Designing motivation. Changing human behaviour using game-elements.
Achieving lasting change is difficult; people are often poorly motivated
to change their behaviour.

WHY INN
SHOULDN'T
VALID

Katinka van der Kooij in collabo

As it economises on health-care budgets, the Dutch government is searching for innovation and evidence of treatment-efficacy. Researchers and designers are working together to address these wishes but how can they do this, optimally?

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REDESIGNING MENTAL HEALTHCARE

Katinka van der Kooij stresses the need for vali-
dation in mental health care, while observing
that that need can at the same time restrict the
innovation process. She proposes to build on
existing knowledge in order for designers and
mental healthcare professionals to optimally
benefit from each other's complementary
knowledge and skills, an approach that has also
shown valuable in the projects of Nynke Tromp
and David van den Berg.

WHY?
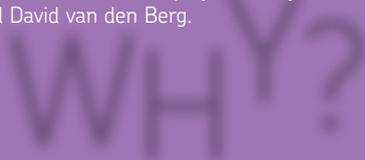
We propose that when working in parallel, their desire for both certainty and innovation impede each other. Instead, design should connect to existing scientific knowledge, using products as means to bring scientific discovery to the user. How do you feel today? Think about it objectively and please rate your well-being with a number. Many people are able to answer this question. Yet, you could ask yourself whether a complex experi-ence such as well-being can be summarised in a single number. More importantly, would we want to use this number to determine which products are to be used in health care? Faced with, for example, the rising costs of mental health care, the government is search-ing for ways to cut costs. The decision to fund a treatment increasingly relies on clinical evidence, and we are continually searching for innovation in treatment efficacy.

The evidence that we need to base decision-making on is preferably quantitative and derives from well-controlled experimental research. Innovation is often looked for in the application of new product service systems (PSS) such as 'serious games'. To sate this hunger for innovation and efficacy-evidence, projects are often funded based on an explicit aim to develop innovations and subsequently test their efficacy. In the CRISP project G-Motiv, for instance, I worked as a psychologist and quantitative researcher

ration with Evert Hoogendoorn

at the TU Delft together with the IJsfontein designers on the development and validation of a serious game that would support therapy for cannabis addiction. I shared both project and desk with Evert Hoogendoorn, designer and strategist at IJsfontein. We developed a vision on how research and innovation can be best combined. In this article, we reflect on whether a societal problem such as addiction among young teens is best dealt with by letting researcher and designer work in parallel, or whether other forms of collaboration are more effective. Because we address the limitations of quantitative research, I as a quantitative researcher have written this article on my account.

Working in parallel—the development of Changamoto

In the G-motiv project, researcher and designer jointly sought a game concept that would support therapy for cannabis addiction. In the Netherlands, thousands of young teens (age 12-14) are treated for cannabis addiction annually. Their treatment usually consists of cognitive behavioural therapy (CBT), the primary aim of which is to gain insights into the chain of events and cognitive reactions that serve as a trigger for drug use. In this way, patients can learn suitable self-control strategies for these triggers. A few highly motivated patients suffering from severe psychological problems are treated in a clinic in The Hague, where they stay overnight for a number of months. Most patients, however, are treated in outpatient care: they see their therapist once a week and receive additional homework assignments, such as keeping a CBT diary in which they note down triggers for cannabis use.

In the G-motiv project, my task was to ensure that the effect of the game that was developed for these young teens was testable, i.e. its validation potential. Evert's task was to ensure that the game would invoke an optimal experience in the user, i.e. its impact potential. Before long we saw how the perspectives of researcher and designer differ. Research is by nature conservative, rational, and focused; by introducing interventions in well-controlled situations, we can achieve relative certainty on the interventions' causal effect. By replicating the effect among many users, we can demonstrate that the effect in not based on coincidence. Design, in contrast, is based on individual user experiences and by nature innovative, intuitive, and holistic.

