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# **Exploring the Effects of an Acceptance and Commitment Therapy -based Intervention Course to University Students' Well-being**

The summarising report of  
article-based master's theses

University of Helsinki  
Faculty of Educational Sciences  
Master's Programme in Education  
General and Adult Education  
Master's thesis (article-based), 30 cr  
Education  
April 2023  
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Tiedekunta - Fakultet - Faculty Faculty of Educational Sciences		
Tekijä - Författare - Author Ronja Ruuska		
Title Exploring the benefits of an acceptance and commitment therapy -based intervention course to university students' well-being		
Työn nimi - Arbetets titel Hyväksymis- ja omistautumisterapiaan pohjautuvan interventiokurssin hyödyt yliopisto-opiskelijoiden hyvinvoinnille		
Oppiaine - Läroämne - Subject Education		
Työn laji/ Ohjaaja - Arbetets art/Handledare - Level/Supervisor Master's thesis/Henna Asikainen & Nina Katajavuori	Aika - Datum - Month and year April 2023	Sivumäärä - Sidoantal - Number of pages 20 pages + 31 pages of appendices
Tiivistelmä - Referat - Abstract <p>This master's thesis includes two sections: the present summarizing report and the article manuscript. The purpose of the study is to explore the benefits of an acceptance and commitment therapy (ACT)-based intervention course to university students' well-being, using both quantitative and qualitative methods. The COVID-19 pandemic has decreased university students' well-being and increased their risk of burnout. The declined state of student well-being calls for measures in exploring ways of promoting student well-being and preventing study-related burnout. The intervention course aimed to increase students' psychological flexibility and organized studying skills, as means to positively impact their well-being and studying.</p> <p>A total of 189 participated in the study in the spring of 2021. Students' risk of burnout was measured pre- and post-intervention, to statistically define whether students experienced that the course impacted their risk of burnout. To explore the course benefits in depth, students' written reflective reports post-intervention were analyzed using abductive content analysis. The results were statistically compared according to the risk of burnout group assigned pre-intervention.</p> <p>The results showed that the intervention course led to a positive change in students' risk of burnout. The content analysis revealed seven main categories of benefits of the course: 1. improved general well-being, 2. improved self-knowledge, 3. increased psychological flexibility, 4. improved study practices and study motivation, 5. increased self-compassion, 6. gained peer-support, and 7. improved organized studying. These benefits were experienced by students regardless of their initial risk of burnout. The study highlights the potential of ACT-based intervention courses in improving the well-being and studying skills of university students, suggesting a need for further research on burnout prevention through such measures. The prospective publication channel for the research article manuscript is Research in Higher Education by Springer.</p>		
Keywords ACT, burnout, higher education, mixed-methods, psychological flexibility, well-being		
Avainsanat - Nyckelord ACT, mixed-methods, korkeakoulutus, opiskelu-uupumus, psykologinen joustavuus		
Säilytyspaikka - Förvaringsställe - Where deposited Helsinki University Library – Helda/E-thesis (theses)		
Muita tietoja - Övriga uppgifter - Additional information		

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# 1 Introduction

Concerns towards student ill-being have been strongly present during recent years. In the beginning of the year 2020, most students were suddenly forced to stay home and shift to remote studying due to the COVID-19 pandemic. This resulted in declined well-being, increased risk of burnout (Salmela-Aro et al., 2022; Sarasjärvi et al., 2022), as well as loneliness and lack of interaction (Asikainen & Katajavuori, 2022; Baltá-Salvador et al., 2021; Nguyen et al., 2021), and other well-being declining symptoms and conditions, such as anxiety and depression (Elmer et al., 2020). The overall decline of well-being among higher education students calls for measures in examining ways of promoting student well-being.

An acceptance and commitment therapy (ACT) -based intervention course was carried out in the spring of 2021, which was a particularly burdensome time during the pandemic since the exceptional situation had been going on for over a year and no clear signs of the situation improving were in sight. The intervention aimed to promote students' well-being and studying by improving their psychological flexibility and skills of organized studying (Asikainen & Katajavuori, 2021).

Psychological flexibility is a promising element in supporting student well-being. Research suggests that interventions based on ACT has various benefits for students, such as improving well-being and decreasing stress and risk of burnout, (Asikainen et al., 2019; Katajavuori et al., 2021; Määttä, 2022; Rähä et al., 2021; Szarko et al., 2022) as well as improving students' performance in their studies (Asikainen et al., 2018; Hailikari et al., 2022). Further information is needed on how such interventions help students with varying levels risk of burnout prior to the course.

The present study explores how an online ACT-based intervention affects university students' experienced risk of burnout, as well as what kind of benefits the students experience during the course. Further, the study compares the results among students with varying levels of pre-intervention risk of burnout.

As the intervention course has been developed heavily based on the theories of psychological flexibility and organized studying, it is appropriate to expand and elaborate on those theoretical framings in this summarizing report. The intended publication channel for the research article is Research on Higher Education by Springer, as the

article's topic and implementation is appropriate and fitting regarding the journal's aims and scope.

## **2 Theoretical background**

This section will present the theoretical background of the present study. It concludes of the definition of well-being, the assessment of the current state of higher education students' well-being, definition of study-related burnout, as well as psychological flexibility and organized studying.

