suggested links and reading things which do not add to my knowledge or understanding of the situation*".

These comments reflect that a kind of "value capture" is occurring when we read the news on our phones or computers (Nguyen, 2020). We start off with good motivations but end up behaving according to the values promoted by certain design features. We kept engaging with more and more content, rather than amounts and types of content actually of value to us. One of us commented that "*I would start my day by opening articles recommended according to my interests, and after a couple of minutes, I'd already have five or six articles open and not know where to start – all looked interesting, and I'd only have time to read one or two. My feed would update throughout the day, providing 'breaking news' and recommended articles every time I opened the browser on my phone, and I'd keep opening even more tabs – planning on reading them later. But the number of open tabs just kept piling up because the interface opened tabs*

in the background and the scrolling headlines remained in the foreground, hijacking my attention away from the articles being opened."

By contrast, one of us commented that changing the format to a news aggregator was a way of realigning behaviour with motivations: "*I actually enjoyed setting up the app as it forced me to be intentional about the areas of news I actually wanted to consume*."

In terms of intensity, in our normal news reading habits we mentioned having a "constant draw" or "constant checking" of the news, and often intense feelings of outrage and annoyance when faced with updates about injustices contributing to deep suffering. This reflects how doomscrolling is connected to "a constant state of alertness" (Lupinacci, 2020).

An aspect of the normative dimension which we did not expect was the importance of aesthetic factors in accessing the news. One reason it felt difficult to get started with some of the news aggregators was that the layout of the articles was unhelpful: "*It felt busy with so many different news sources and types of articles presented at once, and of really varying quality. At the same time, it felt quite modular as I kept needing to tap to get to the next story/article. These small interruptions to my reading made me feel like it was hard to get a quick overview of what was happening at the moment and it was hard to choose which topics I wanted to read up on.*"

It had been a while since we used a new app, which had not collected much personal data yet and so did not know us too well. This meant that unexpected sources of news were recommended, allowing us to find out about more in-depth reporting and "long read" articles which we would not otherwise have come across (on the value of long-reads and other applications of positive psychology to news production, see Haagerup, 2017; McIntyre & Gyldensted, 2018). This connects to the dependent element of MIIND, and having welcome surprises as we encountered valuable sources of information. However, the downside to not being known well by the app was that we also encountered unwelcome surprises. One of us recorded being immediately met with "*sources whose standards of journalistic integrity don't meet a certain bar*", which did not encourage them to use the app. Ironically, this was likely a result of a design feature of the app itself, which sought to provide news from a variety of sources, including those outside of the user's usual sources, in order to cut down on the phenomenon of 'filter bubbles.'

In terms of integrity, one common feature was how social our news reading was, which suggested an important role for the kind of integrity which involves aligning ourselves with other people in the world. For example, we noted the role of social media as a source of news: "*If*

someone personally messages me to look at an article, I am likely to check it out"; "*I take the time to read all the articles sent to me via social media. They often present a very different point of view to the newspapers I usually look at. I worry that it is otherwise difficult for me to see different opinions and to know what how friends and family are thinking*." This reflects how interpersonal relationships are important for news reading habits (Mannell & Meese, 2022, p. 314).

Lastly, we noted that there was a problem for integrity in our news reading habits. Reflecting on why they doomscroll, one of us noted: "*it was an attempt to make up for how ill-informed I was on issues and what was going on in the world. It also felt important, like I was bearing a kind of epistemic witness, or honouring these lives by learning about them.*" At the same time, doomscrolling led to them straining their thumb and some relational difficulties – they recalled being told by a friend after 45 minutes of talking about negative news: "*ok let's take a break and just talk about happier stuff*". In referencing "epistemic witness" and "honour", we see a kind of moral underpinning to doomscrolling. This is a helpful addition to the literature, which tends to explain patterns of news addiction and aversion in terms of things like preferences, desires, affect, or (lack of) trust (Mannell & Meese, 2022; Skovsgaard & Andersen, 2020). Our study suggests that conflicts of integrity could be an additional factor to investigate: epistemic commitments to knowing about what is happening can drive doomscrolling behaviour, but the moral commitment to preventing harm to oneself and others was violated by the personal and social impacts of doomscrolling.

A focus on MIIND elements, especially integrity and normative dimensions, may go some way to explaining why doomscrolling is so hard to stop, and how news aggregators can combat this through suggesting long reads, or appropriate, uplifting, and unexpected news stories.

