Full Professor in Health Psychology and Persuasive Health Technology

Health is a major focus of the University of Twente (UT). UT's motto "High Tech, Human Touch" resonates in its aim of innovating personalized health and healthcare by technological solutions. Health is also one of the major themes of the Faculty of Behavioural Management and Social Sciences (BMS). Challenges like trends in health and well-being, the impact of novel health technologies, and transformations in healthcare ask for an interdisciplinary approach in research and education. The chair in Health Psychology and Persuasive Health Technology takes on these challenges. A psychological approach to health is essential, as individual behaviours play an important role in health promotion, use of health technology, and healthcare organizations. In this report, the international, academic field that the chair will be active in will be shortly described. Next, the specific focus of Health Psychology and Persuasive Technology at the University of Twente will be described, followed by the profile of the new chair. Last, the position of the chair will be described.

Description of the international academic field

Health psychology is an interdisciplinary field of study that deals with the application of psychological knowledge and methods to health, illness and healthcare. It uses a biopsychosocial model to better understand how biological variables (such as genetic predispositions), social and physical environmental conditions (including cultural influences, family relationships, care technology), and psychological processes and behavioural factors (e.g. lifestyle, stress, health views) contribute to health and illness. Knowledge is applied in the promotion of health, in the management of diseases as well as in the analysis and innovation of healthcare and health policy.

Persuasive health technology is rooted in communication science, health science, psychology, and human – computer interaction. The focus is on understanding and predicting factors that improve engagement and adherence to technologies that serve to personalize health(care). The development of pervasive, sensing technologies to monitor people real time and the development of adaptive, tailored, and persuasive coaching strategies (just in time) are at the core of the field.

Health Psychology and Persuasive Technology at the University of Twente

Research

The research contribution to the international academic field of the University of Twente has two important strengths: a design-oriented approach and a health assessment approach.

The aim of the *development-oriented approach* is to develop, design, evaluate and implement innovative E-health technologies focused on the personalization of health information, empowerment, self-management and healthcare – to promote health and well-being. This is typified, first of all, by the strong link between technological innovations and innovations based on behavioural science theories concerning health promotion and disease management. The processes used when designing technology-psychological products and services are based on human-centered design and persuasive technology principles. In addition, the link between behavioural science frameworks and technology is expected to expedite the development of powerful models for behaviour and health. This will have important implications for the advancement of psychological theory and for efforts to deliver more effective interventions. Our design approach is characterized by an iterative, stakeholder-focused, phased approach to the analysis and diagnosis of health problems, development, implementation and the evaluation of interventions. It is guided by the participatory development approach used in the CeHRes Roadmap (reference eHealth Research, Theory and Development, A Multidsiciplinary Approach, (van Gemert-Pijnen, Kip. Kelders & Sanderman, 2018). This method was developed to provide a useful and effective design for E-health. Underpinned by a methodological and iterative approach, this involves analysing the context of health problems in the healthcare sector. This work includes an analysis of the *determinants* (environment, role of psychological factors, technology factors), the *context of development* (involving all stakeholders, user-centered and persuasive designs), the *planning and incorporation of iterative evaluation cycles* (formative evaluation) and the integration of *implementation strategies* in the development at an early stage (business modelling).

This approach can, therefore, apply both to patients and to professionals.

Secondly, there is the *health assessment approach*. This is used to measure significant health outcomes in a valid and technologically innovative way, and to assess behavioural interventions in a broad sense, in terms of health, welfare, safety and the cost benefits involved. Accordingly, the research encompasses a broad spectrum of research methods, involving the development and validation of methods for measuring emotions, cognitions and behaviour, and determinants of behaviour and health outcomes. In addition, health is measured from the user's point of view. Work is currently under way to develop internationally accepted Patient Reported Outcome Measures (PROMs) and technologically innovative measurement methods, such as computer-adaptive measurement technology to link technical innovation to health assessment.

