THE ROLE OF SELF-CONCORDANCE IN IMPROVING THE SELF-MANAGEMENT OF PEOPLE WITH INFLAMMATORY BOWEL DISEASE

Ph.D Thesis

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„Mit adok a világnak? Hozzájárulások a tudományfejlődéséhez I." szekció I. helyezettje

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XII. Horvát, B., Dávid, A., Sallay, V., Rafael, B., Njers, S., Orbán, K., Molnár, T., Csabai, M. & Martos, M. (2024). 38th Annual Conference of European Health Psychology Society. Self-management of inflammatory bowel disease patients: the role of autonomy support in health goal striving. Portugália, Cascais Estoril.

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I. LIST OF ABBREVIATIONS

AS – Autonomy support

CD – Crohn's disease

COR – Conservation of Resources Theory

DS – Directive support

IBD – Inflammatory bowel disease

NE – Negative emotions

PE – Positive emotions

PPA – Personal Project Analysis

QoL – Quality of Life

SC – Self-concordance

SDT – Self-Determination Theory

SE – Self-efficacy

SM – Self-management

SWLS – Satisfaction with Life Scale

UC – Ulcerative colitis

US – Unspecified type of IBD

II. BRIEF SUMMARY

Inflammatory bowel diseases (IBDs) are chronic gastrointestinal diseases that highly affect patients' quality of life (QoL). Even though effective self-management (SM) is associated with better mental health, there has been little research on its motivational and emotional aspects. Based on this gap in the literature this thesis aims to explore the self-management of IBD patients, by investigating their health-related personal goals, with a special focus on an internal psychological resource, namely self-concordance (SC), from the Self Determination Theory (SDT, Ryan & Deci, 2000) framework, and its associations with self-efficacy (SE), autonomy support, positive emotions (PE and NE) and goal progress.

My doctoral research consists of two cross-sectional and one longitudinal study. In the thesis, Study 1 and Study 2 present the results of my already published articles, and Study 3 presents the results of a new, unpublished analysis. For the studies, participants were recruited from the IBD Centre of the Internal Medicine Clinic in Szeged, Hungary.

In Study I, I tested an internal resource mobilization hypothesis, by which I assumed that self-concordance serves as an internal psychological resource and is associated with more positive and less negative emotions during health goal pursuit. I also hypothesized that experiencing more positive and fewer negative emotions during health-related personal goals may serve as a mediator to improve the overall functioning of IBD patients, resulting in lower levels of anxiety. In this study, 96 patients were involved, of whom 79 patients (56.02%) had Crohn's disease (CD) and 56 patients (39.71%) had ulcerative colitis (UC). The results showed different emotional patterns for SC and SE. SC significantly predicts fewer negative emotions, which in turn predict lower levels of anxiety. These findings support that SC and SE, as internal resources related to personal health goals, are relevant psychological factors in IBD self-management and can contribute to patients' overall mental well-being.

In Study II, further focusing on self-concordance as an internal psychological resource, I investigated its relationship with a special aspect of the social environment of IBD patients, namely, the autonomy and directive support (AS and DS) from the healthcare professionals. I assumed that autonomy support can foster self-concordance during the pursuit of health-related

personal goals. In this study, disease activity (relapse or remission) was also involved in the analysis as it is an important contextual variable of self-management. In this study, 377 patients were involved, of whom 241 patients (64.4%) had CD, and 133 patients (35.6%) had UC. Results showed that autonomy support from the healthcare professionals significantly, positively predicts both self-concordance and self-efficacy during health goal pursuit, but when disease activity is taken into account, these associations remain significant only during relapse. Conversely, the negative impact of directive support becomes more pronounced during relapse, predicting lower self-concordance. The results highlight the significance of the supportive role of healthcare professionals in the health behavior change of IBD patients and also provide important information on the social context that can enhance self-concordant goal striving.

In Study III, a longitudinal design with three data collection points was used, after the first data collection, 3 and 6 months later, to investigate longitudinal relationships between self-concordance, positive emotions, and goal progress. During the first data collection (T1), 417 adult IBD patients were recruited, of whom 187 patients were followed up three months later during the second data collection (T2), and 148 patients were followed up six months later at the third data collection (T3). The analyses indicated that self-concordance can foster positive emotions and reduce negative emotions not only in the short term, but over time. We can assume circular causation between positive emotions and goal progress, as positive emotions predict better goal progress, which in turn enhances positive emotional experiences.

The results of the three studies give a significant contribution to the understanding of the motivational and emotional aspects underlying IBD self-management. The complex interplay between self-concordant motivation, emotional patterns, and progress during health goal pursuit suggests that self-management has a dynamic nature. This research makes an important contribution to understanding the precise mechanisms of self-regulatory processes of self-management. By incorporating motivational and emotional aspects, such as promoting self-concordant goal striving in the care of patients, professionals can improve the self-management and overall well-being of patients with IBD.

III. THEORETICAL BACKGROUND

1. INFLAMMATORY BOWEL DISEASES (IBDs)

Inflammatory bowel diseases (IBDs) are chronic gastroenterological diseases, affecting around 50000 people's lives in Hungary (Lontai et al., 2024). The disease primarily attacks the intestinal tissue, causing symptoms such as abdominal pain, bloody diarrhea, fatigue, frequent bowel movements, and weight loss (Podolsky, 2002; Sartor, 2006; Park et al, 2019). The two main forms of IBD are Crohn's disease (CD) and ulcerative colitis (UC). The disease is characterized by an unpredictability of the phases of remission and relapse. Remission refers to phases in which symptoms improve significantly or disappear, while relapse is associated with increased inflammation in the digestive tract, leading to worsening symptoms (Byrne et al., 2017). The course of IBD varies from person to person; some experience long periods of remission with minimal symptoms, while others face frequent and unpredictable relapses. Therefore, the treatment of IBD not only targets active inflammation and alleviation of the symptoms but also aims to achieve and maintain remission (Habibi et al., 2017).

The unpredictability of flare-ups, the need for frequent hospitalizations, severe pain, and the physical changes associated with the disease often lead to a loss of control and autonomy. These challenges contribute to a higher prevalence of anxiety and depression in IBD patients compared to the general population and other groups of chronically ill patients (Addolorato, 1997; Robertson et al, 1989; Graff et al, 2009; Kovács & Kovács, 2007). As the disease highly affects patients' everyday functioning and quality of life, it is important to prevent psychological distress or to detect in time if intervention is needed to protect their mental well-being.

2. IBD SELF-MANAGEMENT

Given the chronic and often unpredictable nature of IBD, consistent self-management is crucial to prevent relapse and maintain remission. Disease management in IBD requires specific skills, including adhering to complex medication regimens, regular medical check-ups, cancer screenings, addressing medication side effects and extraintestinal symptoms, and

making lifestyle adjustments (e.g., stress management, healthy eating, smoking cessation) (von Wietersheim et al., 1992; Kane et al., 2001; Dudley-Brown, 2002). Effective self-management has been shown to lead to positive health-related outcomes, including reduced inflammation, shorter treatment duration, fewer relapses, alleviated symptoms, improved mental and physical well-being, and overall quality of life (Graff et al., 2009; Lobaton et al., 2016; Smith et al., 2017; Jones et al., 2021). Despite its positive consequences, effective self-management is associated with, previous research has primarily focused on disease education interventions rather than self-management components (Barlow et al., 2010; Kemp, 2012).

Research also shows that despite proper psychoeducational interventions, 30–45% of patients do not adhere to treatment plans (Wagoner & Kavookjian, 2017). In addition, many of the patients use passive, avoidant, or maladaptive coping strategies, such as alcohol consumption, smoking, or ignoring dietary recommendations. Considering the relatively high nonadherence rates and maladaptive coping strategies among IBD patients, it is crucial to investigate underlying psychological factors of self-management to better understand and improve patient adherence (Wagoner and Kavookjian, 2017).

3. HEALTH-RELATED PERSONAL GOALS

IBD self-management includes health behaviors, such as medication adherence, dietary changes, attending regular medical check-ups, smoking cessation, regular physical activity, and strategies to improve mental health. These lifestyle adjustments can be effectively framed as personal health goals (Austin & Vancouver, 1996; Peterman & Lecci, 2007; Martos, 2009a). Goals can serve as important motivational tools for IBD patients, helping them to adapt to the lifestyle changes required by the disease (Strecher et al., 1995; Mann et al., 2013).

Goals generally play an important role in behavior change, shaping emotions, and promoting long-term engagement (Little, 2015). Specifically, health goals are aspirations that closely relate to the individual's physical and mental health, appearance, or fitness, giving them a sense of purpose and encouraging stronger engagement (Lo et al., 2021; Lamers et al., 2022; Schlee et al., 2022). Setting appropriate health goals not only supports lifestyle changes and

self-management of patients with IBD but also promotes a sense of autonomy, which can improve patients' active involvement and long-term adherence in their care (Little, 2015; Strecher et al., 1995).

While numerous studies have highlighted the positive impact of healthy lifestyle changes on the quality of life of IBD patients (Lamers et al., 2022; Lo et al., 2021; Schlee et al., 2022), the specific experience of setting and pursuing personal health goals remains under-researched. In my doctoral research, I considered health goals as key aspects of patient self-management, and I explored the underlying motivational and emotional factors.

4. PSYCHOLOGICAL RESOURCES FRAMEWORK

According to the Conservation of Resources (COR) theory (Hobfoll, 1989), we use internal resources to cope with stress and to start and maintain behavioral change. People try to protect and build up these resources to avoid negative health consequences and achieve positive ones. Resources also play a key role in health behavior change, as they influence individuals' ability to adopt, maintain, and sustain healthy behaviors (Cameron & Mitchell, 2017; Johnson & Edwards, 2021; Schulte & Potts, 2022; Wright & Sharma, 2020). These resources can be categorized into personal, social, and ecological areas. My doctoral research focused on self-concordance, as a personal resource that I will explain in the next chapter. In the studies, I examined other personal and social resources related to self-concordance, namely self-efficacy, positive emotions, and perceived autonomy support from healthcare professionals.

5. THE ROLE OF SELF-CONCORDANCE IN SELF-MANAGEMENT

For investigating the motivational aspect of IBD self-management, the theoretical framework of my doctoral research was provided by Self-Determination Theory (SDT; Ryan & Deci, 2000). In line with COR theory, SDT conceptualizes motivation as an important psychological resource. According to the model, humans have three basic psychological needs: autonomy, competence, and relatedness, which are essential for promoting motivation, psychological growth, and well-being. If these needs are fulfilled, individuals are more likely

to experience intrinsic motivation, which promotes long-term persistence.

According to the self-concordance sub-theory of SDT (Sheldon & Elliot, 1998), all motivated behavior can be seen on a continuum ranging from controlled to autonomously regulated. The degree of congruence between an activity and a person's intrinsic values, talents, and needs determines whether the motivation is controlled or autonomous (see Figure 1) (Wan et al., 2021). Autonomously motivated goals are referred to as "self-concordant", reflecting a greater integration with the self and a stronger alignment with core values, talents, and personal aspirations (Ryan & Deci, 2001; Sheldon et al., 2004).

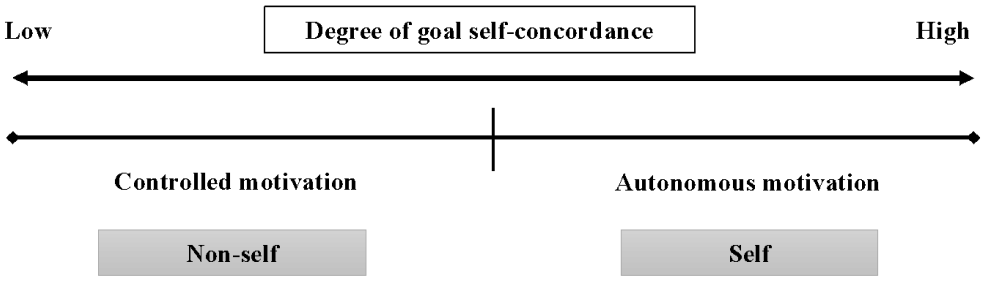

Figure 1. The continuum of motivated behaviors

Note. The figure is based on the article of Wan and his colleagues (2021)

Self-concordance indicates less external control, greater autonomy, and a stronger alignment with personal values and competencies (Wan et al., 2021; Sheldon et al., 2004). This alignment favors greater effort, more positive emotional experiences, and higher well-being (Sheldon et al., 2004; Deci & Ryan, 2000). In the context of the psychological resource-based approach, the stronger the self-concordant motivation is, the greater the resilience and resourcefulness of the individual when coping with challenges.

