

Designing a wearable for and with people with dementia

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Purpose Challenging Behaviour (CB) occurs in up to 80% of nursing home residents with dementia (Zuidema, Derksen, Verhey & Koopmans, 2007). The identification of stressors causing CB is difficult (as often residents cannot themselves indicate what is experienced as stressful), hampering the psychosocial approach. Measuring stress with related parameters, such as skin conductance and heart rate, using wearable sensors, is promising in facilitating a psychosocial treatment approach (Melander, Kikhia, Olsson, Walivaara & Savenstedt, 2018). Consequently, wearables are promising as a supportive technology in the care of people with dementia and CB. However, stakeholders (i.e., (in)formal caregivers of people with dementia) indicate that the commercially available wearable (the Empatica E4, see figure 1) is not suitable for people with dementia, as the design of the wearable was considered to be suboptimal (Peeters, Schouten & Wouters, 2019). The purpose of the current research is to develop a wearable prototype together with different stakeholders. **Method** A prototype of a wearable suitable for people with dementia will be developed using the double diamond model. For the first iteration, input will be used from visitors (a mix of researchers and (in)formal caregivers in the dementia field) of the DementiaLab (<http://www.dementialabconference.com>) and a Dementia Information Meeting in a Dutch nursing home. Visitors were interviewed regarding the design of the wearable. Consequently, multiple prototypes will be made and shown to the platform 'Innovate Dementia 2.0' (van der Kieboom, Bongers, Mark & Snaphaan, 2019), a focus group with people with dementia and informal caregivers. Additionally, a focus group with formal caregivers is organized via a Dutch nursing home. During those focus groups, co-creation methods are used to develop a prototype of a wearable sensor (second iteration) that is accepted by all stakeholders. **Results and discussion** Data will be collected in October (first iteration), November 2019 (second iteration), and prototypes will be available in January 2020. Data from the focus groups will be shown, as well as the prototype of the suggested wearable.

References

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Figure 1. Above: the wearable currently used (Empatica E4) is found suboptimal by (in)formal caregivers regarding its design. Below: a suggested prototype designed by one of our researchers (M. Hoffmann)