### **2.1 Well-being among higher education students**

Well-being contains many elements and dimensions that are interrelated, and it is defined in many ways. The concept of *health* is commonly associated with well-being. It is defined by the World Health Organization as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (World Health Organization, 1948, p.1). However, well-being is a much more complex and multifaceted concept, and it has contradicting definitions and traditions. Well-being can be viewed through objective measures, such as living standards, mental health, and physical health, but as importantly, through subjective well-being (Ryan & Deci, 2001). Subjective well-being is traditionally divided into hedonistic and eudaimonic traditions. The hedonistic tradition views well-being through individuals' emotions, where well-being consists of the individual's subjective happiness and pertains to the overall experience of pleasure and displeasure, including all evaluations of life's positive and negative aspects (Ryan & Deci, 2001). The eudaimonic tradition views well-being as a state where people's actions are in line with their deeply held values, and existing as the truest version of themselves, thus expressing their true human potential (Waterman, 1993; Ryff & Keyes, 1995).

The declined state of well-being among higher education students has been found to be a common and increasing issue (e.g., Auerbach et al., 2018; Asikainen et al., 2020; Salmela-Aro & Read, 2017). The COVID-19 pandemic had a large role in adding ill-being among students, as students were suddenly forced to shift into remote-studying and isolate themselves from their peers. Research shows how remote studying added problems in anxiety, depression, and stress (Elmer et al., 2020). Students also reported loneliness and lack of interaction during remote studies (Asikainen & Katajavuori, 2022; Baltá-Salvador et al., 2021). The pandemic also had its role in further increasing students' burnout symptoms (Salmela-Aro et al., 2022; Sarasjärvi et al., 2022).

## 2.2 Study-related burnout

Burnout as a phenomenon has been studied extensively especially in the work context. However, in recent years attention to the phenomenon of *study burnout* has increased, as many students experience burnout at some point of their studies (Salmela-Aro et al., 2022; Sarasjärvi et al., 2022). Research on burnout stems from the domain of human services, where Maslach Burnout Inventory (MBI) was used in the field of burnout research (Maslach & Jackson, 1981). Since the release of the MBI-general Survey (MBI-GS) by Schaufeli and colleagues (1996), where the dimensions of burnout were defined more generally, burnout research has been able to spread to broader contexts (Schaufeli et al., 2002).

In work context, burnout has been defined as a “prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by the three dimensions of *exhaustion, cynicism, and inefficacy*” (Maslach et al., 2001, p.397). In this definition, exhaustion refers to symptoms of overtaxing work, leading to feelings of strain and chronic fatigue. Cynicism in turn refers to the individual’s distal attitude towards work, as well as not seeing one’s work as meaningful or interesting. Lastly, the decreased feelings of competence and diminished performance on the job refers to the dimension of lack of professional efficacy (Schaufeli, 2002; Schaufeli et al., 1996).

In study context, burnout has been described as a syndrome of emotional exhaustion, which is caused by the high demands of studying, a cynical and detached attitude towards studies, as well as feelings of inadequacy in the study context (Salmela-Aro et al., 2009; Schaufeli et al., 2002). Study burnout is formed from three dimensions and measured based on where the student falls into in the dimension – (1) exhaustion in higher education, (2) cynicism toward the meaningfulness of studying, and (3) a sense of inadequacy as a student in higher education (Salmela-Aro, Leskinen & Nurmi, 2009; Schaufeli et al., 2002).

*Exhaustion* is defined as feelings of strain, stress, and chronic fatigue as well as perceived overtaxing study loads, and study demands. *Cynicism* in the study context refers to students’ distant attitudes and loss of interest towards studying and viewing their studying as insignificant. *Feelings of inadequacy* as a student, in turn, refer to lowered feelings of competence, successful achievement, and accomplishment (Salmela-Aro et al., 2009; Salmela-Aro & Read, 2017). Research suggests that exhaustion and cynicism are in fact independent constructs, predicting differences in feelings of inadequacy over time (Parker & Salmela Aro, 2011). This means that the

component of inadequacy is the final phase of study-related burnout (Salmela-Aro & Read, 2017).

Burnout is a serious problem in the university context. Studies show that burnout can be a predictor of depression later in life (Salmela-Aro et al., 2009; Salmela-Aro & Upadyaya, 2014) as well as dropping out (Bask & Salmela-Aro, 2012). In addition, study-related burnout is related to poor study progress (Asikainen et al., 2020; Salmela-Aro & Read, 2017) and diminished performance (May et al., 2015).

Recent studies suggest that improving students' psychological flexibility through an ACT-based intervention could be an aid in decreasing study-related burnout (Frögéli et al., 2015; Johns et al., 2022; Rähkä et al., 2021; Szarko et al., 2022). There are indications that developing skills of organized studying may prevent burnout symptoms – research suggests that applying study strategies with less organized studying may correlate to study-related burnout (Asikainen et al., 2020). In addition, there are indications that offering peer support for students during their studies may buffer the negative effects of remote studying, such as decreased study engagement and satisfaction, which may contribute to study-related burnout (Wissing et al., 2022).

## **2.3 Psychological flexibility**

### **2.3.1 Definition**

Psychological flexibility is defined as the individual's ability to observe and accept their thoughts and feelings, to act towards one's goals according to one's values, as well as being consciously present in the moment (Hayes et al., 2006). The concept stems from acceptance and commitment therapy (ACT), which is part of the "third wave" behavioural and cognitive therapy approaches. The third wave of behavioural and cognitive therapy is characterized by an approach that considers the context and purpose of psychological phenomena. This approach emphasizes not only direct and didactical strategies, but also experiential change strategies. In other words, this approach recognizes that a person's experiences and environment play a significant role in their psychological functioning and seeks to address this in therapy (Hayes, 2004; Hayes et al., 2006).

