

Filling the Glass

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Valorisation Addendum

Valorisation refers to the process of creating value from knowledge, by either making this knowledge available for social use or translating this knowledge into practical products. In this section of the dissertation, I will discuss the valorisation potential of this dissertation project, by outlining the relevance of the project, by describing the target groups for whom it is relevant and possible activities and products. Furthermore, I will discuss the innovative character of these possible activities and products and how they can be implemented.

RELEVANCE

Chronic pain constitutes a major health care problem in the western world, with almost 1 out of 5 adult Europeans reporting chronic pain of moderate to severe intensity [2]. In a large cross-sectional Internet-based survey it was estimated that about a third of the population in the United States suffers from chronic pain [13]. Patients report living with chronic pain to be devastating and disabling, causing marked emotional, behavioural and physiological problems [2; 4]. It has a negative impact on mood, social relationships, and quality of life and is associated with social isolation [2; 11; 15]. Pain is an aversive experience, making it hard to ignore. It is therefore not surprising that many people with chronic pain report executive functioning deficits. In a study by McCracken and Iverson [16] the most frequently reported cognitive complaints by chronic pain patients were forgetfulness, difficulty finishing tasks and difficulty with attention, with more than half of the patients endorsing at least one of these complaints. Many chronic patients even state that these deficits in executive functioning are more disturbing and disabling than the pain experience itself, especially when it compromises a patient's family life, their professional work productivity and employment status [2; 3; 10; 23]. Furthermore, greater emotional distress is associated with a greater perception of cognitive dysfunction [16].

Given the aversive nature of pain, it is not hard to imagine that experiencing chronic pain is associated with a relentless search for pain relief and when unexplained, a search for a medical explanation for the pain. However, in some cases, a clear medical diagnosis cannot be provided and pain is insufficiently reduced by medical treatments. In an attempt to solve the problem of experiencing chronic pain, the patient will focus on finding a solution to remove the pain experience. This search for pain relief will become problematic when attempts fail and worry is fuelled. A 'perseverance loop' is established in which increased worry increases motivation to continue the search for solving the problem [7]. This eagerness to pursue pain relief solutions and medical explanations will lead to a high demand for medical and health services, resulting in high economic costs. The healthcare costs due to chronic pain in the United States is estimated to be more than \$70 billion per year [9]. The cost even increases to \$150 billion annually when taken indirect costs and related expenses into account [9]. In the Nether-

lands, the direct and indirect costs of chronic pain (e.g., due to loss work productivity, unemployment and disability payments [2; 3; 5; 23]) are as high as 7, 4 billion euro per year [1].

Since the pain itself often cannot be remediated, having means to diminish the burden of living with chronic pain is imperative, especially when you consider the individual, social and economic consequences. Both the reduction of emotional distress and improvements in executive functioning should lessen the burden of living with chronic pain. Our research indicates that optimism is an amendable psychological factor that can reduce the negative impact of pain on executive functioning. Moreover, it is possible to increase optimism, positive emotions and decrease emotional distress with an internet-based positive psychology intervention. Consequently, these improvements in the general well-being of chronic pain patients may also serve an economical interest, as it might help in reducing the direct and indirect costs associated with chronic pain.

TARGET GROUPS

In addition to the academic community, the dissertation findings might be of interest for three target groups, namely (1) patients, family and friends, (2) healthcare providers and (3) society. Firstly, the most apparent target group that may benefit from these findings are individuals that suffer from acute pain and chronic pain patients. Almost 1 out of 5 Europeans report chronic pain of moderate to severe intensity, which is experienced as devastating and disabling. But not only patients are devastated by the experience of chronic pain. Loved ones of patients, such as partners, children, parents, siblings and friends also experience the distressing effects of chronic pain [6]. First of all, seeing a loved one in agony due to pain is an overwhelming experience for family members and friends, with some even experiencing this agony themselves [8]. Additionally, the negative emotions, irritability, and feelings of anger that chronic pain patients often experience, can result in conflicts with family members [12]. Moreover, family members often become caregivers to their loved ones, providing emotional, social and instrumental support. As a result of these new responsibilities, caregivers feel burdened, causing feelings of sadness, frustration and impotence, impacting in turn their social and professional life [18]. But also patients commonly report that they feel as a burden to their loved ones, especially when the support they receive outweighs the support they provide. This perceived imbalance can cause feelings of loss and a decreased sense of autonomy [14]. The perception of being a burden for loved ones can even fuel the desire for suicide [14; 24; 25].

It is clear that the experience of chronic pain has detrimental effects on both patients as their close social circle, making it imperative that we identify amendable psychological factors that protect against the negative effects of pain and help individuals to cope better with the experience of pain. The current dissertation findings identified

optimism as a possible protective factor against the debilitating effects of (chronic) pain, lessening emotional distress, disability, and improving quality of life. Furthermore, this dissertation provided evidence that improving optimism is possible with an internet-based positive psychology intervention. These improvements were already achieved via minimal guidance of research assistants. Furthermore, the intervention is highly assessable as it is given online, making it an attractive treatment option for chronic pain patients that may not be able to travel to a therapy setting.

