Beyond Quantitative Goals: Design for Qualitative Goals and their Quantitative Subgoals

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Goals, as key aspects of users' motivation, have been much explored in personal informatics and behaviour change, albeit with an emphasis on single-domain, individual, and quantitative goals with limited account for users' intrinsic motivation. This half-day workshop aims to address these gaps through six underexplored themes focusing on (i) designing for qualitative goals, (ii) extending the measurement of quantitative goals beyond behavioural measures, (iii) accounting for and supporting users' intrinsic motivation, (iv) critical approach to goal setting, (v) supporting multiple-domain goals and social goals, and (vi) addressing the theoretical gap of technologies for behaviour change and their interventions.

Goals, Goal domains, Qualitative goals, Quantitative goals, Social goals, Effective interventions

1. INTRODUCTION AND WORKSHOP MOTIVATION

Goals shape human aspirations, drive action, and influence daily decision-making. From personal growth to professional development, they can provide direction and purpose across all aspects of life. As technology becomes increasingly embedded in everyday routines, understanding how digital systems can effectively support goal-setting and achievement has become a critical area of research. The last decade has seen increased research on personal informatics, and behaviour change targeting goals. Goals are key aspects representing users' motivation to strive for desired states (Austin and Vancouver (1996); Brandstätter and Hennecke (2018); Locke and Latham (2002)) thus supporting engagement in behaviours in a range of domains from health, wellbeing and physical activity, to work-related activities, social relationships, learning, or financial practices. As shown in several HCI reviews (Epstein et al. (2020); Ekhtiar et al. (2023); Zhu et al. (2025)), a significant focus within this body of work has been on supporting goals predominantly through tracking those related to health such as physical activity. As a result, targeted goals have been mostly those that can be directly tracked such as step, or calorie count (Zhu et al. (2025)). Niess and Woźniak (2018) called such directly trackable goals *quantitative goals*, and contrasted them with *qualitative goals* which are more abstract and not directly trackable such as the goal of being healthy (Agapie et al. (2022)).

A more recent systematic review of 180 HCI papers focused on goals and behaviour change (Zhu et al. (2025)) has also highlighted that besides the predominant step or calorie count, other goal measures include additional behavioural measures related to space or time for physical activity, i.e., walk distance or duration, time for digital wellbeing, i.e., screen time, or food consumption, variety or portion size for eating behaviour, while other non-behavioural measures pertaining for instance to motivation, emotion, or attention have been less used. Previous research has also indicated limited exploration of multiple goals in both commercial apps (Lolla and Sas (2023)) and research prototypes (Zhu et al. (2025)), despite much research on psychology of goals showing that goals do not exist independently but are organized in complex hierarchies (Chulef et al. (2001)).

© The Authors. Published by BCS Learning and Development Ltd. Proceedings of ... Zhu et al. (2025) have further shown that less than a quarter of the reviewed studies that explored such goals do so with participants intrinsically motivated to pursue them, meaning they engage in these goals for personal fulfillment or inherent satisfaction rather than external rewards or pressures. Previous work has also indicated the emphasis on individual goals (Epstein et al. (2020)) and a contrasting limited focus on social goals which can be pursued collectively for example with family, friends, or co-workers (Zhu et al. (2025)). This review has also shown that the most common technologies delivering interventions for behaviour change include mobile apps, followed by wearables.

Zhu et al. (2025) have also reported a meta-analysis of 28 interventions targeting physical activity, and digital wellbeing, respectively whose effectiveness has been evaluated in real-world settings. Their findings indicate that the most effective interventions support users to reflect on their gualitative goals and their deep motives, prior to goal setting (Lee et al. (2015)), and help users to set their own individual goals (Gouveia et al. (2015)), or social goals with measures to which multiple users contribute towards (Ren et al. (2018)). This meta-analysis also indicates that the most effective interventions have a strong theory-grounded rationale, informed for instance by goal-setting, and self-determination theories (Konrad et al. (2015)). This is a key finding, given that although much of previous work mentions theories, less than half of the reviewed papers employ them to design technology-based interventions.



Figure 1: Diagram showing two main HCI research areas—Personal Informatics and Behaviour Change—and their key aspects that this workshop builds on, as well as foundational concepts from psychology research on goals.

This half-day workshop extends previous CHI workshops on personal informatics and behaviour

change (Meyer et al. (2018); Jones et al. (2016); Elsden et al. (2017)), building on previous research in these two areas, as well as on foundational concepts from psychology research on goals (Fig 1) to further investigate six main themes limitedly explored within the HCl state-of-the-art.