Psychological inflexibility is a primary source of psychopathology according to ACT (Hayes et al., 2006). It refers to individuals' inability to act according to their values, and rather act according to their immediate psychological reactions. Psychological inflexibility stems from the individuals' inability to control thoughts emerging from situations. ACT

aims to decrease a self-concept based on rigid thought patterns and emphasizes mindfulness in the present moment. According to ACT, problems lie in people's tendencies to view negative thoughts as truths and consequently fighting against them (Hayes et al., 2006). ACT targets the six core processes of psychological flexibility – acceptance, cognitive defusion, self as context, contact with the present moment, values, and committed action.

Hayes and colleagues (2006) have described the core processes of psychological flexibility in their article which discusses and reviews the theory of psychological flexibility. According to Hayes et al. (2006), *acceptance* is the ability to observe external and internal events in the present, actively and consciously in a non-judgemental manner. Acceptance refers to an alternative to *experiential avoidance*. Experiential avoidance is defined as attempts of avoiding uncomfortable thoughts and feelings, even when the avoidance is not appropriate or unnecessary. This may lead to different kinds of psychological problems – it may increase the harmfulness of traumatic experiences, increase stress and the risk of substance abuse as well as distance the individual from positive emotions and prevent them from participating meaningful activities.

*Cognitive defusion* refers to the ability to differentiate oneself from one's thoughts and feelings. An opposite process for defusion is *fusion*, where the individual perceives thoughts as truths, rather than just thoughts that are separate from oneself. For example, an individual may have a negative thought (i.e., "I am no good"), but with cognitive defusion, can view it merely as a thought, and not as a truth.

*Contact with the present moment* is defined as non-judgemental contact with present psychological and environmental events. It increases flexibility in one's behaviour and thus commitment to one's values. By being present the goal is for the individual to have a particular sense of self – "self as process", which is where the individual views their thoughts and feelings in a defused and non-judgemental manner. *Self as context* refers to the sense of self as an experiential and verbal dimension, which is separate from one's experiences.

*Values* are the foundation for fostering psychological flexibility, they offer guidance in terms of behavior, and value-based behavior is important in terms of life satisfaction and the experience of a meaningful life. In acceptance and commitment therapy, acceptance, cognitive defusion or being present are not desired outcomes by themselves, rather they enable value-based action. *Committed action* is the concrete behavior and goals,



through which individuals pursue their valued ends, by acting according to these values instead of behavior guided by the avoidance of negative thoughts.

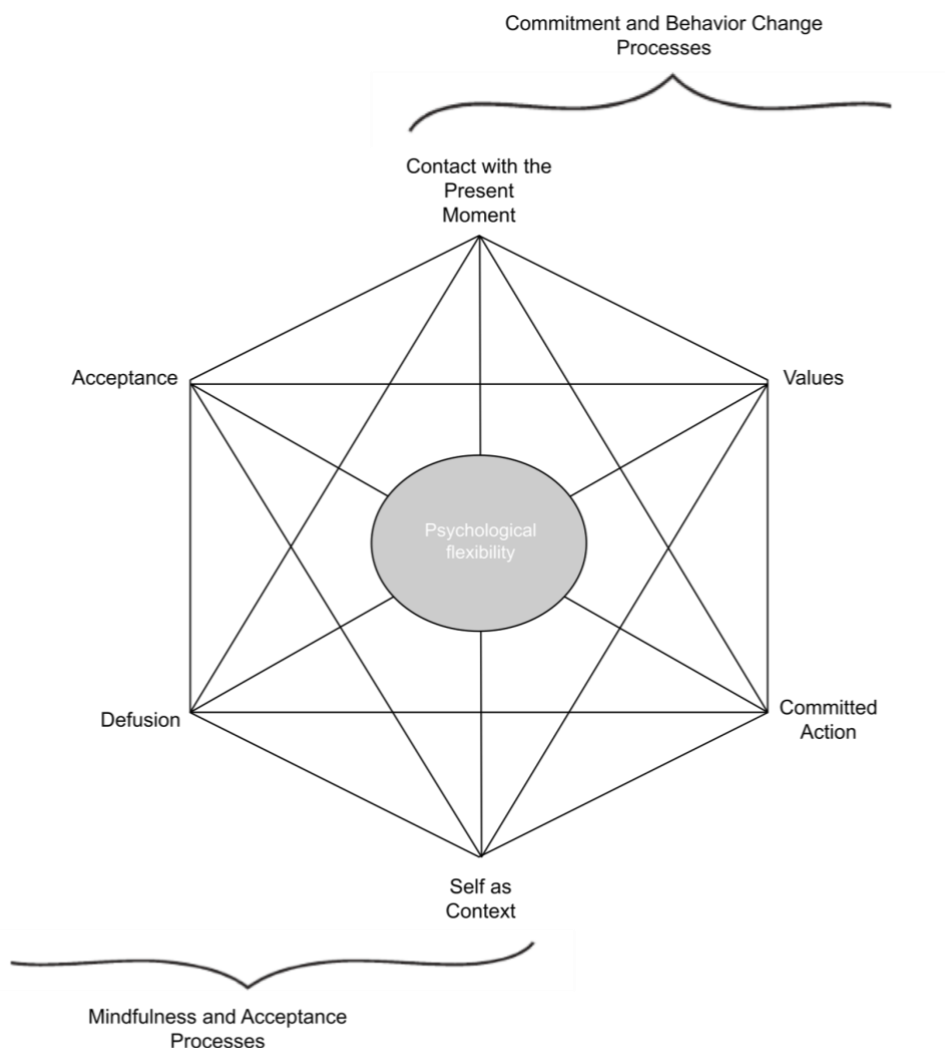


Figure 1. A model of the positive psychological processes ACT seeks to strengthen (Hayes et al., 2006).