Education

Health Psychology represents excellent, inspiring and involved education at the Bachelor's and Master's level Psychology (Master's track: Health Psychology & Technology) as well as at interdisciplinary educational programs like Health Sciences, Technical Medicine and High Tech Human Touch modules. All education in Health Psychology and Persuasive Health Technology at the University of Twente is characterized by a design-oriented approach. The following paragraphs briefly describe the key core values involved.

Link between psychology and technology. Students learn to explore ways in which insights from psychology (and health psychology) can help to improve the use, adherence, effectiveness and implementation of E-health. On the other hand, it investigates ways of using new technologies to strengthen psychological processes and to influence behaviour. This involves factors such as persuasive systems, smartphones, sensors and wearables that allow big data to be collected for the purpose of tailored personal coaching. This is fully in keeping with developments in personalized health. The students learn how to operate in a multidisciplinary context. They are trained to apply innovative design and research methodologies that are in line with a rapidly changing healthcare sector.

Close relationship between research and education. The added value of the link between research and education is the basis. Thus, in education, there is a major focus on current research projects. This can take the form of guest lectures by PhD students, and of teaching staff discussing their own research during regular lectures. The aim is also to enable students – during their internship or graduation research project – to participate in ongoing research programmes. The aim is not only to provide students with up-to-date scientific knowledge, but also to instil in them a passion for research.

Applied and realistic. The education provided is deeply anchored in everyday practice. Active links are sought and maintained with those working in the field (both professional and academic). In this way, we aim to achieve a valuable two-way flow of knowledge and skills. It also enables us to project an image of the scientist-practitioner model to the students. Contact with those working in the field takes the form of internships and external research assignments, for example, as well as guest lectures by professional practitioners and the close contacts maintained with alumni. In this way, students get a reliable impression of their future field of work. Also, in the course of their assignments, they can work on solutions to issues or problems that 'are really relevant'.

Specific focus on professional skills. Good health psychologists have sound knowledge and academic skills, in particular with regard to decision making about novel health technologies to change behavior and wellbeing. They are able to operate professionally in the complex field of work that is the healthcare sector. The ability to identify relevant stakeholders and to negotiate with them, to work in interdisciplinary teams, to take due account of the context in which they operate, and to see other people's interests and visions from their own viewpoint are essential professional skills. Self-knowledge and the ability to reflect on their own professional practices, plus the self-management of their own professional development, form the basis of an independent position as a professional.

Internationalization. Its unique profile makes this a highly relevant and appealing educational programme for both Dutch and international students. For this reason, the Master's has been taught

in English since 2014. In addition, the upcoming years will see further investment in international programmes and online courses.

The Chair in Health Psychology and Persuasive Technology

The aim of the professorship is to link health psychology with persuasive health technology developments in healthcare (Center eHealth and Wellbeing Research), in a way that fully reflects the Human Touch in the University of Twente's *High-Tech profile*. The professor of **health psychology & persuasive health technology** will operate in the area where social sciences and engineering sciences intersect. Accordingly, this will require a multidisciplinary approach in education and research. This is in line with social developments and with the research agenda (Dutch National Research Agenda, Horizon, etc.), to personalize health and healthcare. Technology is considered essential in this regard, in terms of supporting the development and promotion of tailor-made and personalized health and healthcare. The proposed position builds on current developments in persuasive health technology. The goal with the help of members of the public, patients, professionals and other stakeholders is to develop innovative, motivational and user-friendly solutions for personalized care. Here, technology will serve as an instrument for the promotion of self-management and co-management. The professor and his/her group deliver the methodology needed to design technology that is user-oriented, and to use technology as a way of collecting, analysing and translating data in the context of self-management strategies.