In the context of chronic disease management of IBD patients, self-concordance may play a critical role in achieving and maintaining health-related personal goals. Based on the literature on self-concordance, summarized in Figure 2 based on the review of Wan and

colleagues (2021), motivational aspects of self-management were not specifically investigated in the group of IBD patients.

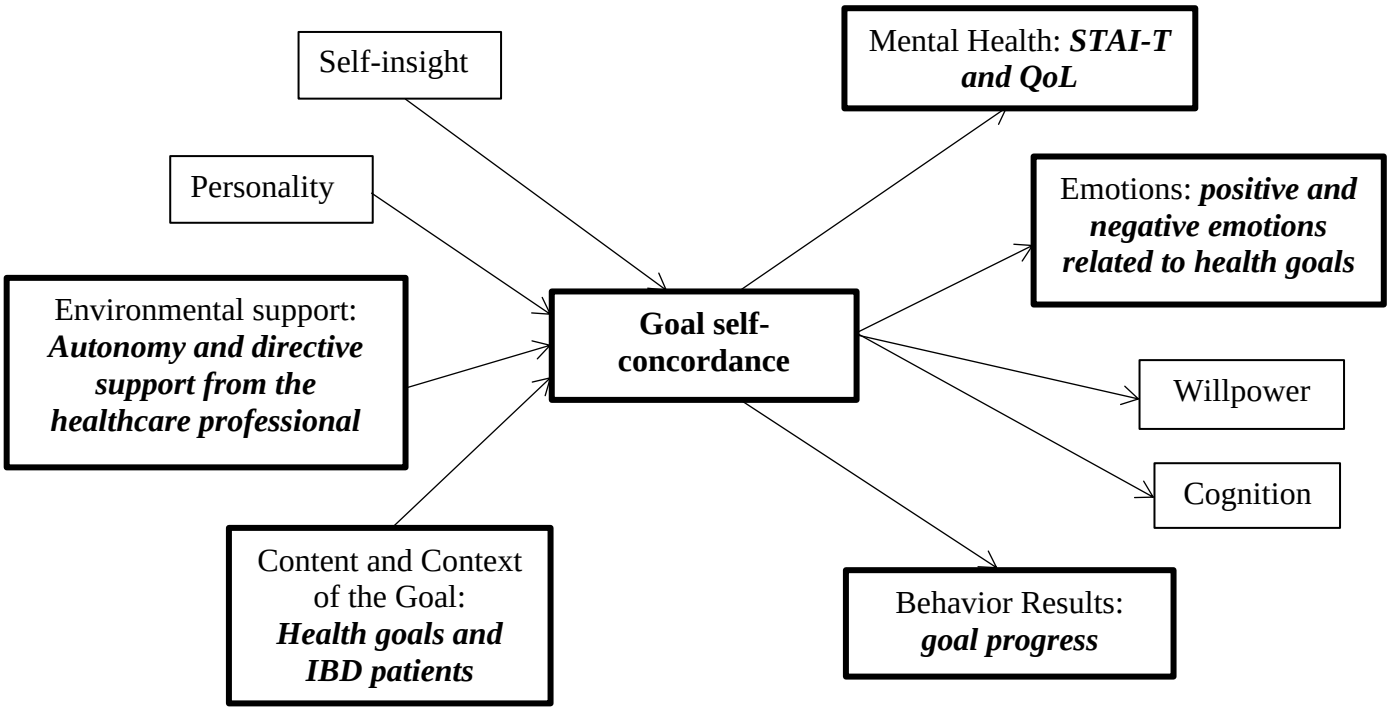

Figure 2. The variables related to self-concordance examined in the previous literature and the variables examined in the doctoral thesis are in italics and bold. Based on the article by Wan and his colleagues (2021)

6. THE ROLE OF SELF-EFFICACY IN SELF-MANAGEMENT

In addition to self-concordance, there is a possible alternative personal psychological resource that is partly related to self-concordance and partly in competition with it. Self-efficacy was first conceptualized by Bandura (1977, 2001) and refers to a person's belief that they are capable of performing the behaviors required to effectively cope with a situation. It is a motivating factor that influences goal attainment, long-term commitment, and adaptation to lifestyle changes (Bandura, 1977; Koestner et al., 2008; Fernández et al., 2009). The role of self-efficacy in health behavior has been developed in several models, of which the Health

Action Process Approach (HAPA, Schwarzer,2016) is one of the most commonly used theoretical frameworks. In IBD patients, high self-efficacy has been associated with regular visits to healthcare providers, openness to psychological support, and better coping strategies (Keefer et al., 2011; Graff et al., 2016). In addition, self-efficacy shows a positive correlation with self-esteem and health-related quality of life, while it is inversely correlated with anxiety and depression (Izaguirre et al., 2017; Graff et al., 2016). Few direct studies have examined self-efficacy and self-concordance together in the context of self-management. In my research, I have included self-efficacy as an internal personal resource alongside self-concordance to better understand their joint role in IBD self-management.

7. EMOTIONAL ASPECTS OF SELF-MANAGEMENT

Emotions influence the long-term persistence required to adopt and maintain new health behaviors, as they have an important feedback function about the success of self-management. Emotions associated with health behaviors reinforce habits through reward pathways in the brain (Wood & Neal, 2007). Furthermore, emotional reasons often surpass rational considerations when making decisions about behavior change (Loewenstein & Lerner, 2003).

According to previous studies, self-concordant strivings influence emotions during the pursuit of goals (Sheldon and Elliot, 1999; Sheldon et al., 2004, 2022; Sheldon and Lyubomirsky, 2006; Wang, 2009; Gaudreau, 2012). Goals that align with inner values, needs, and desires have the potential to fulfill basic psychological needs, thereby contributing to enhanced psychological well-being (Sheldon and Elliot, 1999; Sheldon, 2002). In comparison, non-concordant goals are associated with lower levels of happiness, even if one manages to accomplish these goals (Sheldon and Elliot, 1999). Self-concordant goals are also perceived as more attainable, facilitating the effectiveness of goal setting and long-term commitment (Werner et al., 2016). Moreover, self-concordant future events are associated with more positive and intense emotions (Ernst et al., 2018). In my research, I focused on relationships between self-concordance and emotions in health goal pursuit, specifically examining the role of self-concordance in the mobilization of positive emotions, and also the associations between

positive emotions and goal progress.

8. AUTONOMY AND DIRECTIVE SUPPORT

Extensive research in diverse chronic disease populations highlights the critical role of social support in promoting effective self-management, including health behaviors, such as medication adherence, dietary adjustments, and psychological symptom control (Izaguirre et al., 2017). For individuals with IBD, social support has been shown to significantly improve self-management and alleviate symptoms (Keefer et al., 2011; Graff et al., 2016).

To better understand the mechanisms by which social support influences IBD self-management and, specifically, self-concordant goal pursuit, I investigated two types of support, namely a) *directive support* and b) *autonomy support* (Koestner et al., 2012). Directive support involves offering advice, suggestions, or praise aimed at motivating individuals to engage in certain behaviors. Although directive support is potentially helpful in facilitating immediate behavior change, it has not been consistently associated with deeper goal internalization or improved long-term well-being. In contrast, autonomy support emphasizes the recognition of an individual's will, the validation of real feelings, and the promotion of intrinsic motivation. Autonomy support is closely linked to the promotion of self-confidence and self-efficacy, which are key factors in health behavior change (Koestner et al., 2008; Mann et al., 2013).

9. DISEASE ACTIVITY AND IBD SELF-MANAGEMENT

As already mentioned, IBD is characterized by unpredictable courses of remission and relapse, which have a significant impact on the quality of life. While life satisfaction decreases by 6.6 % during remission, it is 18 % during a relapse (Cosnes et al., 2011; Rowse et al., 2018). The goal of IBD treatment is not only to treat active inflammation but also to maintain remission and prevent relapses to improve patients' overall well-being. Previous research has mainly focused on the impact of self-management on disease activity, indicating that effective self-management is associated with shorter duration of treatment and fewer disease relapses (Elkjaer et al., 2010; Robinson et al., 2001; Kennedy et al., 2004). As disease activity is an important

characteristic of the disease, in Study II, this aspect of IBD was regarded as a grouping variable, and analyses were conducted regarding the state of the disease.

IV. RESEARCH OVERVIEW

The doctoral research is part of a longitudinal, team-based project funded by OTKA *("Health goals in social-ecological context: the Personal Niche Model of health").* Ethical approval for the study was granted by the Regional Research Ethics Committee (RKEB) of the University of Szeged, Albert Szent-Györgyi Health Centre (approval number 14/2022-SZTE RKEB). The studies were conducted in accordance with the Declaration of Helsinki, and informed consent was obtained from all participants.

The studies aimed to provide a comprehensive overview of the motivational and emotional dynamics underlying effective self-management in IBD, with a special focus on self-concordance and self-efficacy as internal psychological resources. In the studies, the Idiographic Goal Methodology was used, as we aimed to focus on personally relevant health-related activities. The research comprised three interrelated parts:

1.) Study I: This study aimed to explore self-concordance's association with emotional experiences and self-efficacy in the pursuit of health goals and its role in general anxiety levels.

2.) Study II: Building on the results of Study I, this study aimed to investigate how autonomy and directive support from healthcare professionals predict self-concordance during the pursuit of health goals, and took into account self-efficacy, emotional experiences, and disease activity.

3.) Study III: In this study, I aimed to examine the longitudinal relationships between self-concordance, positive emotions, and goal progress over time during the pursuit of health goals.

For the Research design of Study I and II, see Figure 3. For easier comprehension, the longitudinal research design of Study III will be presented in a later, relevant section.

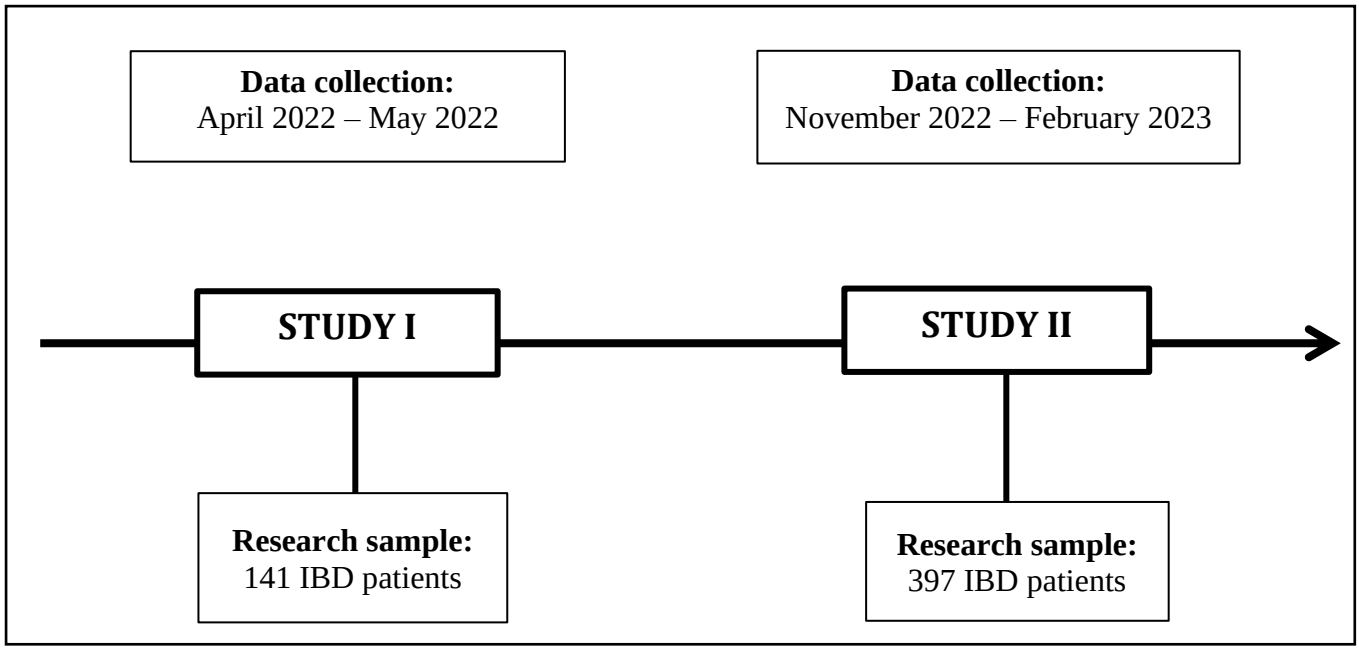

Figure 3. Research design of Study I and Study II.