### 2.3.2 Benefits of psychological flexibility

Psychological inflexibility has been identified as a transdiagnostic phenomenon, meaning that it may affect various psychological symptoms. Thus, it is possible to impact more than one component that declines well-being, such as anxiety and depression by improving psychological flexibility (Hayes et al., 2006; Levin et al., 2014). Research has shown that psychological inflexibility is related to increased anxiety, depression, stress, and overall psychological ill-being (Bond et al., 2011), whereas psychological flexibility has been found to correlate with various positive effects.

Research on the benefits of psychological flexibility shows a vast range of human abilities that it spans – recognizing and adapting to situational demands, shifting mindset or behaviour when applicable, balancing personally important domains of life, being aware and open, and acting in line with personal values (Kashdan & Rottenberg, 2010). Psychological flexibility is an important element in supporting overall well-being. It has been found to correlate with important elements related to well-being such as decreased stress and pain (Hayes et al., 2006) as well as depression and anxiety (French et al., 2017, Gregoire et al., 2018).

### **2.2.3 Results from ACT-interventions amongst higher education students**

ACT-based interventions aim to increase participants' psychological flexibility. ACT interventions have been carried out in various contexts and settings, exploring its effectiveness in relation to a diverse body of outcomes. Research on ACT interventions in the context of higher education show various benefits on students' well-being and studying. Psychological flexibility is particularly appropriate to apply to the higher education context, as it is a skill that can be developed, and it is centred around the individual's skills to act upon one's values, rather than addressing their psychological symptoms (Hayes et al., 2012).

Research on ACT-interventions amongst higher education students have shown a wide variety of positive outcomes. Students participating in ACT-based interventions show improvements in their well-being (Gregoire et al., 2018; Levin et al., 2017; Räsänen et al., 2016; Asikainen et al., 2019; Katajavuori et al., 2021), life satisfaction, mindfulness, and sense of coherence, (Räsänen et al., 2016) as well as self-esteem (Gregoire et al., 2018; Räsänen et al., 2016, Wang et al., 2017).

Further, participants of ACT interventions decrease their symptoms of depression, anxiety, and stress (Frögéli et al., 2015; Gregoire et al., 2018). Importantly, ACT interventions have been shown to decrease students' overall psychological strain and burnout symptoms (Frögéli et al., 2015; Johns et al., 2022; Rähä et al., 2021; Szarko et al., 2022). ACT-interventions for students have also been helpful regarding their studying. Interventions have positively affected students' study engagement (Gregoire et al., 2018), performance in the form of study progress and pace (Asikainen et al., 2018; Hailikari et al., 2022), integration into studying (Asikainen et al., 2018), as well as self-regulation, (Eisenbeck et al., 201; Dionne et al., 2016) and procrastination (Hailikari et al., 2021; Wang et al., 2017).

## 2.4 Organized studying

Along with psychological flexibility, the intervention course aims to promote organized studying skills. The concept of organized studying skills refers to the student's abilities of self-regulation, time-management, and the skills to organize the completion of study-related tasks (Entwistle & Peterson, 2004; Entwistle & McCune, 2004). Self-regulation refers to the ability to control one's emotions, behaviour, and cognition, meaning the ability to direct one's attention, control one's impulses, and to consciously guide one's actions (McClelland et al., 2018). Problems in self-regulation and is in relation to experienced stress, exhaustion, and low interest in studying (Heikkilä et al., 2012).

Time and effort management skills are defined as the students' abilities to set goals and to study according to them, as well as to be able to manage their use of time and to prioritise study tasks (Entwistle et al., 2004). Problems in time and effort management are a major element in students' study performance and progress (Hailikari & Parpala, 2014). It is suggested that *procrastination* could be explained partially by problems in time and effort management skills (Hailikari et al., 2021).

In university context, skills of organized studying have been found to be an important element regarding student well-being and their study performance and progress (e.g., Asikainen et al., 2020; Hailikari & Parpala, 2014). Students who have the skills to manage their time and effort are more likely to experience better overall well-being and less stress and burnout (e.g., Asikainen et al., 2020; Heikkilä et al., 2012; Katajavuori et al., 2021). Students who have the skills to manage their studies through organized studying are more likely to have higher academic achievements and study progression than students without organized studying skills (Asikainen et al., 2020; Hailikari & Parpala, 2014; Herrmann et al., 2017; Rytönen et al., 2012).

