
Contextualizing digital services to promote healthy eating in the office

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Abstract

We conducted a user-centered contextual inquiry study to understand Dutch office workers' eating experiences and to generate design opportunities for digital tools to improve current practices. According to the findings of this study, our next work focuses on using a hands-on app as an effective intervention for promoting healthy eating. We plan to conduct a two-week field study with the dietary assessment app 'Traqq', developed at Wageningen University, to mainly understand how office workers track their eating behaviors in the office context.

Author Keywords

Healthy eating; office vitality; digital health; digital technology; user-centered design.

CSS Concepts

• **Human-centered computing~Human computer interaction (HCI)**; *Haptic devices*; User studies; Please use the 2012 Classifiers and see this link to embed them in the text:

https://dl.acm.org/ccs/ccs_flat.cfm

Introduction

Office vitality becomes increasingly crucial to improve individuals' quality of life [1]. Eating healthier at work can substantially promote health and vitality among

office workers. Office environments and work routines offer good settings to apply healthy eating interventions [2]. In the meantime, many newly developed digital technologies, such as wearable sensors [3] and mobile apps [4] present opportunities to support healthy diet interventions. However, little is known about how to design health-promoting technologies and interventions to optimize office diet. Therefore, our current work-in-progress includes two studies: 1) a user-centered contextual inquiry study, based on the mixed-method of an online questionnaire and a semi-structured interview to understand office workers' eating experiences and to generate design opportunities of digital tools to improve current practices. 2) an observational study investigating the most acceptable tracking approach (e.g. food recall, food record) for eating behaviors of office workers, which will be used to develop tailored interventions to improve eating behaviors of office workers. For this, we aim to use Traqq, a dietary assessment app developed by researchers of Wageningen University.

Contextual Inquiry Study

Purpose The aim of this study is understanding Dutch office workers' eating behaviors and identifying design opportunities and application strategies of digital tools to improve current practices.

Method Mixed method of an online questionnaire using the SurveyMonkey platform (86 participants) and semi-structured interviews (12 interviewees).

Findings The questionnaire feedback from 86 Dutch office workers revealed that their concerns on productivity, health and nutrition, energy support, and well-being could be decisive in shaping the eating

routines at work. Furthermore, the results of 12 interview sessions suggested a set of expected digital features to encourage healthy eating at work, including the health information access, goal setting and self-tracking, technology-assisted health programs, and social support. Additionally, our findings indicated that these digital features should be integrated into the office setting to offer personalized feedback and contextualized health interventions.

Proposal of Field Study with Traqq

Background The rapid advance of digital technologies offers many advantages to promote healthy eating routines. Data collected from health tracking applications can be used to support self-reflection on eating behaviors and improve self-awareness of eating decisions [5,6]. There have been various digital health tools developed to improve the daily eating practices. For instance, Eat&Tell [7] is a mobile application designed to facilitate the collection of eating-related data through automated tracking and self-report. Fitocracy Macros [8] tracks macronutrients and helps users achieve fitness goals. MyFitnessPal [9] supports the user to acquire the nutritional values of the chosen foods (e.g.,) by extracting the information based on the barcode from the food packages. People prefer applications that are quick and easy to administer and those that provide tailoring of health promotion information based on personal tracking data [10].

Purpose Our contextual inquiry study showed that office workers were concerned about time balance between productivity and tracking. They hoped data collection of eating-related behaviors during their working hours could avoid overburdening their working concentrations. Therefore, the aim of this study with

Traqq is to mainly find which approach could help office workers to track their eating behaviors unobtrusively in the office context. In return, we also aim to develop the app further as a human-centered effective intervention for improving the integration of eating-related tracking with day-to-day work and promoting healthy eating at work. By using Traqq, we aim to find the desired features that should be involved in the future app design.

Method We plan to conduct a field study. Dutch citizens can be included in the study when they (1) are engaged in office-based knowledge work for more than 6 hours a day, five days per week, (2) have been working in the Netherlands for more than six months and should be able to speak and read Dutch, and (3) do not follow a special diet will be included in the study. Data will be collected during a two-week period (10 working days) using Traqq and by means of follow-up interviews and questionnaire of the experiment to gain both quantitative and qualitative results. Two research questions will be addressed:

- RQ1: What is the most suitable food registration method for office workers when comparing food recall and food record methods during 8-hour working days? This would be addressed by quantitative comparisons between the usage of two methods. We will conduct this with cross-over approach consisting of one week with food recall method and one week with food record method.
- RQ2: What context-related data should be included/excluded for food tracking at office work? This would be addressed by follow-up interviews and questionnaire of this experiment.

Traqq

Traqq is designed by researchers of Wageningen University. Traqq is a Dutch real-time dietary assessment app. It features a comprehensive food database based on the Dutch Food Composition Database (NEVO) and enables users to report their food by means of the food diary method or the recall method. Users can select food items from the database, after selecting an item, users are prompted to insert consumed amounts and mealtime.

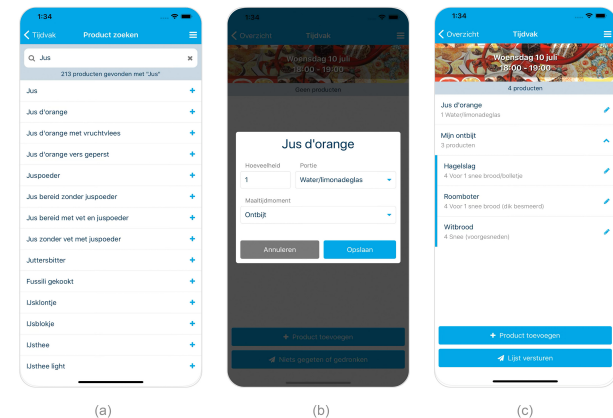


Figure 1: Interface of Traqq with functions: (a) selecting food items in the food list; (b) inserting portion size and mealtime; (c) overview of inserted food items and possibility to adjust input.

Traqq is used for real-time data collection and aims to provide a lower burden on users (validation results expected late-2020). Screenshots of Traqq and its tracking features can be seen in Figure 1. In case of the diary function, the reporting window will close at the end of the day. In the recall function, the user can send the list after they are finished reporting. In that case,

the recall will close and it is not possible to report intake until another window opens.

Expectation of DIS Workshop

Participating in the workshop, we are looking forward to get insights of future design possibilities and implications of digital tools by discussing with other researchers, who has rich experience in the healthy eating or digital technology fields. We would like to share our studies and discuss with them in following aspects:

- Opinions about self-report approaches used in the office context based on personal eating experiences.
- What functions are hoped to be included or excluded in Traqq to help user know eating practice well and better record.
- Design insights about developing Traqq further as an effective intervention for promoting healthy eating at work

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