

## **Meaning-reconstruction process in cancer: the role of psychological flexibility. Intensive longitudinal and experimental studies**

Cancer often causes many losses that oscillate over time and require adaptation. These losses can impede life goals and an individual's sense of meaning. Therefore, restoring meaning is an important element of adaptation to disease. Two mechanisms play a crucial role in the process of restoring meaning. The former one is related to the process of searching for meaning and explanations for adversities (i.e. meaning-making in disease). The latter refers to benefit finding (or meanings made) in disease (i.e. the perception of positive changes resulting from coping with disease) and is the result of searching for meaning. The process of reconstructing meaning was described in the integrative meaning-making model of coping. However, meaning-making in disease is still poorly understood and its theoretical model has not received a comprehensive empirical verification that would consider its complexity, dynamics, reciprocity, and the intraindividual variability of this process (i.e. how a person changes in this process and how they fluctuate). So far many studies have focused on positive changes as the effect of coping with disease. However, only a few studies have been related to what is to lead to benefit finding in disease i.e. searching for and meaning-making in disease. Therefore we plan to conduct the novel research, combining observational and experimental methods whose aim is a deeper understanding of the process of meaning-making in cancer.

We propose a new theoretical model, extending the meaning-making model with the model of psychological flexibility. Psychological flexibility is defined as aiming at valued goals in a difficult situation despite suffering. Creating flexibility should foster meaning-making in disease by building more flexible and workable meaning-making explanations of disease. We are of the opinion that psychological flexibility may be the missing mechanism for the meaning reconstruction process. In order to verify the novel extended model of meaning-making, we plan to conduct intensive longitudinal (i.e. daily-diary) and experimental studies in patients after hematopoietic cell transplantation (HCT). The daily-diary study will allow us to verify the new model i.e. examine the intraindividual variability, dynamics and complex relationships between the elements of the extended model. The data obtained in the daily-diary study will be used to design the experimental randomized controlled trial (RCT) in which we will explicitly manipulate flexibility [using tools for creating flexibility established in the Acceptance and Commitment Therapy (ACT)] and verify whether meaning-making and benefit finding change as a result of this manipulation. The experimental study will allow us to determine the cause-and-effect relationships and the mechanisms responsible for them in the extended meaning-making model.

The daily-diary study will involve at least 150 patients. Participants will be requested to complete a daily-diary on daily distress, meaning-making, psychological flexibility, benefit finding and well-being for 10 days during isolation after HCT. Then a two-armed parallel randomized controlled trial (RCT) will be conducted (involving at least 75 patients in each arm). Participants of this study will be randomly assigned to the experimental group (ACT manipulation) or the control group (neutral cognitive task within minimally enhanced usual care control conditions). Experimental manipulation will last 10 days during isolation after HCT and its effects will be evaluated immediately, one month and three months after completion of manipulation. Participants of both studies will be recruited from patients with hematologic or lymphatic cancers who will be eligible for autologous HCT (transplantation of their own hematopoietic cells). Statistical analysis of the data will be conducted using the latest and most advanced techniques, i.e. multilevel and dynamic structural equation modeling and latent curve growth modeling.

We are convinced that the presented multi-method project will fill in the gaps in health psychology in terms of understanding the process of reconstruction and meaning-making in cancer and understanding the mechanisms of this process (extending the integrative model of meaning-making by the psychological flexibility model) and thus will help to develop this academic discipline. Of note, the data collected will provide data on the effectiveness of ACT-based interventions for creating flexibility, meaning-making in cancer and (generally) for the well-being of patients treated with HCT.