Procrastination is very common amongst university students (Rothblum et al., 1986; Steel, 2007) and it can be defined as "voluntary delay of an intended and necessary and/or (personally) important activity, despite expecting potential negative consequences that outweigh the positive consequences of the delay" (Klingsieck, 2013, 26). Procrastinating is not typically rational or inflicted by external factors. It often involves uncomfortable emotions and various negative outcomes, such as lower academic performance (Steel et al., 2001), stress, (Sirois et al., 2003) as well as problems in mental health, (Stead et al., 2010) and burnout (Turhan et al., 2022). It is suggested that procrastination could be partially explained by problems in organized studying, as well as student's psychological inflexibility (Wolters et al., 2017; Hailikari et al., 2021). Thus,

increasing students' psychological flexibility and organized studying may be an aid in students' procrastination habits. As procrastination is related to study-burnout, it can be concluded that interventions targeting both organized studying skills, as well as psychological inflexibility, can be a major aid in preventing study burnout.

Based on existing literature, an ACT-based intervention course aiming to promote students' psychological flexibility, with additional modules targeting organized studying skills can be an efficient way of promoting students' overall well-being, decreasing, and preventing study-related burnout, as well as promoting their academic achievement and progression. There is a fair body of quantitative evidence on the benefits of ACT-based interventions on higher education students. However, there is a lack of qualitative research on how students experience and describe the benefits of the ACT-based intervention course to their well-being. What is also yet to be explored is how ACT-based intervention courses benefit students with different kinds of starting points in their well-being, specifically, risk of burnout.

### **3 Research task and research questions**

The purpose of this study is to explore the benefits of an online ACT-based intervention course to students' well-being and study skills. Previous research has shown the importance of study-related burnout prevention through promoting well-being, especially at the beginning of studies (Salmela-Aro & Read, 2017) as well as the effectiveness of ACT-based interventions on reducing the risk of burnout (Frögéli et al., 2015; Johns et al., 2022; Rähkä et al., 2021; Szarko et al., 2022)). In-depth understanding of the benefits and mechanisms of ACT-based interventions will inform higher education actors on designing interventions and how to best support students with different starting points.

In this study, we compare how students with different levels of risk of study burnout experience the benefits of the course and how they differ regarding their change in risk of burnout. The study provides important information on how the intervention benefits students with low, average, and increased risks of burnout, or whether the course has similar benefits regardless of the risk of burnout. It is essential to explore how especially students with a high risk of burnout benefit from the course, since they are at a higher risk of dropping out (Bask & Salmela-Aro, 2012).

Based on the research task described above, we set four research questions:

1. How did students' experienced burnout risk change during the online ACT-based intervention course aiming to promote their well-being and studying?
2. What kinds of benefits did students experience during the course?
3. How did the change of burnout risk differ among students with different levels of initial risk of burnout?
4. How did the experienced benefits differ among students with different levels of initial risk of burnout?

## 4 Implementation of the study

### 4.1 Context and participants

An eight-week online course based on Acceptance and Commitment therapy (ACT) called “Towards better well-being and studying” (originally “Kohti parempaa opiskelua”) was held in the spring of 2021. The course was optional and available for all students at the University of Helsinki. It was worth 3 ECTs (1 ECT = 27h of work) and graded pass – fail. The course was designed to promote student well-being as well as their studying, by engaging students in activities which were designed to increase psychological flexibility, as well as organized studying skills. The course progressed week by week, each week having a different theme related to psychological flexibility and/or organized studying skills, as well as overall well-being. Figure 1 shows the course design.

Altogether 238 participated in the intervention course whereas 194 students participated in the study. Partaking in the study was voluntary and did not affect the completion of the course. Informed consent was obtained at the beginning of the course (Appendix 5). From the 194 participants, 189 students completed necessary surveys, as well as the final reports, which were used as data of this study. The study sample was formed of 171 females and 13 males, 3 others, and 10 students who preferred not to state their gender.

Figure 2. The design of the course (modified from Asikainen & Katajavuori, 2021).

Introduction Module	Module 1	Module 2	Module 3	Module 4	Module 5	Module 6	Module 7
Evaluation of well-being and studying	<b>THEME:</b> What is important <b>Subprocess:</b> Values	<b>THEME:</b> Focusing on the present <b>Subprocess:</b> Being present/acceptance	<b>THEME:</b> Power of thoughts. <b>Subprocess:</b> Cognitive defusion/Self as context	<b>THEME:</b> Coping with studying <b>Subprocess:</b> Committed action	<b>THEME:</b> Acceptance/Self-compassion <b>Subprocess:</b> Acceptance/Self as context	<b>THEME:</b> Value-based action <b>Subprocess:</b> Committed action	Individual feedback from peers from the learning report
Introduction to the course and themes	Individual assignments	Individual assignments	Individual assignments	Individual assignments	Individual assignments	Learning report	
Start of peer group work	Group discussion and reflection	Group discussion and reflection	Group discussion and reflection	Group discussion and reflection	Group discussion and reflection	Group discussion and reflection	Group discussion and reflection
<b>REFLECTION</b>							

### 4.2. Instruments

To examine the benefits of the course, students were asked to write reflective reports (one to two pages) at the end of the course on their experiences on the course with the help of questions to reflect on (Appendices 2 & 3).

Study-related burnout was measured using the Study Burnout Inventory (SBI-9) (Salmela-Aro & Read, 2017). The inventory measures study-related burnout and consists of nine items measuring the three components of study burnout in higher education: (1) exhaustion in higher education (four items) (2) cynicism toward the meaningfulness of studying (three items), and (3) a sense of inadequacy as a student in higher education (two items). All items are rated on a six-point scale (1=completely disagree; 6=strongly agree) (Appendix 4).