V. STUDY I

1. AIMS

In Study I, I developed and tested a model, in which I assumed that the degree of self-concordance will enable individuals to engage in activities that truly reflect their motivation, resulting in self-rewarding experiences characterized by joy, pleasure and a sense of flow, while reducing negative emotions such as frustration, sadness or grief. This *internal resource mobilization hypothesis* included the following sub-hypotheses:

H1. Health goal-related self-concordance will predict more positive and less negative emotions during goal pursuit.

H2. Health goal-related self-efficacy will predict more positive and less negative emotions during goal pursuit.

H3. More positive and less negative emotions during health goal pursuit will be positively associated with lower levels of anxiety.

H4. Health goal-related self-concordance and self-efficacy will predict lower levels of anxiety.

For an overview and the hypothesized relationships between the variables, see Figure 4.

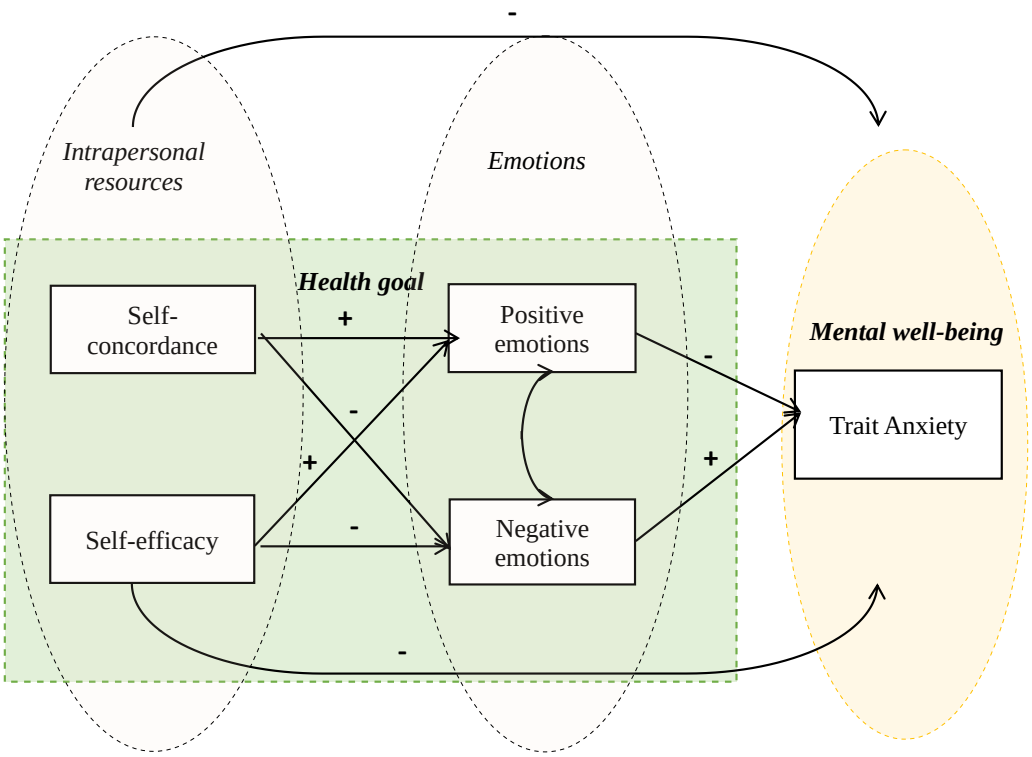

Figure 4. Study I – Model Summary

2. PARTICIPANTS

The participants were recruited from the Department of Internal Medicine of the University of Szeged. The target group consisted of patients diagnosed with a form of inflammatory bowel disease (IBD). In total, data from 141 IBD patients were included in the analysis. Data was collected using a paper and pencil questionnaire, which participants completed at their regular hospital check-ups, which took place every 6-8 weeks. Before completing the questionnaire, participants were informed about the details of the study and gave their written consent.

In sum, 141 patients' data were involved in the analysis, of whom 96 patients (68.08%) reported having a health-related goal, 38 patients (26.95%) reported not having a health-related goal, and seven answers were missing (4.96%). Of those who had a health-related goal, there were 66 females (68.75%) and 30 males (31.25 %). The mean age of the participants was 38.20 years (*SD* = 11.9). According to the type of IBD 79 patients (56.02%) had Crohn's disease (CD), 56 patients (39.71%) had a diagnosis of ulcerative colitis (UC), five patients (3.54%) reported having an unspecified type (UT) of IBD, and one patient (0.7%) did not know the type of the disease. Concerning the status of IBD, 95 patients' disease was in remission (46.0%), and 44 patients' disease was in the relapse phase (31.2%) at the time of the data collection with two missing data points (1.41%). The mean age of IBD subsamples for CD was 38.4 years (*SD* = 11.9), for UC 39.70 years (*SD* = 13.3), and for UT 54.0 years (*SD* = 18.7). Of CD patients, there were 46 females (58.22%), 31 males (39.24%), and two persons with missing data (2.53%). UC patients involved 39 females (69.64%), and 14 males (25.0%), with three missing data (5.35%). From the UT of IBD patients, there were three females and two males. The demographic information and other characteristics of the subsamples are summarized in Table 1.

Variable name	**Health-related goal**		**Type of IBD**		
	Has a health-related goal	**Does not have a health-related goal**	**CD**	**UC**	**UT**
Age	38.2 (11.9)	41.5 (15.1)	38.4 (11.9)	39.7 (13.3)	54.0 (18.7)
Gender					
Female	66	21	46	39	3
Male	30	17	31	14	2
Level of education					

Primary school	6	4	5	4	0
High school	55	28	49	31	2
College and higher	37	6	23	18	2
Type of IBD					
Ulcerative Colitis (UC)	38	16			
Crohn's Disease (CD)	55	21			
Unspecified type of IBD	4	1			
State of disease					
Remission	61	34	58	34	1
Relapse	38	6	21	20	4
State Anxiety	39.9 (11.4)	34.1 (10.9)	37.8 (11.7)	39.1 (10.3)	42.6 (16.1)
Trait Anxiety	43 (11.4)	37.4 (10.2)	40.6 (11.5)	43.1 (10.3)	44.6 (13.9)

Table 1. Demographic information and IBD characteristics.

Note. The abbreviation CD stands for Crohn's Disease, UC stands for ulcerative colitis, and UT stands for an unspecified type of IBD.

3. PROCEDURE

Data collection was carried out with the help of psychology students for the partial accomplishment of a university course. We asked patients to participate during their regular check-ups in the hospital, due at a 6-8 week pace. The data were collected from April to May 2022. Before receiving the questionnaire, the participants were informed about the conditions for participation and were requested to provide informed written consent. The questionnaire

package, consisting of several other scales not discussed here, took approximately 30-40 minutes to complete.

4. METHODS

1. IBD-SPECIFIC QUESTIONS. Self-reported questions about the disease, including the time of the diagnosis, disease type, activity, and symptoms.

2. HEALTH GOAL ASSESSMENT. Self-management was operationalized through personal health goals, utilizing a modified version of the Personal Project Analysis technique (PPA, Little, 1993; Koestner et al., 2012; Martos, 2009). Patients were asked to list their health-related goals, select one of them, and evaluate it according to the criteria provided. Sample personal health goals included domains such as sport (Example: *"I definitely need to start doing some form of exercise regularly."*), weight management (Example: *"I want to lose weight."*), eating habits (Example: *"Greater adherence to the diet"),* reduce smoking (Example: *"I want to quit smoking."),* mental health *(*Example: *"Find a better work-life balance."),* and sleeping (Example: *"Get 8 hours of sleep every night.").* The health goals were rated according to the following criteria.

A) GOAL SELF-CONCORDANCE (SC) (Sheldon & Elliot, 1999). Goal self-concordance refers to the extent to which the person has internalized the goal. It was calculated from the subtraction of three items of controlled (Example item: *"You are pursuing this striving because you would feel ashamed, guilty, or anxiety if you didn't."*) and two items of autonomous motivation (Example item: *"You pursue this striving because of the fun and enjoyment it provides you.")* (Sheldon & Elliot, 1999). The questionnaire provided a five-point Likert scale for each response. Due to the composite nature of the index, the standard reliability estimate of alpha was not applicable.

B) GOAL SELF-EFFICACY (SE) (Rózsa et al., 2003). Goal self-efficacy refers to the person's belief in his/her ability to achieve the goal. This four-item questionnaire provides a

five-point Likert scale for each response. Example item: *"I can usually handle the situations that come with achieving this goal."* Internal consistency of the four items was excellent: Cronbach's α =.805.

C) POSITIVE AND NEGATIVE EMOTIONS (PE and NE) Martos et al., 2013). Six items referred to the emotional experiences during the goal implementation process. Three items were used for measuring negative (Example item: *"How often do you experience negative emotions in your daily life: stress, worry, and anxiety about this goal?")* and three items for positive emotions (Example item: *"How often do you experience positive emotions in your daily life: joy, happiness about this goal?").* Both subscales used a five-point Likert scale. Internal consistency of the items for positive emotions was Cronbach's α =.806, and for the negative emotions, Cronbach's α =.890.

2. STATE-TRAIT ANXIETY INVENTORY (STAI-T and STAI-S, Spielberger, 1983; Sipos et al., 1978), Trait Anxiety Subscale. The questionnaire was used to measure the general levels of anxiety. The trait anxiety score was calculated from 20 items, rated on a four-point Likert scale (ranging from "Almost Never" to "Almost Always"). Example items: *"I worry too much over something that really doesn't matter"* and *"I am content; I am a steady person."* The scale had an internal consistency of .925 in the sample.

5. RESULTS

5. 1. STATISTICAL ANALYSES

JASP software (Version 0.18.3; JASP Team, 2024) and JAMOVI (Version 2.3; The Jamovi Project, 2022) were used for the statistical analyses of the data of Studies I, II, and III. Patients' scores for the inventories were summarized using descriptive statistics, and Pearson's correlation coefficients were used to quantify associations between variables (0.10 is small, 0.30 is moderate, and 0.50 is large; Cohen, 1988). Path analysis was used to examine the relationships between variables. For further examination of the relationship between variables,

standardized regression coefficients (β) were used to quantify the strength of association (0.10 is small, 0.30 is moderate, and 0.50 is large).

Path analytic models in the studies were employed to evaluate systems of equations, enabling the identification of potential causal linkages and the most influential pathways in predicting specific outcomes. To assess the models' goodness of fit, we relied on multiple indices. These included the χ^2 test, the root mean squared error of approximation (RMSEA), the normed fit index (NFI), the comparative fit index (CFI), and the incremental fit index (IFI). Acceptable fit criteria required NFI, CFI, and IFI values to exceed .90, while RMSEA values between .05 and .10 were considered indicative of a fair fit.

5. 2. BIVARIATE ASSOCIATIONS

I run a series of bivariate Pearson correlations for the study variables. According to the results, positive emotions, higher self-efficacy, and goal-self-concordance have a significant, weak to medium-strong negative association with the levels of trait anxiety (*p* was everywhere <0.001, n = 91-105): r_{PE} =-.372, r_{SC} = -.459, r_{SE} =-.358. Negative emotions had a significant, moderate positive association with trait anxiety (r_{NE}=.428, p<.001). There was a significant positive association between SC and SE (r = .331, p <.001), and a significant negative association between PE and NE (r =-.378, p<.001). Descriptive statistics and correlations are presented in Table 2.

	Variable	Mean	*SD*	Range	1	2	3	4	5
1	PE	4.27	1.32	1-5	-				
2	NE	3.27	1.77	1-5	-.38***	-			
3	SC	2.81	2.22	1-5	.31**	-.34***	-		
4	SE	4.89	1.21	1-5	.48***	-.26**	.33***	-	
5	STAI-T	41.9	11.3	1-4	-.37***	.43***	-.46***	-.36***	-

Table 2. The correlations among goal self-concordance, goal self-efficacy, positive and negative emotions, and trait anxiety (n = 91-105).