Case study 2: Social media

Our second case study was a more direct exploration of the MIIND framework. We developed survey questions for HEART and MIIND and sent them out to users of a social media platform. We were interested in what HEART and MIIND metrics would reveal about these design choices. The *Appendix* to this paper contains the questions we used.

We had six complete responses, so more conclusive results await a larger sample size. Recruiting a larger sample size from this platform would have been difficult, as it is still in the early stages of user testing. We selected this app for further study, however, because it is explicitly aimed at leveraging and experimenting with alternate design features from the

mainstream, market-dominant apps, in order to promote healthier forms of engagement. For example, it does not have “like” or “comment” functions. Using this app for the study provided the opportunity to directly study whether these design principles (many of which map well to the MIIND framework) are effective in bringing about thicker user experience. We will discuss some trends that we have seen so far.

We noticed several contrasts between HEART and MIIND questions. First, HEART questions mostly elicited technical responses, whereas responses to MIIND questions were more personal. For example, there were some dissatisfactions flagged under HEART questions, with the open-ended questions eliciting comments about limits on posts and editing capacities. In response to the MIIND questions, particularly about user motivation, several participants wrote about using the app primarily as a place to “*store*” content and memories, which could then be visited at a later point (by themselves or other people). They highlighted organization, safety, and lack of distraction as what they valued the most for this purpose. The MIIND responses allow for more informed changes to the app’s capabilities.

Second, there was a difference in timeframe considered within responses to HEART and MIIND questions. MIIND questions about motivation offered a picture of use over time. Participants reflected on their original and current motivations for use, and what about the app had led to changes in motivations (“*Have your motivations for using [product] changed over time? Please explain*”). HEART responses provide more of a snapshot of user satisfaction with the app at that moment (“*Indicate your satisfaction with [product] in the following areas…*”).

Third, the MIIND questions relating to intensity and normativity provided greater background to HEART questions about satisfaction (measured on a five-point scale) and engagement (measured with minutes and times per week of using the app and particular design features). The participants who were somewhat to extremely satisfied overall on HEART metrics all commented that “*calm*” best described their experiences while using the app. Most of these participants highlighted “*gratitude*” as the normative quality of their experience (one specified that they felt gratitude at being ‘*in a safe space*’ for content making), with some also mentioning “*beauty*”, and “*making more of an impact*”.

Fourth, HEART satisfaction and engagement metrics can come apart. On the one hand, MIIND is useful as it could help explain some of these discrepancies within HEART. Despite most of the participants saying they were ‘somewhat’ to ‘extremely’ satisfied with the app overall and its design features, there was low engagement by all participants. Most said they did tasks using the app between 0-1 times a week, and participants tended to

use the app for 2-15 minutes each time they opened it (one participant reported using the app for a task 10 times a week, but they generally used the app 5 times a week for 30 minutes each time). The emphasis on memory retrieval, safety, and calm engagement revealed through the MIIND questions may go some way to explaining these patterns of use.

On the other hand, the gap between satisfaction and engagement may also create a problem for MIIND. Platforms doing well on MIIND may not do well on HEART engagement, precisely because they do not promote high-intensity, addictive forms of engagement. One participant who rated the app lowly on both satisfaction and MIIND questions commented that although they liked the idea of removing "*the dopamine hit of likes",* the app was "*ultimately not "sticky"- there was little reason for me to keep going back*". A participant who rated the app highly on overall satisfaction and MIIND metrics, but had low HEART engagement, noted "*I have to get better into the swing or adding it into my routine*".

All participants who reported overall satisfaction with the app said that when using it, they found joy (understood as "a powerful positive experience or vision of some aspect of the world, or yourself, being the way you want it to be"). The features supporting their joy were spaces for co-creation, connections to memory, ease of creation, and lack of social criticism and monetisation: "*I get back to simple creation when it was fun and not sponsored*". Although few were seeking joy directly in their use of the app, participants were looking for a more positive kind of social media experience and were generally aware of the influence of external factors (with an emphasis on gratitude). Throughout the survey, participants noted their approval of how "*the focus was on quality content rather than quantity*", and "*the ability to create content without like stress*".