### 4.3 Analysis

#### 4.3.1 Qualitative analysis

The reflective reports ( $n = 189$ ) were used to analyze students' experiences on the benefits of the course (RQ2) by following the principles of qualitative abductive approach, in which data is analyzed shifting back and forth between inductive and deductive approaches (Elo et al., 2008). The benefits were quantified on the grounds of if it was present in the report or not.

#### 4.3.2 Quantitative analysis

Students were divided into four groups based on their initial risk of burnout, which was defined based on their SBI-9 survey results (Table 1). To measure the change in students' risk of burnout (RQ1), change variables were created by deducting each students' score from the pre-intervention risk of burnout survey from the post-intervention test score. Tests of normality showed that the post-intervention risk of burnout data was not normally distributed, thus appropriate tests for non-parametric data were chosen. Wilcoxon Signed-Rank Test was used to statistically measure the change in students' risk of burnout.

Kruskal-Wallis  $H$  test with pairwise comparison using Bonferroni correction was conducted to test if the change of burnout risks varied amongst different burnout risk groups (RQ3). Lastly, to examine how the experienced benefits differ among students with different levels of initial risk of burnout (RQ4), each identified benefit category was cross tabulated with the burnout risk groups, using Pearson's chi-squared test.

**Table 1** Groups of burnout risk and score range (Salmela-Aro, 2009).

Score	Burnout risk group
9 – 20	No risk
21 – 25	Average
26 – 33	Increased risk
34 – 54	Obviously increased risk

## 5 Results and presentation of the article

The present section presents the major results of the study, as well as discusses the prospective publication channel. For more detailed description of the results, see the article manuscript (Appendix 1).

### 5.1 Change in students' burnout risk during the ACT-based intervention course

A Wilcoxon signed-rank test showed that an 8-week online ACT-based intervention course did elicit a statistically significant change in participants' risk of burnout ( $Z = -5.768$ ,  $p = <.001$ ). The median ranks were 30.00 pre-intervention and 28.00 post-intervention. Frequencies pre- and post-intervention are shown in Table 2.

**Table 2**

Frequency of students in each burnout risk group pre- and post-intervention.

Risk of burnout	Frequency pre-intervention <i>n, (%)</i>	Frequency post-intervention <i>n, (%)</i>
No risk	27 (14,3)	42 (22,2)
Average	24 (12,7)	37 (19,6)
Increased risk	64 (33,9)	61 (32,3)
Obviously increased risk	74 (39,2)	49 (25,9)

### 5.2 Experienced benefits during the intervention course

The qualitative content analysis revealed seven categories and 25 sub-categories of benefits that the students experienced during the intervention course. The seven categories were identified and named to be the following: improved general well-being, improved self-knowledge, improved psychological flexibility, improved study practices and study motivation, improved self-compassion, gained peer support, and improved organized studying (Table 3). For a broader description of the benefit categories see the article manuscript (Appendix 1).



**Table 3**

Identified benefit categories, subcategories, quotations, and number of students in each category.

Category	Subcategories	Quotation	n	%
Improved general well-being	Overall experienced increase in well-being (n = 86) Decreased stress and burnout (n = 67) Improved daily habits (n = 44) Improved coping with daily life (n = 21) Improved skills to relax (n = 30) Improved quality of free time (n = 12) Increased positive feelings (n = 27)	I have learnt to prioritize my own well-being and realized how much enough of good quality sleep, enough exercise and good quality nutrition affects well-being. (021)	136	71,9
Improved self-knowledge	Recognition of the need for development (n = 69) Improved self-reflection skills (n = 75) Gained perspective (n = 55)	Reflecting on my own behavior and the reasons behind it has been beneficial. I have noticed that I don't always act in a way that is the best for myself. For example, acknowledging procrastination in my studying and neglecting my health helps me make a change regarding them. (179)	128	67,7
Increased psychological flexibility	Improved skills to cope with negative thoughts and feelings (n = 69) Contact with the present moment (n = 16) Values and committed actions (n = 80) The overall experience of increased psychological flexibility (n = 19)	Only through this course have I understood that you can make your values visible in your everyday life and this is how a happy everyday life is formed. Through this realization I have consciously reflected on my values every day and made choices according to them. (035)	125	66,1
Improved study practices and study motivation	Tools to develop study methods (n = 77) Increased study efficiency (n = 35) Decreased multitasking (n = 7) Decreased procrastination (n = 37) Increased motivation to study (n = 34) Balance between free-time and studying (n = 20)	Discussing psychological flexibility and procrastination has helped me understand what is causing procrastination, and therefore it has made it easier to recognize the moments where the mind is trying to come up with supplementary activities, even though the unpleasant feeling eases only by starting to work. The course has affected my studying this way. (111)	123	65,1
Increased self-compassion	A positive way of viewing oneself (n = 65) Compassionate approach towards setbacks (ns = 62)	If I compare my well-being to the time before the course, the difference is quite clear. I have learnt to respect myself and truly believe that I can do anything if I just try. (041)	101	53,4
Gained peer support	Receiving peer support (n = 97)	I felt that the group discussions were important especially in gaining and sharing peer support. Especially now during the time of remote studying it was valuable to get contact with other students ja to read interesting thoughts about well-being and studying. (025)	97	51,3
Improved organized studying	Improved time management (n = 80) Improved organization of studies (n = 28)	During this course I have learnt a lot of things. The most important thing is time management. By observing how I use my time I realized why was I always behind and why I felt like I didn't have enough time... Now I can manage my time better and know how to prioritize. (006)	92	48,7
No significant experienced benefits		However, I do not feel that any major changes happened in my studying or on thought level in this short amount of time. In addition, I do not feel that my well-being has improved significantly, because I believe that these kinds of changes would be visible only after several weeks. (082)	6	3,2