The professor will clearly communicate the technological profile of health psychology throughout the University of Twente while striving to expand existing partnerships with technical research institutes. This is important in terms of exploring innovative information and communication technologies. Besides promoting behaviour and wellbeing, these technologies can help to lay the foundations for a new social-technical design approach. This, in turn, will promote the unique character of the University of Twente, while strengthening our profile in grant applications and boosting the commercial knowledge transfer from research. The research will be multidisciplinary in nature, with input from psychology, health sciences, and medicine, as well as from information technology, engineering and communication technology. It offers ample opportunities for cooperation with relevant groups at the University of Twente and throughout the region in the field of public health and secondary and tertiary healthcare. This approach could involve building on the current research lines in psychology, coupled with a major focus on links to the domains of Health, Learning, Smart Industries, Emergent technologies and Resilience in the Faculty BMS. For the outside world, the professor will be a recognizable face representing Health Psychology & Persuasive Health Technology at Twente. He/she will project its image throughout the academic world, both at home and abroad, and in the professional field of healthcare and technology. Also, technology is strongly intertwined with every aspect of our work in health psychology, which clearly sets us apart from other universities. In addition, the candidate is expected to have a clear vision on education. Where necessary, he/she will develop and implement innovations in education. Operating within the technological environment provided by the University of Twente, health psychology occupies a position that is unique in this branch of science. This technological embedding must be exploited to the full, to attract more students from all over the Netherlands, and from other countries inside and outside the EU.

Research program

The chair's research focuses on:

(a) Development of interdisciplinary theories and methodologies to influence behaviours with a view to improved health and healthcare;
(b) Development of technology to support the monitoring and coaching of implicit and explicit psychological and behavioural processes in members of the public, patients and healthcare professionals;
(c) Development of innovative and motivational measurement methodology, including technology as a way of collecting, analysing and translating big data in behavioural interventions.

Educational program
The chair will be responsible for:
(a) Education in Health Psychology and Technology in the Bachelor and Master Programs in Psychology;
(b) Cooperation with other educational programs, like Health Sciences, Technical Medicine, as well as with multidisciplinary High Tech, Human Touch modules;
(c) Innovative teaching efforts like the Massive Open Online Course (MOOC) eHealth.

Management tasks
The professor will be responsible for:
(a) Managing ongoing and novel research projects and education programs in the field of health psychology and persuasive health technology, and for managing the staff of the Health Psychology group. The professor will be part of the management team of the department Psychology, Health and Technology (PHT) which is part of the cluster Technology, Human, and Institutional Behavior (HIB);
(b) The chair will play a role in the research management of the interdisciplinary theme Health@BMS and the newly developing TechMed institute;
(c) The chair will help to expand cooperation with institutions such as the University Medical Center Groningen (UMCG) / the University of Groningen (RUG) and other knowledge institutions in the Netherlands;
(d) The chair will also continue and expand current international and transatlantic cooperation. Among other benefits, this will boost the group's recruitment capacity, while attracting talented students to the Master's in Health Psychology and Technology.

Scale, level, duration and embedding
The new chair concerns a tenured full-time (1.0 FTE) position. It will be established in the Department of Psychology, Health and Technology (PHT). The chair in Health Psychology and Persuasive Health Technology involves a new profile that follows the ad interim chair in Health Psychology (Robbert Sanderman) and the chair in Persuasive Health Technology (Lisette van Gemert-Pijnen). The Professor of Mental Health Promotion, Ernst Bohlmeijer, holds a related post within this department. The department also includes the professorships of Narrative Psychology and Technology (Gerben Westerhof) and the part-time professorship of Rheumatology and Society (Mart van de Laar).

Envisaged BAC (Benoemingsadviescommissie)

1. Dean BMS: prof.dr. Theo Toonen (observer)
2. Full Professor PTG and departement chair: prof.dr. Ernst Bohlmeijer
3. Full professor BMS, department chair PCRS and member BMS board: prof.dr. Ellen Giebels
4. Associate Professor/OLD: dr. Mariëlle Stel
5. Full Professior UT: prof.dr. Hermie Hermens (EWI) or prof.dr. Nico Verdonschot (TECHMed)
6. Full Professor HTSR department: prof.dr. Sabine Siesling
7. Full Professor IST department: prof.dr. Ton de Jong
8. Full Professor external; prof.dr. Falko Sniehotto
9. Full Professor external: prof.dr. Sonja Lipke
10. Student assessor: Fabian Klaster

Prof. dr. Theo A.J. Toonen
Dean Behavioural, Management and Social sciences (BMS)