From the HEART part of the survey, we saw that the app had low levels of engagement but generally high satisfaction, apart from some technical fixes which were needed. On the MIIND part of the survey, we learned more about participants' experiences and motivations for using the app, including users' opportunities for calm, safety, and memory storage and retrieval, for which they could be provided with more support.

Case study 3: Film and Virtual Reality

This study was supervised by Jennifer, and was entitled "iSense360: Simulating empathy in film and virtual reality via documentary storytelling" (Koker, 2022). The focus of the study was the film 'I Remember', which portrays Neelofar Abrahimi and her family's refugee journey from

Afghanistan to England.[4] Visual recreations of significant moments from this journey were overlayed with voice recordings of Neelofar and her parents discussing memories of that time, and reflections on their life in England. The film was produced in two formats: a traditional audio-visual film format, and a 360-degree Virtual Reality format, in which participants with a VR headset could turn their head to look in any direction. The study covered two phases: constructing and evaluating the film.

Construction

During the construction phase, one of the aims was to "explore whether a sense of joy could be revealed in distressful and difficult circumstances" (Koker, 2022, p. 13). The filmmakers recreated the most negative parts of the narrative, for example using motion and murkiness to depict the family's distress during lengthy travels by lorry and by dingy. In the film, these recreations were interspersed with footage of the narrator as an adult standing on a peaceful beach, even as audio of dialogue about the family's troubles continued to play. The film also included family home videos of life growing up in England (e.g. playing, cooking, dancing, and meeting with members of their community), and ended with footage of the family and their friends laughing and dancing together on the beach.

In this phase, the study touched on several aspects of the MIIND framework. One aspect is integrity – specifically, self-efficacy, which is integrity in a 'world to self' direction, as it is the ability to bring the world into alignment with one's beliefs, commitments, and desires (Robertson et al., forthcoming; Robertson & Johnson, 2023). The study considered critiques of VR experiences, which suggest there can be a negative impact on users' self-efficacy. Intense experiences of negative empathy often involve biasing and demotivational effects, resulting in reduced capacities to help affected communities (Bloom, 2017; Prinz, 2011; Ramirez et al., 2021). The study then considered how joy is closely connected with self-efficacy – it results from a recognition of self-efficacy, and also involves gaining new skills and resources which protect against demotivation and emotional burnout (Johnson, 2020b).The inclusion of family videos and the beach scenes were an attempt to generate joy in a way which supports self-efficacy.

This phase of the study also had to do with the normative dimensions of joy. Filmmakers were hoping to produce "long-term positive narratives" in a depiction of an oppressed community, rather than primarily depicting a "hopeless and unfortunate" situation (Koker, 2022, pp. 7; 14). This harnesses a distinction between negative normative dimensions of

[4] This film was created as part of the 'Age of Many Posts' project at the Barbican Centre (https://www.barbican.org.uk/age-of-many-posts-weekender-programme#neelofar-abrahimi).

voyeurism, sadism, and schadenfreude, and positive experiences encompassing beauty, gratitude, and positive social connection.

The intensity of joy was also relevant. It may be difficult to generate high-energy joy alongside scenes of distress and sadness, so calm and serene joy was seen as more appropriate. Thus, the filmmakers aimed to depict joy through “a sense of hopefulness and serenity” (Koker, 2022, p. 15).

Evaluation

The evaluation phase consisted of a pre-experiment survey and screenings of ‘I Remember’ in its two formats (traditional film and 360-degree VR), with each screening being followed by a semi-structured interview. Five participants were recruited for this phase.

One research question was whether the filmmakers succeeded in their aim to promote joy and a positive message. In the interviews, participants connected feelings of joy and positivity to the moment in the narrative when the family arrived at the coast of England. Feelings of peace and relief were connected with viewing the narrator standing on the beach. Participants also highlighted the negative emotional impact of the lorry and dingy scenes. The study reflected how serene joy can be sustained alongside (and without diminishing) intense sadness and distress.

Another question had to do with the differences between traditional film, and the immersive first-person perspective of the 360-degree VR format. We find the results of the study particularly inconclusive here, but it would be interesting to see how differences between the two formats apply across in the MIIND dimensions. For example, the study reports participants describing “having more of a ‘real’ feeling, and having a sense of being ‘inside’ the scenes”, as well as “a higher sense of immersion and therefore relatability” with the 360-degree format. Further studies could investigate whether this applies specifically to the intensity of the joy and sadness as well. Another question is: how do first- and third- perspectives impact differently on integrity (self-efficacy)?