Note. **p<.01, ***p<.001. *Note.* PE = positive emotions, NE = negative emotions, SC = self-concordance, SE = self-efficacy, STAI-T = Spielberger Trait Anxiety Inventory

5. 3. PATH ANALYSIS

Since the self-concordance-based model is saturated, the fit indices indicate a perfect fit to the data: X^2 (0) = 0.00, p = 1.00, CFI = 1.00, TLI = 1.00, RMSEA = 0.00, SRMR <.001. Self-efficacy has a significant positive effect on positive emotions (β=.422, p < 0.001), and a significant negative effect on negative emotions (β=-.292, p = .003). Self-concordance at a tendency level has a positive effect on positive emotions (β = .163, p = 0.07), and a significant negative effect on negative emotions (β = -.292, p = .003). Positive emotions have no significant effect on trait anxiety (β= -.120, p=.24), but negative emotions have a significant negative effect on trait anxiety (β=.241, p=.01). Self-concordance has a significant negative effect on trait anxiety (β=-.289, p=.002). Self-efficacy has no significant effect on trait anxiety (β=-.125, p=.22). Self-efficacy has a significant moderate positive association with self-concordance (β=.330, p=.002). Positive and negative emotions have a significantly small negative association (β=-.273, p=.008). Figure 5 shows defined paths.

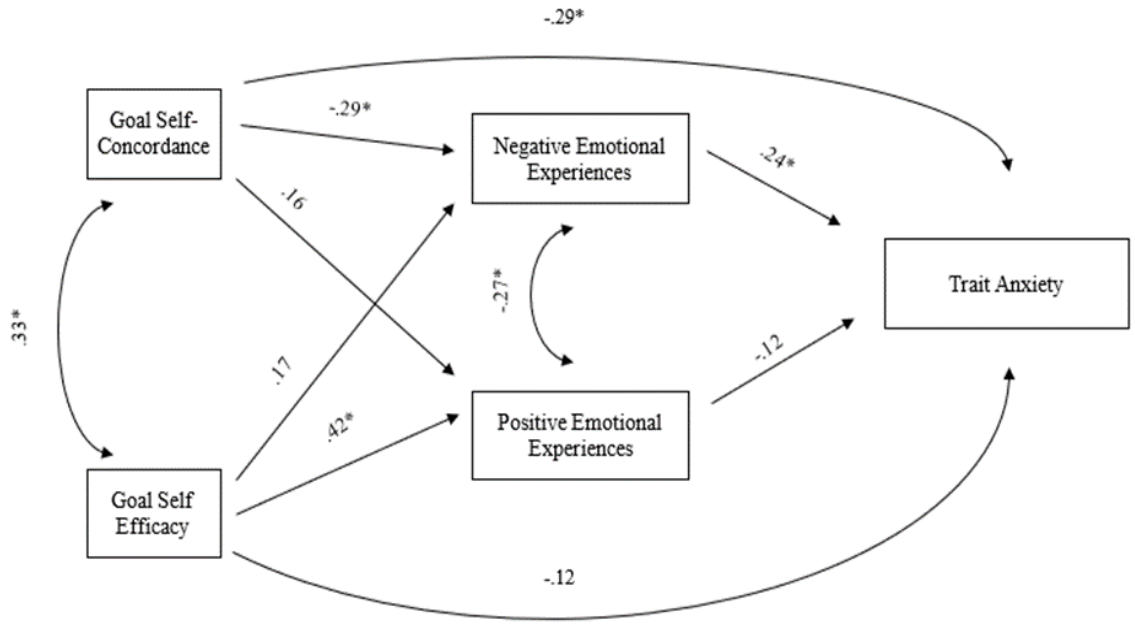

Figure 5. Path Diagram. *Note.* The diagram shows the standardized path coefficients.

Note. * p < .05

6. DISCUSSION

The aim of Study I was to investigate the motivational and emotional aspects of self-management in patients with IBD, focusing on health goal-related self-concordance and its role in promoting positive feelings, and general anxiety levels. According to the results of Study I, self-concordant goals predict more positive and fewer negative emotions in the pursuit of health goals. In addition, self-concordance predicts lower levels of anxiety. This relationship was partially mediated by negative emotions. The results demonstrate the positive emotion-enhancing role of self-concordance and its direct impact on the overall psychological functioning of IBD patients.

Self-concordance as an internal psychological resource manifests in positive emotional patterns during IBD self-management. This is consistent with previous research findings that internally regulated goals tend to fulfill basic psychological needs, leading to better functioning

and greater well-being (Ryan & Deci, 2000, 2017; Sheldon et al., 2004). Furthermore, higher self-concordance is associated with fewer negative emotions.

Negative emotions predict lower levels of trait anxiety, however, positive emotions had no significant effect on anxiety. These results suggest that the reduction of negative emotions, rather than the presence or increase of positive emotions, is the key factor in the level of anxiety. Negative emotions such as fear or frustration are closely linked to the activation of the body's stress response. Reducing these emotions can directly downregulate stress pathways, leading to a decrease in anxiety (Beck & Clark, 1997). Although positive emotions such as joy or contentment are beneficial to overall well-being, they cannot directly counteract the psychological effects of anxiety (Frederickson, 2001). The reduction of anxiety may rely primarily on the reduction of arousal within the negative emotion system, whereas the benefits of positive emotions may increase overall well-being rather than directly lower anxiety levels (Watson & Tellegen, 1985). Dealing with negative emotions as part of self-management targets the underlying causes of anxiety and is therefore a more effective approach to alleviation (Gross & John, 2003).

The hypotheses on self-efficacy assumed that, like self-concordance, it is associated with more positive and fewer negative emotions. The results partially supported this hypothesis, as SE was significantly associated with positive emotions, but showed no significant correlation with negative emotions. The significant relationship between self-efficacy and positive emotions is consistent with Bandura’s (1997) work on self-efficacy, which emphasizes that belief in one's abilities increases motivation, engagement, and positive affect, as individuals are more likely to experience a sense of fulfillment and pleasure when they feel competent in their actions. The lack of a significant correlation between self-efficacy and negative emotions (such as anxiety, fear or sadness) indicates that self-efficacy has no direct influence on the reduction of negative emotions. While self-efficacy contributes to positive emotional experiences by promoting motivation and goal achievement, it may not directly counteract negative emotions. One possible explanation is that negative emotions are multifaceted and may stem from factors unrelated to self-efficacy, such as external stressors, interpersonal relationships or cognitive patterns. Negative emotions may not be directly reduced by a simple increase in self-efficacy if

they are not accompanied by other coping mechanisms or emotion regulation strategies (Schwarzer & Fuchs, 1996). The different emotional patterns in self-concordance and self-efficacy suggest that these two psychological resources represent different aspect of self-management, and complement each other (Fuchs et al., 2016; Downes et al., 2017).

7. CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

The results of Study I emphasize the importance of self-concordance in self-management and psychological well-being of people with IBD. The results also confirm that self-efficacy is an important psychological resource that can be independent of the self-concordance or even reinforce it. Even though they do not follow the same emotional patterns, both play an important role in patients' self-management.

Personal health goals are important tools for monitoring patient self-management, facilitating lifestyle changes, and promoting adherence to treatment tasks. Future intervention programs to improve self-management in IBD patients could include strategies to promote self-concordance of personal health goals, as this could lead to more effective and sustainable health behavior outcomes. Promoting self-concordant goal striving can improve the self-management and overall well-being of patients with IBD.

VI. STUDY II

1. AIMS

In Study II, I continued to examine self-concordance in the context of health-related self-management, but based on the experience of Study I, we modified the instructions, conceptualizing the motivational aspect of self-management as personal *strivings* rather than personal health *goals*. A full explanation of the changes to the instructions is provided in the Methods section.

Building on the findings from Study I, in Study II, I examined the impact of the social environment on self-concordance, with a particular focus on the role of autonomy and directive support from healthcare professionals, taking into account self-efficacy and disease activity. In

addition, I explored the mediating role of positive and negative emotions in the relationship between self-concordance and quality of life in IBD patients, extending the findings of Study I in a larger clinical sample.

The aims of Study II were threefold. First, I examined how autonomy and directive support from healthcare professionals influence self-concordance in the pursuit of health goals. Based on previous findings, I did not hypothesize a specific influence of directive support on self-concordance. Second, I investigated whether self-concordance is associated with positive and negative emotional experiences during the pursuit of health goals. Third, I examined whether emotional experiences during health goal pursuit can predict life satisfaction. The theoretical model is summarized in Figure 6. The following hypotheses were tested:

H1. Individuals with IBD who perceive higher levels of autonomy support from healthcare professionals will experience greater self-concordance and self-efficacy during health goal pursuit.

H2. Self-concordance and self-efficacy will predict positive and negative emotions during health goal pursuit.

H3. Positive emotions will predict greater life satisfaction, whereas negative emotions will predict lower life satisfaction among patients with IBD.

I also formulated the following research question:

Q1. Will individuals with IBD who perceive higher levels of directive support from healthcare professionals experience lower self-concordance and self-efficacy during health goal pursuit?

Moreover, I assessed the potential influence of disease activity by comparing the theoretical model between two groups of patients: 1) those in remission, and 2) those experiencing a relapse.

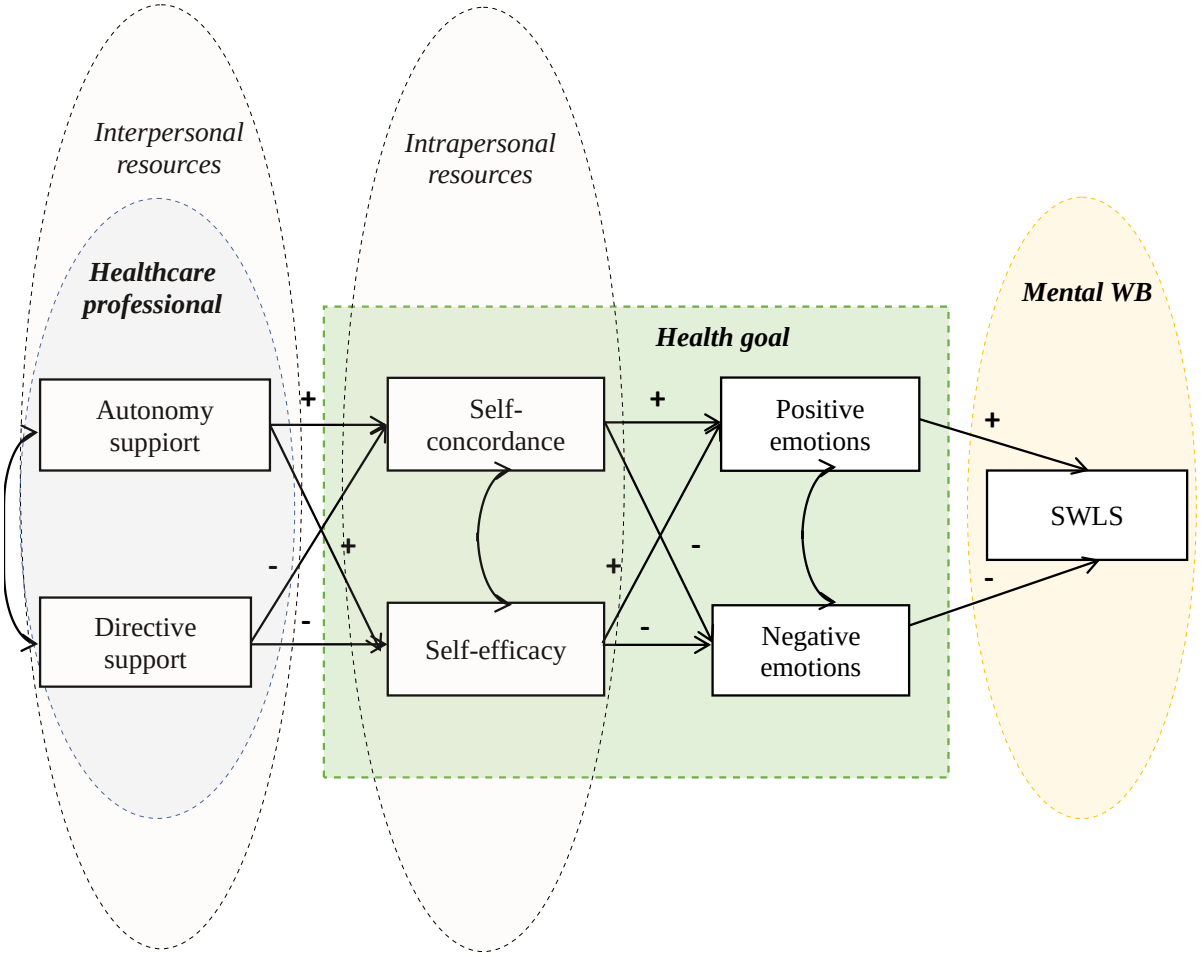

Figure 6. Study II - Model summary

Note. Both autonomy and directive goal support are related to the healthcare professional with whom the patient is in contact. SWLS – Satisfaction With Life Scale, QoL – Quality of Life.