Secondly, the results are interesting for health care providers, such as doctors, psychologists, rehabilitation therapists, occupational therapists and social workers. As mentioned above, the internet-based positive psychology intervention can be easily implemented to improve the current well-being of chronic pain patients. With minimal guidance, health care providers can deliver an evidence-based intervention. But the internet-based positive psychology intervention may also be implemented to provide patients with an intervention while waiting for standard treatment or as a method to prevent relapse of treated patients.

Thirdly, the findings may have an influence on society. As mentioned before, chronic pain is associated with high societal costs, due to rising health care costs, disability payments, unemployment and loss of work productivity. Research also indicates that these negative effects even extend to the social environment of chronic pain patients. Insurance companies and policy makers should acknowledge the enormous societal impact of chronic pain and promote research that examines possible psychological factors that may reduce this impact.

ACTIVITIES AND PRODUCTS

The findings in this dissertation showed that optimism can protect against the negative effects of pain. The Best Possible Self manipulation and the internet-based positive psychology intervention can increase optimism in both healthy individuals and chronic pain patients, respectively. The research with the BPS has driven the development of a mobile app to practice the BPS to cultivate optimism. Additionally, the internet-based positive psychology intervention can be easily implemented on a large scale in clinical practices. Currently, the intervention (*happy despite pain / gelukkig ondanks pijn*) is available online for health practitioners via a commercial company and has also been made available for a wider audience by means of a self-help book. In this 8-week online intervention, patients perform positive psychology exercises that aim to increase optimism, positive emotions and self-compassion [20]. Patients receive instructions about the exercises via the online platform, and conduct each exercise individually at home. The intervention consists of 4 modules (i.e. (1), self-compassion, (2) positive focus, (4) savoring, and (5) optimism. Self-compassion (module 1) refers to fully accepting oneself, the ability to treat oneself with kindness rather than self-criticism and recognizing that

everyone experiences failures [17]. Module 2 aims to shift the focus from a negative orientation towards a more positive one, by raising awareness for the good things in life [22]. Module 3 contains savoring techniques that promote the frequency and intensity of positive experiences in daily life. In module 4, patients practice the Best Possible Self (BPS) exercise [19], which is used to increase optimism. The last week (i.e., week 8) of the PPI aims to prevent relapse.

INNOVATION

Problem-focused psychology has been dominant for decades. In this type of psychology, the focus is on ‘fixing what is wrong’. In contrast, positive psychology focusses on what makes life worth living, i.e., ‘building what is strong’ [21]. Positive psychology is concerned with both making the lives of people fulfilling as with healing pathology. The intent of positive psychology is to have a more complete and balanced scientific understanding of the human experience—the peaks, the lows, and everything in between. Positive psychology should complement and extend to the problem-focused psychology. An important aspect of positive psychology research is validating innovative techniques and interventions that both improve well-being and relieve suffering. The current dissertation findings validated the Best Possible Self as a technique to increase optimism. As stated before, these findings have driven the development of a mobile app. Although there were several app’s available to cope with chronic pain, an app that focussed on building optimism was not available. Furthermore, our research also validated that the internet-based intervention was able to improve the emotional well-being and relieve the suffering of chronic pain patients. Similar to the app, the online interventions that were available until now for chronic pain patients were predominantly based on cognitive behavioural therapy. Additionally, there is growing evidence that both acute and chronic pain have deteriorating effects on executive functioning, fuelling even more the devastating experience of pain. However, we are not aware of any research that attempted to protect individuals from this pain-induced deteriorating in executive functioning. The results of this dissertation can therefore be regarded as innovative as it indicates that optimism may indeed be a protective factor in this context.

SCHEDULE AND IMPLEMENTATION

At this moment, 3 chapters are published articles in international peer-reviewed scientific journals, making the findings available to the scientific and clinical community. The additional two chapters are submitted and are expected to be accessible within a year. Furthermore, we will continue with disseminating the research findings by presenting

the findings at national and international conferences. The positive psychology intervention, described in this dissertation, is at the moment already available for clinicians that have an account on an online commercial platform, which provides various online interventions. Clinicians have to pay a small fee per patient if a patient wants to use the online intervention. However, we plan to promote the widespread use of this intervention, by communicating these clinical relevant results to health care providers involved in treating chronic pain patients. Patients and their loved ones should receive the information via magazines of online platforms of various patient organizations. There are already established links with e.g. rehabilitation centres, pain outpatient's clinics, the pain expertise centre and patient organizations to promote the communication of these clinical relevant results. The BPS mobile app to cultivate optimism, will become available within a half year. There are plans to further develop this app to a more encompassing positive psychology app for chronic pain patients. The estimated time frame of this comprehensive app is 3 years. Furthermore, given the enormous effect of having a loved one being in constant pain, we will continue our research examining the interpersonal effects of the experience of chronic pain and whether optimism can relieve the burden both experienced by the patient and their close environment.

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