Case study 4: Fitness apps

This study, again supervised by Jennifer, investigated user experience of fitness apps on mobile phones (Lu, 2022). The aim was to explore why users of fitness apps are prone to a drop-off in engagement in the short term, or prior to meeting their goals. The focus was on the role of “hedonic adaptation” in this trend, which refers to the way that people quickly adapt to stimuli for happiness, needing more and more intense stimuli to achieve similar levels of happiness over time (Lu, 2022, p. 26; see e.g. Bottan & Perez Truglia, 2011). The study considered which design features might

combat hedonic adaptation. There were two phases, with a survey and prototype building and testing.

Survey

The survey investigated which motivations were important for users of fitness apps. Participants highlighted “freedom and ability to experiment”, “pursuing goals and rewards”, “achieving goals”, and “greater self-awareness” as being most important, rather than “social support”, “less self-awareness”, and “competition”. In their responses, participants reflected on how they did not want to follow tasks too strictly, or to be restricted by other people’s arrangements for timings and frequency of exercise (Lu, 2022, p.44). They wanted the app as an “assistant” not a leader, and they preferred to have a range of alternatives when certain speeds, types of activities, or diets were not appropriate for them (2022, p.45). This was partly because failing to meet (unreasonable) goals was a cause for negative emotion (2022, p.45).

Participants seemed to be aware of dangers of motivations shifting when using the app (see our above discussion of “value capture”, as in Nguyen 2020). They said they were “not into the competition side of things” in their apps, such as publicising progress or being on leaderboards, as they feared “it turns the fitness reason of self-health into becoming better than others, which makes the fitness behaviours seem to be forced”, and “sports are for themselves, not for the attention or praise of others” (Lu, 2022, p.47, 39). Furthermore, some participants noted they did not find virtual rewards within their apps very motivating, as these were not the same as valuing their own persistence and progress (2022, p.46).

In terms of intensity, most participants reported experiences of “confidence” and “making a breakthrough” (2022, p.40). Gratitude was the least common experience. Most participants reported experiences which were “intense and high-energy” as well as being “calm, at equilibrium”. Furthermore, more than half of the participants agreed that “some features make me feel dissatisfied after using the fitness app for a while”, while half agreed that some features made them “want to give up”, or feel “incompetent”, or like they “can’t grow further or try new activities” (Lu, 2022, p.43).

Regarding integrity, “personal significance” (a focus on personal goals) was the most important factor in continuing to use the apps, followed by pleasure (“enjoying the present moment”) (Lu, 2022, pp.41-43). Virtue (behaving honourably and striving for ideals”) was a common factor but not as influential as the other two. The emphasis on personal significance was reflected in other responses during the survey, such as participants selecting “setting goals” and “self-selecting tasks” as the most important

design features for their positive experiences. It was suggested these features made them feel like their activities had personal significance. Privacy was a concern, as well as protection from “anxiety and negative emotions” caused by other people’s remarks (Lu, 2022, p.47)

Despite preferring not to have competitive elements in their apps, participants did suggest a preference for social factors and “having someone else involved in the process”, such as being in a gym with others or going on a night run with friends (Lu, 2022, p.47). They suggested that an app could integrate these kinds of interactions, such as a feature which sends invitations to friends to join in an activity.

Participants also drew attention to aesthetic features, such as visuals of physical condition and animations and customised pictures of progress towards goals. It was suggested that this would support feelings of breakthrough, and help users to keep more informed about their own health. This may support users in a kind of epistemic integrity.

Finally, a significant percentage of participants who chose “finding joy” as one of their goals in using the fitness app, agreed (25%) or strongly agreed (33%) that “this app had assisted me to meet my goal(s) before I abandoned it”; whereas none of those who chose joy as a goal said they strongly disagreed with this statement (Lu, 2022, p. 29, 39).

Prototypes

Results from the survey phase were used to inform two prototypes, which were designed, built, and tested using “the eye gaze tracker, think-aloud techniques, self-reporting questionnaire, interview, and user testing analysis” (Lu, 2022, p. 2).

In the first prototype, design elements were introduced which facilitated motivations for joy. For example, when users wanted to give up or skip exercise tasks, a popup reminded them of their progress record and previously unexpected achievements. This shows the importance of supporting motivations for greater self-awareness.