2. PARTICIPANTS

This was a single-center, observational, cross-sectional, questionnaire-based study conducted between November 2022 and February 2023 at the IBD Centre of the Internal Medicine Clinic in Szeged, Hungary. Participants were recruited by personal invitation, and participation was voluntary. Data collection took place during the patients' routine examinations

at the IBD center, where they completed a paper-and-pencil questionnaire.

The inclusion criteria were: (1) age 18 years or older, (2) diagnosis of IBD according to the international diagnostic criteria, and (3) written informed consent. Exclusion criteria included: (1) age under 18 years and (2) ongoing psychiatric treatment or treatment within the last year.

3. PROCEDURE

After providing written informed consent, participants completed the questionnaire, which took approximately 30-40 minutes. In the first section, sociodemographic data were collected, followed by details about the participants' disease history, treatment (including type of disease, treatment method, disease activity, year of diagnosis, surgeries, medications, and complications). In the second section, general health and life satisfaction were assessed using the Satisfaction with Life Scale (SWLS). The third section dealt with personal health goals, using the Personal Project Analysis (PPA). In this section, the following characteristics were assessed: autonomy and directive support from healthcare professionals (AS and DS), goal self-concordance (SC), goal self-efficacy (SE), and positive and negative emotions (PE and NE).

4. METHODS

The questionnaire was the same as used in Study I, consisting of the following sections:

1. IBD-SPECIFIC QUESTIONS. For the detailed descriptions, see the Methodology section of Study I.

2. HEALTH-RELATED PERSONAL STRIVINGS. Based on the experience of Study I, we have changed the procedure to make the instructions as clear and simple as possible. Thus, in this study, we have referred to health in general, rather than specifically to the health goals as in Study I. Therefore, the construct under examination remained health-related self-management, but the way the concept was measured has changed, as it was operationalized through personal *strivings* rather than health *goals.*

At the beginning of the session, they had to think about and name their personal goals again, according to the following instructions: “Please think about what activities you have done in the last month or so to improve your physical or mental health. You can list any activity that you feel relates to physical or mental health. For example, activities related to lifestyle, body weight, diet, exercise, use of various health services, interventions, tests, the coronavirus epidemic, maintaining, and improving mental health. Please name these activities in your own words. You can list more.”

Then, the examined characteristics were phrased along the following formula: "When you are taking care of your health lately…?" For example, the following question was asked about self-concordance: „Please rate how true the following statements are about your health. When you are concerned about your health now, why do you do it?" Examples from the participants’ answers are presented in Table 3. The variables assessed were measured in relation to health-related strivings, based on the criteria of:

A) SELF-CONCORDANCE (Sheldon & Elliot, 1999).

B) SELF-EFFICACY (Rózsa et al., 2003).

C) POSITIVE AND NEGATIVE EMOTIONS (Martos et al., 2013).

The more detailed description of the instructions is explained in Study I. Furthermore, we measured autonomy and directive support, which will be described in the following.

D) AUTONOMY AND DIRECTIVE SUPPORT (AS and DS) (Koestner, 2012). The questionnaire assessed the participants’ perceptions of the support from the healthcare professionals for their health-related goals. This assessment consisted of two subscales with three items each, namely: autonomy support (e.g., *“I feel that this person understands how I see things with respect to this goal”*) and directive support (e.g., *“This person repeatedly reminds me of this goal”*). The responses were scored on a seven-point Likert-type scale ranging

from 1 (not at all true) to 7 (very true). The internal consistency of the items for autonomy support demonstrated a Cronbach's α of 0.878, while that for directive support included a Cronbach's α of 0.910.

Category	Examples
Diet and healthy eating	– *Balanced diet* – *Eating healthy* – *Following a diet*
Meditation	– *I meditate* – *Contemplative retreat (30 min/day)* – *Meditation for mental health*
Medical Consultation	– *Consulting with a doctor* – *Hospital-provided health counseling* – *Bone density test*
Psychological Health	– *Visiting a psychologist* – *Relaxation* – *Avoiding stress*
Spirituality	– *Studying the Bible* – *Meditation* – *Relaxation*
Physical activity	– *Working out* – *Cycling* – *Starting sports*

Table 3. Examples from the participants' health-related personal strivings

3. SATISFACTION WITH LIFE SCALE (SWLS, Diener et al., 1985; Martos et al., 2014). A total of five items were employed to measure the patients' satisfaction with life (e.g., *"In most respects, my life is almost ideal"*). The responses were based on a five-point Likert scale, ranging from 1 (I totally agree) to 5 (I do not agree at all). The internal consistency of the items demonstrated a Cronbach's α of 0.837.

5. RESULTS

5. 1. DESCRIPTIVE STATISTICS

A total of 377 adult patients with IBD responded to the cross-sectional questionnaire study, of whom 241 patients (64.4%) had Crohn's disease, and 133 patients (35.6%) had ulcerative colitis. In addition, 44.3% were male, the average age was 41.8 ± 12.1 years, and the average disease duration was 14.7 ± 9.34 years. In terms of disease status, 289 patients were in remission (77.9 %) and 82 patients were in relapse (22.1 %) at the time of data collection. Detailed descriptions of the demographic characteristics are presented in Table 4. Data from complete respondents were analyzed.

Sociodemographic characteristics	**N**	**Valid percentage %**
Gender:		
Male	167	44.3
Female	210	55.7
Education:		
Elementary	12	4.1
High school	272	91.9
College or university studies	113	4.4
Marital status:		
Single	67	17.8
In relationship	310	82.2
Economic activity:		
Active	286	77.1
Inactive	72	19.4
Student	13	3.5
Disease type:		
CD	241	61.6

UC	133	34.0
US	5	1.3
Disease activity:		
Remission	289	77.9
Relapse	82	22.1
Intestinal complication:		
Stenosis	137	56.2
Fistula	107	43.9
Operation		
Yes	159	42.2
No	218	57.8
Hospitalization within 1 year:		
Yes	76	20.2
No	301	79.8

Table 4. Demographic factors of IBD patients (N = 377)

Note. IBD – Inflammatory bowel disease.

5. 2. BIVARIATE ASSOCIATIONS

Since the sample size was large ($N = 370$), according to the central limit theory, we applied normal distribution and conducted parametric tests. To test the hypotheses, we ran a series of bivariate Pearson correlations for the study variables. The results of the correlation analyses and the average scores of the questionnaires are summarized in Table 5. Regarding autonomy support, it is significantly and positively linked to self-concordance, self-efficacy, positive emotions, and satisfaction with life, whereas it is negatively linked to negative emotions. As for directive support, it is only significantly and positively linked to self-efficacy. Meanwhile, the scores in the remission group significantly differ from those in the relapse group. Specifically, the scores for self-concordance, self-efficacy, and satisfaction with life are significantly higher in the remission group, whereas the levels of negative emotions are

significantly lower in this group.

Variable		Disease activity												
		Remission		Relapse		T-test								
		M	*SD*	*M*	*SD*	*p*	Range	1	2	3	4	5	6	7
1	AS	4.37	.79	4.25	.78	.23	1-5	-						
2	DS	3.83	1.10	3.92	.99	.54	1-5	.65***	-					
3	SC	1.92	1.28	1.37	1.23	<.001	-2-4	0.7	.01	-				
4	SE	3.65	.85	3.28	.77	<.001	1-5	.23***	.14**	.235***	-			
5	PE	3.29	.96	3.08	1.02	.103	1-5	.15**	.04	.31***	.25***	-		
6	NE	1.71	.93	2.40	1.14	<.001	1-5	-.12*	-.04	-.33***	-.22***	-.11*	-	
7	SWLS	3.69	.74	3.43	.82	.007	1-5	.13*	0.7	.15**	.28***	.21***	.21***	-

Table 5. Correlation matrix and the characteristics and average scores of the questionnaires (N = 370)

Note. *p < .05, **p < .01, ***p < .001 denote significant values. $N_{remission}$ = 282, $N_{relapse}$ = 82. AS = Autonomy support, DS = Directive support, SWLS = Satisfaction with Life Scale. The values in the table are the standardized coefficients.

Predictor variable	Predicted variable	St. Estimate	*p*	*z*
AS	SC	.22	.001	3.28
DS	SC	.002	.97	.04
AS	SE	.13	.05	1.90
DS	SE	-.10	.05	-1.38
SC	PE	.25	< .001	4.96
SC	NE	-.29	< .001	-5.23
SE	PE	.26	< .001	5.19
SE	NE	-.17	< .001	-3.28
PE	SWLS	.23	< .001	3.93
NE	SWLS	-.19	< .001	-3.71

Table 6. Standardized parameter estimates of direct effects for the study model

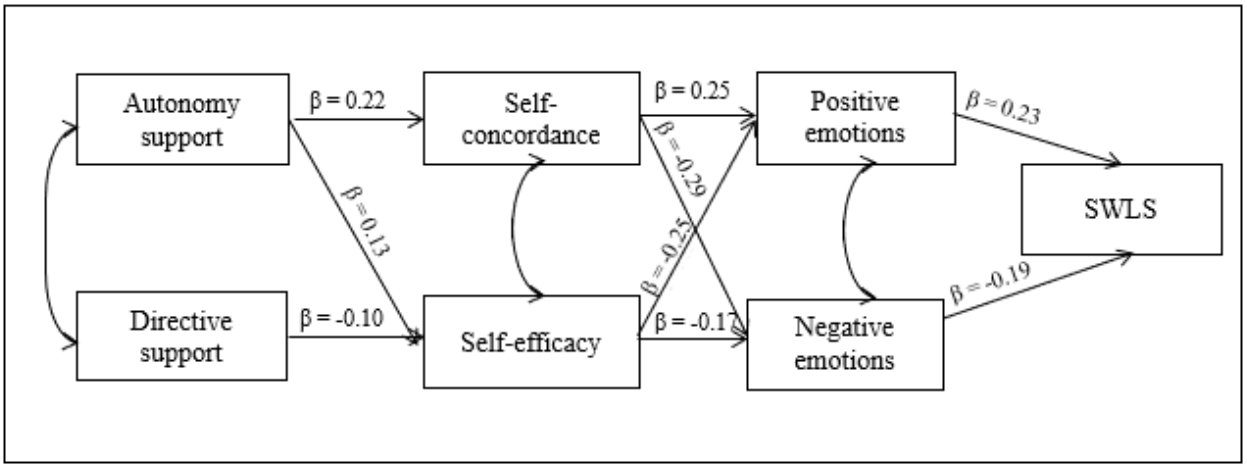

Figure 7. Path Model

Note. Only significant paths (p < .05) are included.

5. 3. PATH ANALYSIS

In this study, the fit indices for the hypothesized model indicated an appropriate fit to the data: χ^2 (8) = 18.914, p = .01, CFI = .935, TLI = .837, RMSEA = .06 (see Figure 7).

5. 4. MULTIGROUP ANALYSIS

In order to examine the possible differences between the patients in different stages of the disease (i.e., remission or relapse), we tested the multiple-group path analytic models. To examine the model invariance between the patients in remission and relapse, the following steps were performed. First, the unconstrained model (i.e., the model in which the paths are free to vary between groups) was estimated and the differences in significant pathways between the groups were analyzed: (χ2 = 41.422, df = 24, p = .01). NFI = .81, IFI = .91, CFI = .89, and RMSEA = .07, CI =.03-.12). Next, the model fit for the constrained model (i.e., the model in which the means are constrained to be equal across the groups) was assessed. In this case, the unconstrained and constrained models were compared by using the CFI values. In addition, we tested additional constrained models (means and regression coefficients). We stopped the testing with the model restricting regression coefficients when the model started to significantly deteriorate.