2. AIMS AND OBJECTIVES

The workshop's aim is to further support the community of researchers, designers, and developers interested in goal related technologies for behaviour change, and their interventions. This aim is addressed through two main objectives of identifying the challenges and opportunities of current approaches to technologies supporting goals for behaviour change, and charting key future directions of such technologies.

The first objective will be explored through three themes focusing on the limitations of traditional approaches to goal setting, of the emphasis on single-domain goals, and the theoretical gap of technologies for behaviour change and their interventions.

The second objective will focus on three main themes of designing for qualitative goals, extending the measurement of quantitative goals beyond behavioural measures, and the need to account for, and support users' intrinsic motivation.

3. BENEFITS AND SIGNIFICANCE

The workshop outcomes include participants' submissions relevant, but not limited to our six themes intended to advance the state-of-the-art on goal related technologies for behaviour change. As a followup activity, we intend to put together a call for a special issue in the ACM Transactions in Human-Computer Interaction journal focused on designing for qualitative and quantitative goals. The workshop also aims to support the community of researchers, designers, and developers interested in goal related technologies for behaviour change, and their interventions.

4. WORKSHOP PLANS, REQUIREMENTS, AND DISSEMINATION

This in-person workshop is planned for half-day with a minimum of 8 participants along with the organizers.

4.1. Workshop activities

The draft schedule of the workshop is presented in Table 1. The workshop will begin with a brief Beyond Quantitative Goals: Design for Qualitative Goals and their Quantitative Subgoals Sas • Lolla • Agapie • Niess • Woźniak • Gouveia

Time	Activity	Description
9.00 - 9.15	Introduction	Welcome and introduction
9.15 - 10.15	Activity 1	Group activity on challenges and opportunities of current approaches to technologies supporting goals for behaviour change
10.15 - 10.30	Activity 2	Groups' report and general discussion
10.30 - 10.45	Coffee break	
10.45 - 11.40	Activity 3	Group activity on charting key future directions of such technologies
11.40 - 11.50	Activity 4	Groups' report and general discussion
11.50 - 12.00	Wrap-up	Final reflections

Table 1: Workshop schedule detailing the sequence of activities

introduction, followed by two rounds of group activities and discussions on the workshop themes, and conclude with final reflections.

In the **Introduction** session, participants are welcomed, and supported to engage in icebreak activities while being introduced to the workshop's goals and targeted outcomes.

Activity 1 focuses on challenges and opportunities of current approaches to technologies supporting goals for behaviour change, and targets three themes. The theoretical gap of technologies for behaviour change and their interventions. This theme focuses on the theoretical gap of interventions for behaviour change (Hekler et al. (2013)). As Zhu et al. (2025) shown in their review, the most effective interventions have strong theoretical grounding, and most work in this space mention theories. However, less then half of their reviewed papers use theories to inform design of interventions. This theme will explore how the community could support a more thorough application of key theories and their operationalization to facilitate designers' understanding of their potential value in design, and engagement with them.

Activity 1 also focuses on *supporting multipledomain goals, and social goals.* This theme focuses on the current emphasis on single-domain goals and how this may be extended through interfaces supporting goals across domains, from which users could prioritize the ones they are intrinsically motivated to pursue. Such domains can include for instance not only health, nutrition or wellbeing, but also work, learning, relationships or personal finance (Alenazi and Sas (2023, 2024)). This theme also aims to extend the predominant focus on individual goals towards social goals (Mankoff et al. (2007); Saksono et al. (2020, 2021)).

In addition, Activity 1 also addresses *critical approach to goal setting.* While goals can motivate and guide behaviour, there is increasing recognition that certain approaches to goal setting may coerce individuals into particular modes of conduct, thereby exacerbating the risks associated with persuasive technology (Brynjarsdottir et al. (2012)).

Persuasive technologies often focus on quantifiable and performance-based metrics, which can narrow users' vision of what counts as success, and reinforce normative expectations around behaviour change (Spiel et al. (2018)). This is particularly problematic when goals become disconnected from users' own values or circumstances, leading to reduced agency and increased pressure to conform to externally dictated standards. The theme will explore how we can develop a systematic critical approach to goal setting, focusing on user-specific, context-sensitive, and inclusive goals.

Activity 2 consists of each group presenting their key insights, and facilitated discussion to tease out the emerging themes from each group.

Activity 3 focuses on charting key future directions of such technologies through three complementary themes. *Designing for qualitative goals*. This theme focuses on emphasising qualitative goals, their benefits, and their limitations. It also aims to explore novel design approaches to elicit qualitative goals, and design opportunities to support such qualitative goals, and their breakdown in quantitative subgoals. For instance, we may leverage approaches and methods from goal-oriented work in therapeutic practices (Cooper and Law (2018)) such as motivational interviews (Rollnick et al. (2008); Little (1983)) or Personal Project Analysis (Little (1983, 2014)) whose use in HCI has started to be explored (Brotman et al. (2015); Chen et al. (2021)).