The first prototype also included support for users’ freedom, providing greater capacities for setting goals, and offering alternative tasks when they wanted to skip or give up on a task. These choices also sought to promote integrity in the form of self-efficacy. The prototype incorporated the dependent element of joy with the design feature which highlighted unexpected achievements, which brought about a connection to gratitude and awareness of factors outside of the users’ current control.

Feedback on the first prototype included requests for a greater range of alternatives and goals. For example, when a revised plan was offered

after seeking to skip an activity, the participants wanted more information on how much shorter the new plan was and how much it would contribute to their overall goal (Lu, 2022, p. 64). Participants wanted a function to attach photos of themselves after exercise (rather than a standard stock photo which was provided in the first prototype), as this would allow for more “emotional attachment” (2022, p.64).

Although this was a short-term study, it offers a starting point for how to apply positive psychology to design in UX, which is a relatively unexplored approach when it comes to the design of fitness apps (Lu, 2022, pp. 10, 12).

MIIND in design and beyond

There seemed to be a difference between the snapshot of satisfaction and engagement captured by surveys or interviews within a HEART framework, and reflections revealing more long-term, cognitive, and normative elements elicited within the MIIND framework. Our suggestion is that platforms and applications which do well within our joy-focused framework promote a deeper and healthier level of engagement with digital technologies, although this may not correspond to an increase in the kind of engagement measured under HEART, which focuses on metrics like number of times and hours the product is used per week.

We would like to draw together our findings in our studies to provide two broader reflections on the role of MIIND in design.

MIIND in the design process

The inclusion of MIIND elements at the level of UX evaluation is valuable, but this should not be the only stage at which they are considered in the design process. The film/VR and fitness apps case studies suggest that MIIND would be helpful to consider in the earlier, conceptual stages of design.

The table below presents some questions which bring focus to the role of joy in design choices (Cockton, 2020; George, 2016; Heskett, 2005).[5] Crucially, our approach also considers the joy of the development team. This is because the development team will use methodologies such as empathetic design, and tools such as empathy mapping, promoting the joy of the development team throughout this process will help them better understand how to build technologies that facilitate joy in user experience.

[5] A version of this table originally appeared in (George & Robertson, 2023).

Design Stage	Usual Activities	Role of Joy in the design stage	Possible Questions to ask
Requirement Specification *The details of what the customer wants, which would normally align and contribute to the mission statements of the organisation.*	Consulting a range of stakeholders to understand needs from various perspectives.	Weighing up the joy of all stakeholders and making it part of the specifications for the end product and experience (this could be as message, as medium, or as both).	Is the joy of the *beneficiary* included as part of the *purpose*? Who is the *beneficiary* of the joy in focus? What is the intended *purpose* of the *artefact*, and how is this *evaluated* against the joy of the *beneficiaries*? In what ways do the *beneficiaries* have joy as a *purpose*?
Design *Forming the technical and functional aspects of the artefact.*	Sketches, prototyping, and testing the designs with sample of real users.	Promoting the joy of the design team in their work of creation and real users who are testing it.	What are specific features of the product or service (*artefact)* which could support joy (e.g. beauty)?
Implementation *Testing the artefact before it is released for consumption*.	Testing the full development product/service with sample of real users.	Promoting the joy of the development team in their work of creation real users who are testing it.	Does the implementation process give joy (*purpose)* to the developers?
Testing/Evaluation *Assessing what the product gives to the user, iteratively*	Taking physical and physiological measurements, pre- and post-use questionnaires,	Assessing experiences of enjoyment: if the product gives joy to the user, the type of joy this is, and an	Do *evaluations* include measures of joy (*purpose)*, including the motivations, intensities, and

Design Stage	Usual Activities	Role of Joy in the design stage	Possible Questions to ask
between design and implementation.	interviews and focus group discussions.	evaluation of this joy. This includes joy taken in the medium (e.g. aesthetics and beauty) or joy taken in the message.	activities associated with use of the *artefact*? Is there a consideration of long- term impact, reflecting the persistent nature of joy? Is joy *evaluated* at various stages of design and implementation (*artefact)*?