Overall, the fit indices for the constrained model were as follows: NFI = .68, IFI = .85, CFI = .83, and RMSEA = .07, CI =.04–.12. According to the CFI values, there is no difference between the groups according to the means, but there is a difference between the groups in regression coefficients. Thus, by separately testing the model in the remission and relapse groups, we found differences in the pathways: According to the results in Table 3, autonomy and directive support only predict self-concordance among the patients in relapse, while self-efficacy and self-concordance only significantly predict negative emotions among the patients in remission. Moreover, positive emotions only significantly predict satisfaction with life in the remission group. Results of the multiple-group analysis between IBD patients in remission and relapse are presented in Table 7. The standardized estimates for the pathways in the remission and relapse groups are presented in Table 8.

Model	$\chi 2$	df	$\chi 2$/df	p	CFI (ΔCFI)
M0 (unconstrained)	41.422	24	1.73	.01	.89
M1 (Means)	41.422	24	1.73	.01	.89 (0)
M2 (Means and regression)	70.387	44	1.60	.007	.83 (.07)

Table 7. Results of the multiple-group analysis between IBD patients in remission and relapse

Predictor variable	Predicted variable	Disease remission		Disease relapse	
		Standardized estimate	p	Standardized estimate	p
AS	SC	.03	.73	.48	.002
DS	SC	-.004	.96	-.47	.002
AS	SE	.18	.02	.35	.02
DS	SE	-.004	.96	-.05	.75
SC	PE	.27	< .001	.28	.009
SC	NE	-.28	< .001	-.09	.45
SE	PE	.21	< .001	.35	< .001
SE	NE	-.12	.04	-.20	.09
PE	SWLS	.23	.006	.10	.35
NE	SWLS	-.10	.12	-.40	< .001

Table 8. Standardized estimates for defined pathways in the remission and relapse group.

6. DISCUSSION

Building on the results of Study I, in Study II, I investigated the influence of autonomy and directive support from healthcare professionals on self-concordance, taking into account the disease activity. According to the results, healthcare professionals' autonomy-supportive

behaviors positively predict both self-concordance and self-efficacy in pursuing health goals. Directive supportive behavior from the healthcare professional is not associated with self-concordance and predicts lower self-efficacy in the active phase of the disease. Emotions play a mediating role between self-concordance, self-efficacy, and life satisfaction, although these effects vary according to disease activity.

The first aim of the study was to investigate the role of two types of social support: Autonomy and directive support, received by health professionals during health-related activities. Although the importance of social support in improving the self-management of people with chronic diseases (DiMatteo, 2004; Gariepy et al., 2016; Katz et al., 2016), including IBD, has been demonstrated by previous research, there is a notable gap in the literature regarding the study of autonomy supportive type of social support especially for IBD patients, with Dasharathy and her colleagues (2022) being an exception. In the study, autonomy support was found to significantly and positively predict both self-concordance and self-efficacy in the pursuit of health goals in the total IBD sample.

When disease activity was examined separately for remission and relapse groups, significant differences were found, suggesting that disease activity influences the relevance of autonomy support in self-management. In particular, with increasing disease activity, autonomy support acts as a significant positive resource and predicts higher self-concordance during relapse. Conversely, directive support from healthcare professionals tends to have a negative effect during relapse and predicts lower self-concordance. In addition, autonomous support had a positive effect on self-efficacy in both the relapse and remission groups, whereas directive support had no significant effect on self-efficacy in either group.

These results highlight the critical role of healthcare professionals in supporting patients with IBD to change their health behaviors. Acknowledging patients' autonomy and personal will and accepting negative emotions can increase intrinsic motivation and boost patients' confidence, which can contribute to successful behavior change. In contrast, offering instructions and explicit recommendations can hinder it (Koestner et al., 2012). The experience of pursuing health goals is shaped by disease symptoms, and the support of healthcare professionals in this process is particularly important in the relapse phase of the disease to

maintain self-concordance.

The second aim of my study was to investigate the relationship between self-concordance, self-efficacy, and the emotional experience of pursuing health goals. Previous research supports the role of self-determined motivation in behavior change (Knittle et al., 2015; Slovinec D'Angelo et al., 2014), but this was the first study to focus specifically on the motivational aspects of self-management in IBD patients. Goal self-concordance reflects autonomous motivation and indicates the extent to which health goals are intrinsically integrated and consistent with personal identity and values (Sheldon & Elliot, 1999; Wan et al., 2021). The path analysis confirmed that self-concordance enhances positive emotions in the pursuit of health goals in both the remission and relapse phases of the disease. The degree of self-concordance reflects how well illness-related self-management activities are integrated into the self and internalized as intrinsic values (Sheldon and Elliot, 1998, 1999; Judge et al., 2005).

Consistent with the *internal resource mobilization hypothesis* from Study I, a recent study of Peters and Brown (2022) showed that illness acceptance activates psychological resources and contributes to more effective illness management. Across the IBD sample, self-concordance was a predictor of lower negative emotions. However, the association with negative emotions was only significant during periods of remission, suggesting that self-concordance acts as a protective factor against negative emotions during goal pursuit in remission. During relapse, this protective effect appeared to diminish, possibly because patients focus more on coping with physical symptoms, which can divert attention away from motivation for health goals.

Self-efficacy was also found to be a predictor of more positive and fewer negative emotions in both the remission and relapse groups. Self-efficacy has a significant impact on the initiation and performance of health behaviors related to disease management and therefore plays a critical role in predicting health outcomes in people with a chronic disease such as IBD (Bandura, 1977; Dur et al., 2014). The positive influence of self-efficacy on the pursuit of health goals is consistent with previous research linking self-efficacy to self-esteem, health-related quality of life, and improved psychological well-being in IBD patients (Izaguirre et al., 2017). These findings support the conclusions of Study I, as self-concordance and self-efficacy are two

independent, but joint psychological resources that are valuable to examine together.

The third aim of the study was to investigate the relationship between emotional experiences during the pursuit of health goals and overall life satisfaction, specifically whether emotions mediate between self-concordance, self-efficacy, and life satisfaction. The path analysis showed that life satisfaction in the IBD sample was influenced by both positive and negative emotions. However, when disease activity was taken into account, positive emotions predicted higher life satisfaction only in the remission group, whereas negative emotions predicted lower life satisfaction only in the relapse group. During periods of remission, positive emotions significantly increase life satisfaction and can contribute to maintaining a good emotional state. In contrast, those affected are often more vulnerable to negative emotions during a relapse. As the COR theory (Hobfoll et al., 1989) assumes, psychological resources protect individuals from stress and help them manage behavior change. The escalation of physical symptoms during relapse may limit the ability to protect and mobilize these resources. It is important to address and mitigate negative emotions during relapse, as they contribute to the improvement of different mood and anxiety disorders and may also play a role in the persistence of inflammation.

7. CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

The overall aim of the study was to investigate how autonomy and directive support from healthcare professionals predict self-concordance during the pursuit of health goals, and to take into account self-efficacy, emotional experiences, and disease activity. The results of the study suggest that healthcare professionals should focus on supporting patients' autonomy and providing personalized interventions for patients, as these behaviors contribute to more self-concordant strivings. Disease activity is a key factor in the self-management of IBD patients, as it strongly influences emotional patterns of health goal pursuit. During relapse, patients are more receptive to the need for autonomy support from the professionals, so this attitude is particularly important during the flare-up of symptoms. This study was the first to combine a resource-based approach with the motivational and emotional dimensions of self-

management, providing a new perspective on the factors that influence coping in patients with chronic diseases.

8. LIMITATIONS OF STUDY I AND II

Studies I and II have several limitations. First, due to the cross-sectional design, causal relationships cannot be established, so future longitudinal studies are needed to better understand causal effects. Second, the small sample size of Study I limits generalizability and may affect the accuracy of the model parameters. Larger studies would increase statistical power. In the second study, I examined a linear model that focused on the mediational role of self-concordance between autonomy support and positive emotions, however, it is possible that autonomy support also influences positive emotions and life satisfaction through direct pathways beyond emotional experiences and self-concordance. In addition, the reliability of disease status in Study II may have been affected by relying on self-report rather than medical records.

VII. STUDY III

1. RESEARCH OVERVIEW

The sample used in Study III is a subsample of Study II, with additional data from a second assessment in 2023-24, involving 40 patients in T1-T2-T3, respectively. While in Study II a cross-sectional design was used to examine the data in Study III a longitudinal approach was chosen. In Study III, results were analyzed over three data collection points (including baseline data). This design enabled the deeper investigation of potential causal relationships and complemented the correlative results observed in the earlier study.

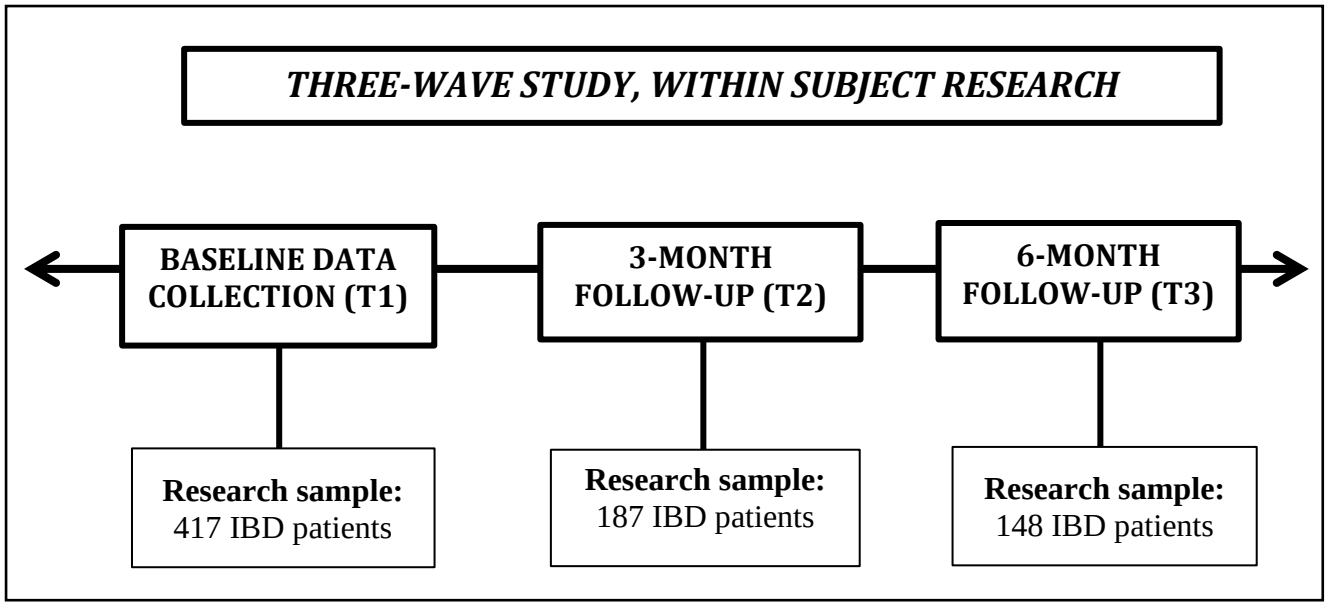

Figure 8. Research design of Study III

2. AIMS

To account for the relatively small sample size and to increase the reliability of the models, in this study, I focused specifically on the relationship between self-concordance, emotions, and goal progress. In order to explore possible causal relationships more clearly, self-efficacy was excluded from the model for this study.

Building on the longitudinal setting, the prior objective of Study III was to investigate the interplay between self-concordance, positive emotions, and goal progress over time. Diverging from prior research (Studies I and II) that predominantly examined mental health outcomes (trait anxiety and life satisfaction), in this study, perceived goal progress was considered as an outcome variable. The guiding principle of this was to focus closely on health-related self-management of IBD patients. The hypotheses were structured around the longitudinal examination of the following five mechanisms:

H1. Individuals with IBD who report higher levels of self-concordance at Time 1 or Time 2 will experience more positive and less negative emotions at Time 3 (based on Study I and II).

H2. More positive emotions and fewer negative emotions at Time 1 or Time 2 will predict greater self-concordance at Time 3.

H3. More positive emotions and fewer negative emotions at Time 1 will predict better goal progress at Time 2 and Time 3.

H4. Better goal progress at Time 1 or Time 2 will predict more positive and fewer negative emotions at Time 2 and Time 3.