### 5.3 Differences in the change of risk of burnout among risk of burnout groups

According to Kruskal-Wallis H test there was a statistically significant difference between burnout risk groups (N = 189) regarding the change of burnout risk during the intervention ( $\chi^2(3) = 16.43, p < .001$ ; Table 4). A pairwise comparison test showed that there was a statistically significant difference between the groups “no risk of burnout” and “obviously increased risk of burnout” (Bonferroni adjusted  $p = .001$ ), where risk of burnout decreased more among students with a “obviously increased risk of burnout” compared to students with “no risk of burnout”.

**Table 4**

Means of pre and post intervention risk of burnout scores. Means and standard deviations of change in risk of burnout between different groups. The difference between the groups “no risk” and “obviously increased risk” was found to be statistically significant (Bonferroni adjusted  $p = .001$ ), and groups “no risk” and “increased risk” are almost statistically significantly different (Bonferroni adjusted  $p = .007$ ).

Risk of burnout, (N)	Burnout risk averages pre- and post-intervention				Change of burnout risk	
	Mean pre	SD	Mean post	SD	Mean	SD
No risk (27)	17.11	2.44	17.78	4.90	.67	4.10
Average (24)	23.21	1.32	21.29	6.03	-1.92	5.63
Increased risk (64)	29.14	2.26	26.89	6.57	-2.25	6.28
Obviously increased risk (74)	40.85	5.07	35.51	8.69	-5.34	7.65

### 5.4 Differences in experienced benefits according to risk of burnout -group

Comparison between the different burnout risk groups and their experienced benefits showed that the course had benefitted students similarly regardless of their initial risk of burnout. The cross-tabulation chi-squared test did not show statistically significant results (Table 5). However, there were indicative results between the risk of burnout and gained peer support ( $\chi^2(3) = 6.69, p = .083$ ). Students who were at an obviously increased risk of burnout had experienced more peer support, whereas students with lower risks of burnout had experienced less peer support or did not find it as valuable to them during the course.

**Table 5** Differences in benefits of the course according to burnout risk groups

Experienced benefit	No risk (n = 27)	Average risk (n = 24)	Increased risk (n = 64)	Obviously increased risk (n = 74)	Pearson Chi-Square test $\chi^2$ (3), p
Improved general well-being	18	19	44	54	$\chi^2$ (3) = 1.32, p = .725
Improved self-knowledge	19	17	49	42	$\chi^2$ (3) = 6.47, p = .091
Increased psychological flexibility	21	15	44	44	$\chi^2$ (3) = 3.40 p = .335
Improved study practices and motivation	18	16	43	45	$\chi^2$ (3) = .747, p = .862
Increased self-compassion	13	14	36	37	$\chi^2$ (3) = 1.07, p = .785
Gained peer-support	11	8	37	43	$\chi^2$ (3) = 6.69, p = .083
Improved organized studying	16	14	32	30	$\chi^2$ (3) = 4.11, p = .250
No significant benefits	1	1	0	4	$\chi^2$ (3) = 3.40, p = .334

### 5.5. Prospective publication channel

The intended publication channel for the research article “Exploring the effects of an Acceptance and Commitment Therapy -based intervention course on university students’ well-being is a journal called Research on Higher Education by Springer. Research on Higher Education publishes studies on issues in postsecondary education using a wide range of methods. The journal has been chosen since it is fitting for the subject of the present research. Its scope includes a wide range of topics in higher education. The article is limited to 10 000 words, including references, tables, and figures. The abstract is limited to 150 to 250 words, with 4 to 6 keywords. The article manuscript has been composed accordingly.

## **6 Assessment and discussion**

This section discusses the findings of the present study in reflection to the theoretical background and previous research on the topic. Possible limitations are assessed, as well as conclusions, implications, and future research possibilities related to the topic. For broader discussion of the results see the article manuscript (Appendix 1).

This study was designed to investigate students' experiences of an online ACT-based intervention course regarding students' risk of study burnout. While studies have shown ACT-interventions effectiveness on several outcomes, this study shows what kinds of mechanisms may be behind their effectiveness. The present findings show that while the experienced risk of burnout decreased the most for the students with initially high risk of burnout, students experienced qualitatively similar benefits regardless of their initial risk of burnout. The experienced benefits ranged from concrete improvements of well-being, such as decreased stress, to improvements in studying and gained peer support. From these benefits, only peer support displayed possibly as particularly important for students with the highest levels of risk of burnout.

### **6.1 Change of students' experienced burnout**

As burnout is a serious issue among higher education students it is crucial to investigate the possibility of ACT-based interventions being an aid in preventing and decreasing study burnout. The present study suggests that an online ACT-based intervention can support student well-being by decreasing and preventing burnout, as during the course, students experienced a statistically significant decrease in their risk of burnout. These results are strengthened by previous research that have shown how ACT-based interventions have decreased students' burnout (e.g., Frögéli et al., 2015; Rähkä et al., 2021).