By considering joy as design choices for *beneficiaries, evaluations, artefact and purpose* from the conception of the design at requirements specifications, and repeatedly evaluating it to ensure that it is delivering to this requirement, we can ensure that joy is intentionally embedded as a value. Should the requirement for the joy or the type of joy change during the process, this can also be modified and catered to within the process.

When the correct questions are raised about the four design arenas at each point in the design process, for example by asking the questions on the far right column, it will afford the beneficiaries the opportunity to reduce any aversions and costs and increase the benefits of the technology. Beneficiaries in this case could be any and all of the stakeholders including the design team, business stakeholders, and the end users of the service or design.

Taking the iSense 360 as example, reducing costs/aversion could be the perception of refugees, potential ethical issues such as exploitation of participants in the filming, and designing to reduce trauma. Increasing benefit could be empathy, joy and satisfaction for the the producers, power balance of the content, and joy for the participants in knowing they are understood.

In the example of fitness apps, costs/aversions could be wasted fitness subscriptions, risks such as designing for addiction, and impact on body

image. Increased benefits could be self-confidence, healthier lifestyles, and the the joy of the developers knowing they are making an positive impact. Power balance between the virtual coach and user could also be a risk. In the study of existing fitness app, it was evidenced that it was difficult to add joy as retrospective requirement.

MIIND beyond design

We have suggested that cognitive and normative elements can and should be incorporated into design. However, an issue arises in our case studies.

Our experiences of using news aggregators revealed a clash between appropriate cognitive and normative attitudes for confronting the truth about what is happening in the world. We seem to be placed in a 'tragic dilemma' when it comes to the news, to use a term from Lisa Tessman's work (2017; for a further discussion of tragic dilemmas and consuming negative news, see Robertson & Johnson, 2023). A tragic dilemma is a case in which there is no right thing to do – the individual is forced to choose between two actions that both involve harm. The agent who has to choose in the face of a tragic dilemma will experience tension as they are pulled between the different options, and they will also experience a "moral remainder" after their decision, as they have to make do with something which is 'all things considered' the best course of action. Given the sheer amount of bad news and information available online, there may be no resolution to the loss of integrity which occurs in news reading behaviours, and certainly no solution to be found in an app.

Similarly, there may be no appropriate attitude or self-efficacy available when watching a film or engaging with VR, as the awareness which comes from passive watching does not go towards addressing any of injustices in practice. This relates to issues brought up by many critics of empathy machines (Benjamin, 2019, p. 174). For example, artist, writer, and game developer Robert Yang asks: "Do you really need to wear a VR headset in order to empathize with someone? Can't you just […] believe them? You need to be entertained as well? Are you sure this isn't about you? […] *I don't want your empathy, I want justice!*" (Yang, 2017, original emphasis). Tragic dilemmas present a limit for design and digital technology, and yet these kinds of situations are unfortunately common.

All this is to back up critiques of the way that the language and methodology of design – and particularly design of digital technology – inappropriately gets used to "describe any and everything", including the people and practices required for making social change (Benjamin, 2019, p. 179; see also the effectively titled section "Social Inequality Will Not Be Solved By an App" in Noble, 2018, Chapter 6). To draw on Ruha

Benjamin's insightful discussion of this trend, sometimes design purports to offer new solutions which are in fact drawn from other fields, or are just obvious, as in the case of putting a cartoon mural around an MRI machine for children (Benjamin, 2019, p. 180; taking the MRI example from Jen, 2018). Benjamin points out that this emphasis on design erases the work of people in non-designer roles, especially within the tech industry (see also Irani & Silberman, 2016). She notes that design is usually focused on "moving forward" and pushing out new and better products, in a way which is "in sync with the maintenance of capitalism" (Benjamin, 2019, p. 182). She comments: "Maybe what we must demand is not liberatory designs but just plain old liberation. *Too retro*, perhaps?" (2019, p. 181, original emphasis).

As long as digital technology is making money from attention, then there may be no interest in the quality of that attention within the design process, let alone the work needing to be done outside of the design process to sustain high-quality normative and cognitive experiences.

One lesson is how dependent or communal wellbeing is, especially in this increasingly technologically connected world. Whether as technologist or end-user, doing well and sustaining the different dimensions of joy depends on how well other people are doing in our communities, both in their use of technology and beyond it (Johnson & Robertson, 2023). Therefore, prioritising MIIND elements in design may well depend on changing structures outside of design.