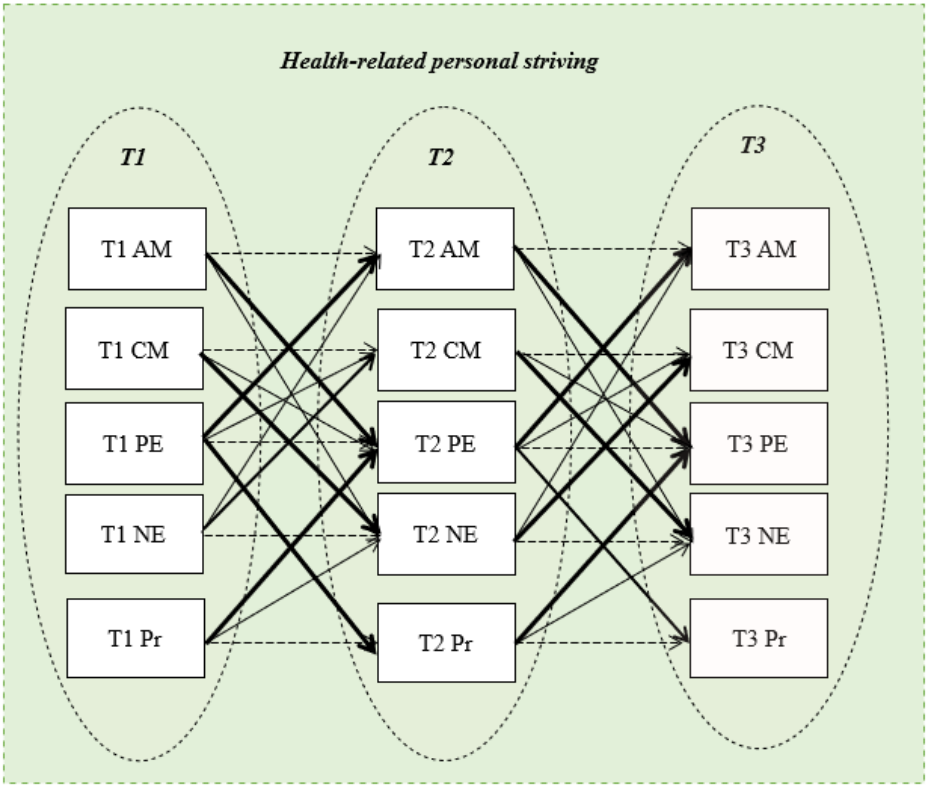

Figure 9. Study III - Model summary

Note. AM = autonomous motivation, CM = controlled motivation, PE = positive emotions, NE = negative emotions, Pr = goal progress. Solid lines represent the hypothesized paths, bold lines indicate positive correlations, dashed lines indicate auto-regressions.

3. PARTICIPANTS

The sample for the first T1 data collection consisted of 377 IBD patients whose descriptive statistics were described in detail in Study II. In addition, a supplementary data collection was conducted, where 40 additional IBD patients were included in the follow-up study. For descriptive statistics for the T1-T2-T3 follow-up samples, see Table 9. The final baseline (T1) sample consisted of 417 IBD patients, of whom 187 individuals completed the 3-month follow-up (T2) questionnaire during the second data collection, and 148 patients were followed up six months later at the third data collection (T3) (see Figure 8.)

4. PROCEDURE

This part of the research was a longitudinal, questionnaire-based study. Participants during the baseline data collection were recruited in two waves. For the greater sample, T1 data collection was conducted between November 2022 – February 2023, T2 data collection took place between March 2022 – April 2023, and T3 data were collected between June 2023 – July 2023. For the additional sample, data collection took part between December 2023 and July 2024. The inclusion criteria were already demonstrated in Study II. Participants who agreed to participate in the second and third data collections received the T2 and T3 questionnaires by e-mail.

5. METHODS

In the Baseline study, I employed the same set of questionnaires demonstrated in the Study II Methods section. For the T2 and T3 data collections, participants completed a shortened version of the questionnaire used in the T1 data collection. The questionnaire used in T2 and T3 was the same as that used in T1 (Study I), consisting of the following sections:

1. IBD-SPECIFIC QUESTIONS. For the detailed description, see the Methodology section of Study I.

2. HEALTH-RELATED PERSONAL STRIVINGS. For more details, see Study II. Strivings were evaluated by the responders based on the criteria of:

A) SELF-CONCORDANCE (Sheldon & Elliot, 1999). In this study, to get a more precise picture of the two elements of self-concordance, I analyzed autonomous motivation (AM) and controlled motivation (CM) separately. The motivation types were measured by summing the scores of 2-2 items of the previously used autonomous and controlled motivation.

B) POSITIVE AND NEGATIVE EMOTIONS (Martos et al., 2013). For the detailed description, see the Methodology section of previous studies.

C) GOAL PROGRESS (Pr) (Koestner et al., 2002; Csuka et al., 2021). To assess the perceived progress of health-related personal strivings, we used a four-item scale. The respondents rated the statements on a 7-point Likert scale (1 = very rarely, 7 = very often). For example: "I feel that I made good progress in this goal in recent weeks." The measure presented a Cronbach's alpha of 0.910.

6. RESULTS

6. 1. DESCRIPTIVE STATISTICS

A total of 417 adult patients with IBD responded to the longitudinal questionnaire study, of whom 255 patients (63%) had Crohn's disease, 139 patients (34.3%) had ulcerative colitis, and 11 patients (2.7%) had unspecified type of IBD. 43.6% were male, the average age was 43.5 ± 12 years, and the average disease duration was 15.6 ± 9.28 years. In terms of disease status, 304 patients were in remission (77.7 %) and 87 patients were in relapse (22.3 %) at the time of data collection. Detailed descriptions of the demographic characteristics are presented in Table 9. Descriptive statistics of the observed variables at different time points are presented in Table 10. Latent factor scores of the construct variables on the three data points were estimated using a structural equation modelling procedure (see in Annex 1).

Socio-demographic characteristic		T1 – N (valid percent)	T2 – N (valid percent)	T3 – N (valid percent)
Gender	Male	182 (43)	79 (42.7)	62 (44.3)
	Female	235 (56.4)	106 (57.3)	78 (55.7)
Education	Elementary	12 (2.9)	2 (1.1)	1 (0.7)
	High school	280 (67.1)	123 (66.5)	86 (61.4)
	College or university studies	125 (30)	60 (32.4)	53 (37.9)
Marital status	Single	73 (18.1)	37 (20.6)	26 (19.1)
	In relationship	330 (81.9)	143 (79.4)	110 (80.9)
Economic activity	Active (part-time or full-time job)	303 (73.2)	142 (76.8)	104 (74.3)
	Part-time or full-time job and disability pension	6 (1.4)	4 (2.2)	3 (2.1)
	Inactive	92 (22.2)	33 (17.8)	30 (21.4)
	Student	13 (3.1)	6 (3.2)	3 (2.1)
Disease type	CD (Crohn's disease)	255 (63)	115 (64.2)	96 (70.1)
	UC (Ulcerative colitis)	139 (34.3)	59 (33)	36 (26.3)
	US (Unspecified)	11 (2.7)	5 (2.8)	5 (3.6)
Disease activity	Remission	304 (77.7)	139 (81.3)	107 (82.9)
	Relapse	87 (22.3)	32 (18.7)	22 (17.1)
Intestinal complication (Stenosis)	Yes	144 (38.6)	69 (41.6)	60 (46.9)
	No	229 (61.4)	97 (58.4)	68 (53.1)
Intestinal complication (Fistula)	Yes	112 (30.4)	69 (41.6)	43 (65.3)
	No	256 (69.6)	97 (58.4)	81 (65.3)
Operation	Yes	171 (41.7)	86 (47)	77 (44.2)
	No	239 (58.3)	97 (53)	61 (55.8)

Table 9. Descriptive statistics of the T1-T2-T3 follow-up sample

6. 2. PATH ANALYSES

The hypothetical model shown in Figure 9 was tested in a cross-lagged path analysis model, to investigate the relationships between positive and negative emotions, autonomous and controlled motivation, and progress were examined at T1-T2-T3 data points. The

significant paths in the model are presented in Table 11. The fit indices for this model indicated an appropriate fit to the data: χ^2 (33) = 108, $p < 0.001$, CFI = .95, TLI = .84, RMSEA = .12 (see Figure 10). According to the results, autonomous motivation at T1 positively predicts more positive and less negative emotions at T2. Positive emotions at T1 predict better goal progress and lower controlled motivation at T2. T2 goal progress in turn predicts more positive emotions at T3. Autonomous motivation at T2 predict more positive emotions at T3.

	Predictor variable	**Predicted variable**	**St. Estimate**	***p***	***z***
Cross-lagged paths	T1 AM	T2 PE	.33	.007	2.68
	T1 AM	T2 NE	-.26	.04	-2.04
	T1 PE	T2 Pr	.24	.008	2.67
	T2 PE	T3 CM	-.50	.05	-1.98
	T2 AM	T3 PE	.35	.03	2.14
	T2 Pr	T3 PE	.20	<.001	3.63
Auto-regressive paths	T1 PE	T2 PE	.43	<.001	3.45
	T1 AM	T2 AM	.63	<.001	5.72
	T1 CM	T2 CM	.39	.02	2.42
	T1 NE	T2 NE	.44	.004	2.91
	T2 AM	T3 AM	.63	<.001	3.47
	T2 CM	T3 CM	.77	.004	2.91
	T2 NE	T3 NE	.54	.006	2.77
	T1 Pr	T2 Pr	.34	<.001	3.96
	T2 Pr	T3 Pr	.60	<.001	3.63

Table 11.

Note. The values in the table are the standardized coefficients. N = 124

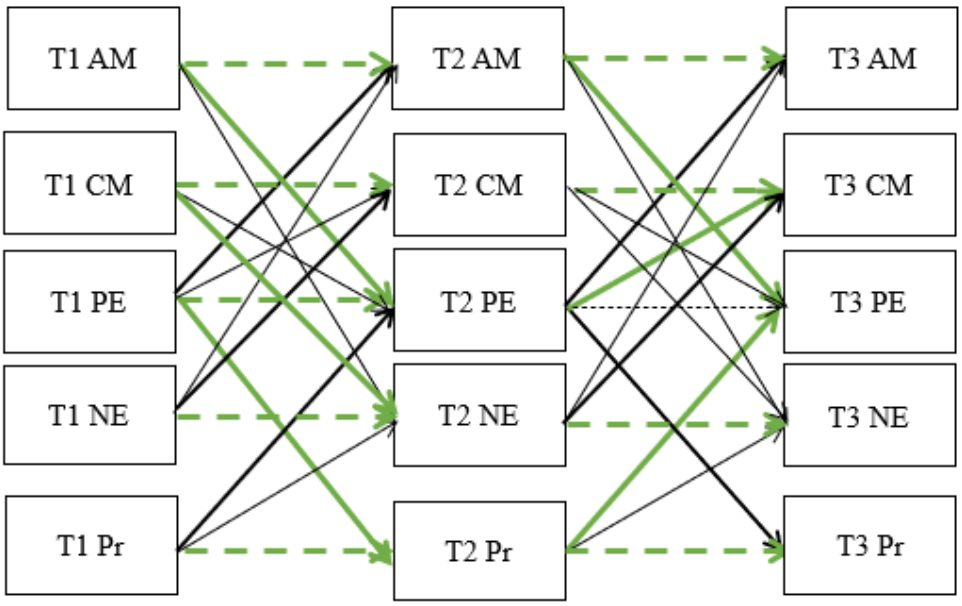

Figure 10. Path Model

Note. Significant paths ($p < .05$) are included with green colour. Bold green lines indicate significant cross-lagged paths ($p < .05$), dashed green lines indicate significant auto-regressive paths.

7. DISCUSSION

Building on the longitudinal research design, the main aim of Study III was to investigate the bidirectional relationship between self-concordance and emotions and to explore how emotions in turn influence the progress of health-related personal strivings over time. The results show that autonomous motivation promotes positive emotions and reduces negative emotions over time. Furthermore, there is a potential circular relationship between positive emotions and goal progress, as positive emotions promote goal progress, which in turn reinforces positive emotional experiences.

Study II showed in a cross-sectional design that self-concordance predicts more positive emotions and serves as an internal psychological resource that facilitates positive experiences. Based on the longitudinal results, higher autonomous motivation at Time 1 predicts more positive and fewer negative emotions at Time 2, and autonomous motivation at Time 2 predicts

more positive emotions at Time 3. In line with the principles of the self-concordance model (Sheldon & Elliot, 1998; Ryan & Deci, 2000), autonomous motivation can promote positive emotions and reduce negative emotions over time, whereas controlled motivation has no such effect. Based on this finding, when examining self-concordance's role in IBD self-management, it provides valuable information if we distinguish between autonomous and controlled motivation rather than merging them.