Many of the design ideas we considered were rejected from a research perspective: patients who control their brains with innovative neuro-feedback methods, patients who play together, patients who part virtually from their addicted personalities. These ideas were either too new, too unpredictable, or too difficult to measure. Eventually, researcher and designer found each other in the concept of Changamoto: a single-player game that stimulates adherence to the CBT diary by rewarding its use. What proved crucial for Changamoto's future was the decision to design a game for patients in outpatient care. From a research perspective, this was a safe choice: we could perform research among the hundreds of patients in outpatient care. Moreover, use of a CBT diary can be measured easily, and reward for diary use establishes a well-defined relation between game and therapy. From a design perspective, though, this was a risky choice: we lost access to a small but well-defined target group in the The Hague clinic and could no longer make a game that includes social interaction, one of the great motivational aspects of games.

We were a few months into the validation study testing whether Changamoto really stimulates adherence to the CBT diary, when practice turned out to be much 'noisier', as is often the case in validation studies. Although hundreds of young teens are treated each year, it is difficult to get a grip on the real number of patients that a therapist sees, because patients tend to interrupt their treatment. And although therapy for addiction is evidence-based, the personal contact ➔

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between therapist and patient leaves a lot of room for personal interpretation, even regarding the use of a standard assignment such as diary registration. As we waited for the slow validation process of Changamoto, we wondered whether we had missed the main aim in optimising Changamoto for validation potential.

If we could not achieve our validation study, for instance, because too few patients used the Changamoto game, would it not have been better to give the designer more freedom? Had we, in our desire for certainty, perhaps withheld a game with, potentially, a much larger impact from the addicted teens? A game that, for instance, would allow for social play. Perhaps the target group would have been better off with a game that hadn't been validated but which they could use according to their own insights.

It may sound odd to question the value of validation when you assume that, with the right validation methods, you would always be able to reveal the quality of an effective game. Yet it is utopian to believe that quantitative methods can already provide insights into all aspects of such a complex human experience as well-being. It is the basic belief of quantitative science that it will be possible one day, but this day is in a future far beyond the future of the teens we are trying to help today. Waiting for validation results may withhold products from the market until they're no longer relevant. Yet, delivering completely unfounded products will also withhold them from the market, because health care is becoming increasingly evidence-based.

Research is by nature conservative, rational, and focused

The Future

We suggest that research and innovation can optimally profit from each other by connecting to existing scientific knowledge. The scientific literature lists several principles of behavioural change which have often been demonstrated in a laboratory situation, far from a users' reality, and are only valuable upon repeated exposure. The designer, though, can use these principles in the design of a user experience. Moreover, the motivational aspects of game design can be used to invite a user to return repeatedly and thereby be exposed to the same principle many times over.

IJsfontein is now working on a project that uses this form of collaboration with researchers from the VU University Amsterdam. Their findings suggest that patients can influence the storage of trauma in long-term memory by engaging in a working memory task, while memories of the trauma are repeatedly recalled. It is difficult for patients to focus on the working memory task at the right moment while keeping the trauma in mind. The immersive and motivating properties of games may be exactly what is needed in offering this form of therapy. In this way, the game isn't used as treatment but rather as the means by which treatment is offered to the user.

Conclusion

We advocate a more serial form of collaboration in which researchers provide knowledge that designers use in their designs. These products still need to be validated, but validation will be much easier as researchers can build on earlier work on the active principle.

What we would like to keep from our experience during the close, parallel collaboration in the CRISP project is the physical proximity and the continuous touch points. While researcher and designer take leading roles in turns, they remain continuously involved, sharing their knowledge and questions. We found that physical proximity encouraged 'trust', which allowed us to see how research and design really supplement each other. Researchers aren't slow; it is science that is a slow process. Designers aren't merely daydreamers; they base their ideas on experience and user tests. Experience-based knowledge can be worth just as much as quantitative evidence.

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