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Appendix

1. HaTS

These questions are adapted from the Happiness Tracking Survey (Müller & Sedley, 2014).

Overall, how satisfied are you with [product]?

Extremely dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Extremely satisfied
○	○	○	○	○

How likely are you to recommend [product] to a friend or colleague?

Definitely would not	Probably would not	Might or might not	Probably would	Definitely would
○	○	○	○	○

What, if anything, do you find frustrating or unappealing about [product]? What new capabilities would you like to see for [product]?

What do you like best about [product]?

Indicate your satisfaction with [product] in the following areas:

	Extremely dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Extremely satisfied
Ease of use	○	○	○	○	○
Technical reliability	○	○	○	○	○
Features & capabilities	○	○	○	○	○
Visual appeal	○	○	○	○	○
Speed	○	○	○	○	○

In the last month, which of the following tasks have you tried to accomplish with [product]? Select all that apply:

Task 1
Task 2

Task 3
…

2. HEART

These questions were developed in light of the article on HEART (Rodden et al., 2010).

How much time (in minutes), on average, do you spend on [product] each time you use it? Enter a number of minutes below:

Which description most accurately represents how you spend your time using [product]? Please select:
I mostly browse content
I browse content, but occasionally create and share content
I spend time equally between browsing, and creating and sharing content
I create and share content, but occasionally browse content
I mostly create content

In general, how much attention are you typically paying to the platform while you are using it?

Not much at all	A little	A moderate amount	A lot	A great deal
○	○	○	○	○

How many times a week do you do the following tasks (on average)?
_____ times a week > Task 1
_____ times a week > Task 2
_____ times a week > Task 3
…

How many people subscribe to your page per week (on average)?

How many likes do you receive per week (on average)?

How satisfied or dissatisfied are you with doing the following tasks:

	Extremely dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Extremely satisfied
Task 1	○	○	○	○	○

Task 2	○	○	○	○	○
Task 3	○	○	○	○	○
…	○	○	○	○	○

How many weeks ago did you start using [product]? Enter a number below:

How many times do you use [product] per week (on average)? Enter a number below:

3. MIIND – Motivation

To what extent do the following factors motivate your use of [product]?

	None at all	A little	A moderate amount	A lot	A great deal
Freedom and ability to experiment	○	○	○	○	○
Safety	○	○	○	○	○
Social connection	○	○	○	○	○
Competition	○	○	○	○	○
Pursuing goals and rewards	○	○	○	○	○
Achieving goals and rewards	○	○	○	○	○
Greater consciousness of one's whole person (e.g. self, thoughts, body)	○	○	○	○	○
Lesser consciousness of one's whole person	○	○	○	○	○

(e.g. self, thoughts, body)					
Gratitude	○	○	○	○	○
Beauty or aesthetic factors	○	○	○	○	○

Are there any other factors motivating your use of [product]? Please explain.

Have your motivations for using [product] changed over time? Please explain.

4. MIIND – Integrity

Indicate how satisfied or dissatisfied you are with [product] in the following areas:

	Extremely dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Extremely satisfied
Connecting you with the world (informationally, socially, morally, aesthetically)	○	○	○	○	○
Making you feel empowered	○	○	○	○	○
Helping you better understand or develop yourself	○	○	○	○	○
Accessing the kind of information that you want	○	○	○	○	○

Quality of community	○	○	○	○	○
The community norms	○	○	○	○	○

5. MIIND – Intensity

Reflect on the experiences you have had while using [product]. Which (if any) of the following describe those experiences (please explain):
Intense and high-energy
Calm, at equilibrium
Making a breakthrough
Struggle
Outrage

6. MIIND – Normative

Reflect on the experiences you have had while using [product]. Which (if any) of the following describe those experiences (please explain):
Gratitude
Unfairness
Competitiveness
Schadenfreude or sadism
Powerful and positive social connection
Powerful and negative social connection
Beauty or ugliness

7. MIIND – Joy

Joy is a powerful positive experience or vision of some aspect of the world, or yourself, being the way you want it to be.
Have you ever found joy, as described in this way, while using [product]? Yes/No

[If Yes] **Please describe the joy you found while using [product]. Did any of the features of the platform help make this possible?**

[if No] **What would need to change about [product] to make joy possible for you?**

Were you looking for joy while using [product]? Yes/No

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