I also wanted to test the potential feedback function of positive emotions in self-concordance. This was a novelty compared to the two previous studies investigating the effects of emotions on motivation. The results showed that positive emotions at Time 2 predicted lower controlled motivation at Time 3. This finding is in line with the Broaden-and-Build theory of emotions (Frederickson, 2001), according to which perceiving goal-related activities as pleasurable and rewarding increases autonomous motivation. The results of the study confirmed that positive emotional experiences may promote successful self-management not only by increasing autonomously regulated behaviors but also by decreasing controlled self-regulation.

The third and fourth hypotheses focused on the relationship between emotions and goal progress over time. According to the results, more positive emotions at Time 1 lead to better goal progress at Time 2, which in turn predicts more positive emotions at Time 3. When individuals experience a sense of fulfillment and competence when they see progress toward their goals (Ryan & Deci, 2000). Achieving personally meaningful goals contributes to the satisfaction of the basic psychological needs of competence, autonomy, and relatedness. Achieving goals leads to inner rewards and thus to positive emotions such as pride and satisfaction. This emotional response can further strengthen the ongoing commitment to achieving goals (Ryan & Deci, 2000). Positive emotions such as joy, enthusiasm, and hope expand a person's thinking and behavior, helping them to become more open to possibilities, more creative in problem-solving, and more committed to achieving their goals (Fredrickson, 2001). Individuals who feel happier and more positive are therefore more likely to invest more effort and persistence in their goals, leading to greater progress over time.

8. CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

The results of Study III highlight the different emotional patterns of autonomous and controlled motivation. Furthermore, based on the reciprocal relationship between goal progress and positive emotions, the research underscores the dynamic nature of self-management. Positive emotions and goal progress are important psychological resources, in addition to self-concordance, which can be mobilized to improve the effectiveness of IBD self-management. The clinical relevance of the results for the self-management of IBD is that promoting positive emotional experiences during self-management activities is crucial, as they can improve patients' ability to achieve their health goals. When people associate the pursuit of a goal with positive emotions, they are more likely to stay engaged and succeed. In turn, experiencing progress increases well-being and creates a self-confirming cycle of motivation and positive emotions.

9. LIMITATIONS OF STUDY III

One of the main limitations of the third longitudinal study was the relatively high number of drop-outs among the participants. We tried to prevent this by providing a detailed briefing at the T1 data collection and multiple reminders during the follow-up. This challenge can be partly attributed to the fact that patients of the Gastroenterology Ambulance of the Internal Medicine Clinic in Szeged are often involved in research studies, which could reduce their motivation to participate. Due to the relatively small number of responders in the follow-up sample, the number of variables included in the path analysis had to be limited; for example, self-efficacy in the two previous studies could not be included in the analyses. Another limitation is that the changes in disease activity were not taken into account in the longitudinal analyses. Finally, in line with previous research, the calculation of the self-concordance index was challenging for the samples. The results suggest that the use of autonomous motivation items rather than the autonomous-controlled motivation composite index may be appropriate for future self-concordance-based studies.

VIII. GENERAL CONCLUSIONS

The study emphasizes the role of self-concordance as an important psychological resource in the self-management of people with inflammatory bowel disease. The results suggest that patients whose health-related goals align with their intrinsic values and interests experience more positive emotions, which in turn facilitates sustained goal pursuit. This bidirectional relationship between self-concordance and positive emotions contributes to a reinforcing cycle that increases motivation and supports long-term maintenance of behavior change.

In addition, self-concordance is closely related to self-efficacy and represents a complementary psychological resource that contributes to effective self-management. The emotions experienced during the self-management process not only influence short-term goal progress but also have a significant impact on patients' overall psychological well-being over time. These findings emphasize the need to consider both motivational and emotional factors in chronic disease management.

An autonomy-supportive attitude of the environment, characterized by recognition of personal will, acceptance of negative emotions, and avoidance of controlling communication, is essential for promoting self-concordant goal-striving. This is particularly important in times of relapse of the disease, when maintaining psychological resources is crucial for self-management and the prevention of mental health problems.

The studies presented in the thesis contribute to a deeper understanding of the mechanisms by which self-concordance, together with positive emotions and self-efficacy, facilitates adaptive self-regulation and enhances overall well-being in people with IBD. These findings support the integration of autonomy-supportive approaches into clinical practice and provide a theoretical basis for future interventions aimed at promoting successful behavior change and psychological well-being in people with chronic diseases.

IX. IMPLICATIONS FOR PRACTICE: AN INTERVENTION METHOD

Based on the findings of the doctoral research, I started to develop a projective goal

presentation method that would allow professionals to measure the degree of self-concordance qualitatively and also to use it as an intervention in clinical practice. The method and the questions asked during the interview can be used to facilitate the internalization of personal health goals. By employing this technique, professionals can help patients to become aware of what is making it difficult to achieve their health goals, and to have more positive emotional experiences about them. The guideline for the *"Internal map of my health-related personal goals"* intervention method is presented in the Appendices under Annex 2.

X. ACKNOWLEDGEMENTS

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I thank my father for giving me a model to always do my best, and to always be kind and loving to people, as he does.

I thank my mother for doing my laundry and for tidying my room when I didn't have time for it, and for always being available for a quick phone call.

I thank my best friend, Erna Krajinovic, for teaching me what a true friend is like, for better or for worse.

Finally, I thank God for loving and guiding me through this long journey to get here.

XI. APPENDICES

Annex 1: Latent factor score analysis

First we used the whole sample in each time point with the maximally available data from the actual respondents. Number of participants in the subsequent time points were 411 for T1 data collection, with 293 comlete cases (without missing values - in parentheses), 190 for T1 data collection, with 133 complete cases, and 146 for T3 data collection, with 106 complete cases. We did data imputation wherever it was necessary

Then, we computed a measurement model, for the estimation of the latent variables ('true scores') of the constructs, where we used the data from the three time points together. We tested for measurement invariance of the model across the time points, and when we reached the best fitting model, we saved the estimated scores for the latent variables. Gradually constrained models for testing measurement invariance are presented in Table 12.

According to the calculations, the invariance of the loadings and intercepts were confirmed. In Study III in the cross-lagged path analysis we used the estimated latent score variables in the three time points (i.e., 3*5 variables) as initial variables.

		Chi^2	df	Delta ch^2	Delta df	p (delta)	CFI	TLI	RMSEA
1	Non-constrained	495	201				.94	.92	.07
2	Constraining loadings	516	219	21	18	.279	.94	.94	.07
3	Constraining intercepts	530	237	35	36	.516	.94	.94	.07
4	Constraining residuals	622	265	127	64	<.001	.93	.94	.07
5	Constraining latent variances	642	295	147	94	<.001	.93	.94	.07
6	Constraining means	662	305	167	104	<.001	.93	.94	.07
7	Constraining residual covariances	662	305	167	104	<.001	.93	.94	.07

8	Constraining latent covariances	662	305	167	104	<.001	.93	.94	.07

Annex 2: The ”Internal map of my health-related personal goals” intervention technique

Instruction:

1. A LIST OF MY PERSONAL HEALTH-RELATED GOALS

Write down your personal health goals in the table and rate them on a scale of 1 to 5, according to how much energy and attention you are currently putting into achieving them:

1 = I put very little energy into it

2 = I spend rather little time on it

3 = I devote a moderate amount of time and effort to it

4 = I devote a lot of attention and energy to it

5 = I devote a great deal of energy to it, it is one of my main priorities

Write the goals in the table in the order in which you feel they are most important at number 1., with the one you feel is least important at the top and the one you feel is least important at the bottom at number 5.

Number	Health goals	How much energy do you put into it? 1 = I put very little energy into it . . . 5 = I put a lot of energy into it
1.		
2.		
3.		

4.		
5.		

2. THE VISUAL REPRESENTATION OF PERSONAL HEALTH GOALS

(Internal map of my health goals)

On the next page you will find a simple drawing of two concentric circles.
Imagine that the two circles together represent your inner world. The part outside the outer circle is the world outside of you.
The inner circle is your true self.
You can feel that the goals that come from here are really in line with your inner values, and that what you do because of this is really your own, you can be very much in line with it.
From the outer circle come all goals that are your own but come from outside your true self. This includes goals that you pursue primarily because others, e.g. your partner, your friends or your parents, expect you to do so - or because you would feel guilty or bad if you did not.

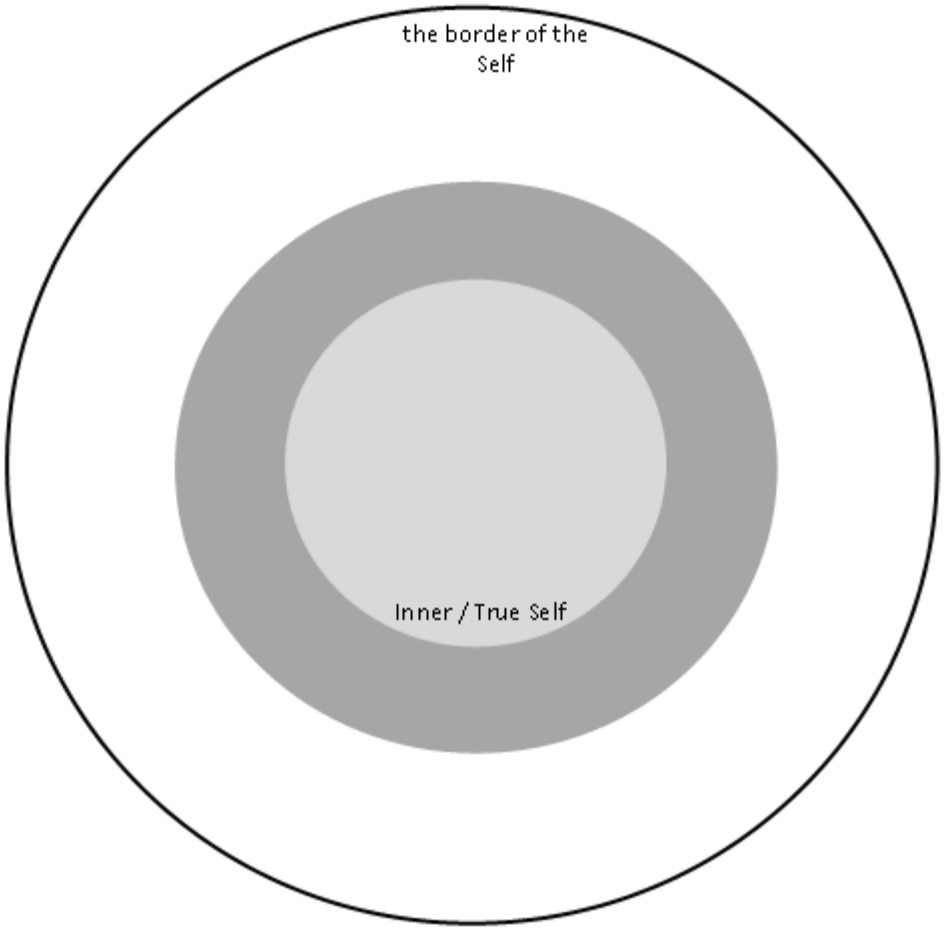
For example, if you only follow your diet because your doctor expect you to, it probably makes sense to put it on the outer circle. If you follow your diet mainly because you know it's good for your disease, and beacuse you would also like to comply with your doctor's recommendations place it between the outer and inner circle. If you feel ownership of the diet, you can identify with the fact that it is important for your health, and you experience joy and satisfaction when you work on this goal, place it in the inner circle

Place your goals one by one, marked with a number - depending on the order in which you have listed them in the table above - within the large or small circle, according to how much you feel they are yours.

In the top circle, write the goals that are entirely intrinsically motivated. In the outer

circle, those that he does more because of external expectations. And in the circles, those in which both factors are present.

If you wish, you can also highlight each goal with a colour or a symbol (e.g.  *strongly intrinsically motivated,*  *mixed motivation,*  *more of an external expectation).*


the border of the
Self
Inner / True Self

3. PERSONAL REFLECTION

- What did you observe? What type of health goal do you have more of? Internally motivated or influenced by external expectations?

- Do you have any health goals that you would like to move from one circle to another?

- Do you have a health goal that consumes too much energy but is not important enough?

- Do you have a health goal that you would like to put on the back burner or let go of altogether?

- Which of your health goals would need more attention and resources to really move forward?

- Are there any health goals that are the result of external expectations that you would like to let go of?

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