The second theme of Activity 3 is *extending the measurement of quantitative goals beyond behavioural measures* This theme targets the current emphasis on easily trackable behavioural measures of quantitative goals such as step counts (Ekhtiar et al. (2023)). It also aims to explore how these measures can be extended with other complementary, valid goal measures, both behavioural such as goal attainment measures of self-reported goal progress or goal completion (Konrad et al. (2015); Lee and Dey (2014)), as well as non-behavioural measures targeting emotion, motivation, and attention aspects pertaining to goals. Here we can draw instances from biosensors, less explored in technologies targeting goals for behaviour change but increasingly used for wellbeing, affective health (Nadal et al. (2023); Umair et al. (2021b,a)), or mindfulness (Daudén Roquet and Sas (2021); Daudén Roquet et al. (2023)).

Finally, in Activity 3, we also aim to *account for, and support users' intrinsic motivation* This theme explores the challenge of personal informatics and behaviour change technologies usually targeting goals with limited consideration of users' intrinsic motivation for such goals. The latter is however key for ensuring engagement in goal pursuit (Deci and Ryan (2008); Fishbach and Woolley (2022)). This theme will thus explore how to better account for users' intrinsic goals, by supporting awareness of such intrinsic goals and how they may be prioritized.

Activity 4 is similar to activity 2, albeit reflecting the key insights from activity 3.

4.2. Required facilities and equipment

For this in-person, half-day workshop we require a cabaret-style room with tables where people can work in small groups, a projector, and a lectern with a PC controlling the projector. Based on the size of the room, we may benefit from 1-2 microphones. To summarize the discussion, we will use A0 flipchart paper and colored markers, together with adhesive for hanging on walls.

4.3. Accessibility considerations

Interested participants are recommended to submit contributions which comply with SIGCHI accessibility guidelines. We will also ensure that the the workshop website is also compliant with these guidelines.

4.4. Promotion and post workshop plans

Our call for participation in the workshop will be shared on our workshop website, as well as social networking sites, academic and developers mailing lists. Following the workshop, will also host the call for a special issue in the ACM Transactions in Human-Computer Interaction journal focused on designing for qualitative and quantitative goals.

5. ORGANIZERS

Corina Sas is a Professor in HCI and Digital health in the School of Computing and Communications at Lancaster University, UK. Her expertise includes technologies for wellbeing and affective health, as well as those focusing on personal goals.

Sruzan Lolla is a PhD candidate in the School of Computing and Communications at Lancaster University, UK. His research focuses on eudaimonic wellbeing, with the aim of designing interventions that help people set their goals. **Elena Agapie** is an Assistant Professor in Informatics at University of California, Irvine. She researches, designs and builds technologies that empower people to engage in health behaviours through a human centered approach. She is affiliated with the Connected Learning Lab and the Institute for Future Health.

Jasmin Niess is an Associate Professor in Human-Computer Interaction at the University of Oslo. She designs and evaluates technologies that enhance well-being and foster positive societal impact, while critically examining the role of health and wellbeing technologies and their potential unintended consequences.

Paweł W. Woźniak is a Professor in Human-Computer Interaction at Faculty of Informatics, TU Wien. Pawel is particularly interested in HCI for sports, designing technology for wellbeing and how interactive technologies can support reproducible science. What Pawel likes most is using a blend of methodologies and approaches for solving strange HCI problems.

Rúben Gouveia is an Assistant Professor at the University of Lisbon. He is interested in the design, adoption and use of personal health and wellbeing technologies in everyday contexts, with a particular interest in how to design these tools in ways that support health goals changes over time.

6. CALL FOR PARTICIPATION

We invite researchers, designers, and developers working on personal informatics, or technologies for behaviour change, and with an interest in developing more effective interventions targeting both qualitative and quantitative goals to contribute to this workshop. Its aim is to further support the community interested in goal related technologies for behaviour change, and their interventions. We will aim to select interdisciplinary contributions relevant to our themes to ensure multiple perspectives and engaging conversations.

We welcome single-column SIGCHI submissions, up to 3 pages long (excluding references) describing conceptual designs for interventions supporting both qualitative and quantitative goals, theoretical perspectives informing such design, as well as novel design methods and tools supporting them. All submissions are recommended to comply with SIGCHI accessibility guidelines. To submit, please send the pdf to s.lolla@lancaster.ac.uk before the 4th of July, 2025. At least one author of each accepted submission must attend the workshop and all participants must register for the workshop.

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