### **6.2 Experienced benefits of the course**

ACT-based interventions have been found to be helpful regarding many aspects of student well-being as well as their studying. The findings of the present study exhibit a wide range of benefits that the students experienced, ranging from concrete improvements in their daily habits to experienced improvement in elements that affect well-being, such as decreased stress and burnout and improved stress management skills. Importantly, students experienced an improvement in their self-knowledge, in the form of, for example, recognition for improvement in certain areas, such as time

management or not being kind to oneself, which is a crucial step for concrete improvement.

As anticipated, students experienced that their psychological flexibility increased during the course, which was manifested as the experience of overall increase of psychological flexibility, as well as the core processes that psychological flexibility is composed of. The increase of students' psychological flexibility could explain the diverse benefits they experienced in terms of their overall well-being, such as heightened positive emotions, reduced stress and burnout, and improved daily routines. This is because psychological flexibility skills have been linked to various aspects of well-being.

Importantly, the study suggests that an online ACT-based intervention course can improve students' studying by enhancing their study motivation and processes, as well as skills of organized studying, including time management skills and organization skills of their studies. These improvements are likely due to mostly the exercises targeting specifically organized studying during the course, as well as increased psychological flexibility, as previous research has suggested a connection between both psychological flexibility as well as organized studying and procrastination (e.g., Hailikari et al., 2021), which in turn relates to study burnout (e.g., Turhan et al., 2022). Therefore, it could be concluded that improvements in students' organized studying and study practices and motivation along with psychological flexibility may partially explain how the intervention course is an aid in students' burnout and stress, as shown by previous research (e.g., Heikkilä et al., 2012; Asikainen et al., 2019).

The study was conducted during a unique time in history when students were forced to shift to remote learning due to the pandemic. Previous research has shown that students experienced more loneliness and a lack of interaction during the pandemic and longed for peer interaction (Asikainen & Katajavuori, 2022; Baltá-Salvador et al., 2021; Nguyen et al., 2021). The results of this study implicate the significant role of peer support, which students found particularly meaningful. Given the timing of the course, it can be assumed that students valued peer support and found it crucial to share their experiences and feel supported in their thoughts and feelings. This can further enhance the positive experiences gained from the course. Therefore, it is crucial to offer students the opportunity for peer support in online ACT-based intervention courses.

This study provides a detailed exploration of the benefits of an online ACT-based intervention course for students, shedding light on its potential mechanisms. The course

had wide-ranging benefits for participants, including improvements in self-knowledge, study motivation, and overall life management, as well as in social domains. Students found the course to be a comprehensive intervention that equipped them with tools to cope and organize their lives and provided much-needed peer support for processing and reflecting on difficult topics.

### **6.3 Differences in experienced benefits and the change of risk of burnout according to burnout risk groups**

Previous research suggests that ACT-based interventions may be more effective for participants with higher initial ill-being, such as depression and stress (Reeve et al., 2018; Zhao et al., 2022). Similarly, this study found that students at higher risk of burnout experienced the most significant changes in burnout risk during the intervention. However, the study also shows that the benefits of the intervention were qualitatively similar for all students, regardless of their initial burnout risk. Therefore, it could be said that an online ACT-based intervention course can support students' psychological flexibility, organized studying, and importantly, well-being and burnout through diverse, yet similar, mechanisms, regardless of their risk of initial study-related burnout.

The findings of this study implicate that particularly students with a high risk of burnout may benefit from peer-support. Sharing feelings and experiences with peers may give them a sense of community and decrease the feeling of being alone with their problems. This is particularly relevant during remote studies, where peer support can buffer negative outcomes such as decreased study engagement and satisfaction that can contribute to study burnout (Wissing et al., 2022). The importance of peer-support was highlighted by many students, especially those with a high risk of burnout. Therefore, offering peer-support in online ACT-based intervention courses is crucial.

### **6.4 Limitations**

The study has some limitations to consider. Firstly, the pandemic circumstances during the course may have influenced participants' experiences. However, it is encouraging that the course had various benefits despite the challenging situation. Secondly, the quantitative results rely on self-reported data without a control group, so interpretation requires caution. However, the quantitative results are strengthened by the qualitative results of the study. Lastly, the course benefits were identified from reflective reports, which left out the possibility for elaborative questions. This also required a certain level of the authors' interpretation. However, the identified benefits in the reflective reports

were analysed in a very specific manner, without any attempt to infer hidden meanings. In addition, all the authors were involved in the analysis process and a common understanding was achieved regarding the categorization process. In the future, it would be meaningful to conduct interviews for the participants of the course to gain even deeper knowledge of the mechanisms behind the course benefits.

## **6.5 Conclusions**

This study shows that the benefits of an ACT-intervention course aiming to promote students' psychological flexibility and organized studying can reduce students' risk of burnout through a wide range of benefits. Whereas the students with the most risk of burnout can benefit the most from an ACT-intervention, the mechanisms behind the benefits are mostly the same. In addition to the apparent benefits of promoting psychological flexibility, it is possible to simultaneously promote students' study skills, which in part contributes to increasing student well-being. Importantly, emphasizing peer-support in online ACT-based courses is important – it may contribute to decreasing students' burnout and enhance the effects of the many other benefits that the course has to offer.

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# Appendices

## APPENDIX 1

### Article Manuscript

#### **Exploring the Effects of an Acceptance and Commitment Therapy -based Intervention Course to University Students' well-being**

Ronja Ruuska, Henna Asikainen, Nina Katajavuori

#### **Abstract**

The COVID-19 pandemic has negatively impacted the well-being of university students and increased their risk of study-related burnout. The present study explores how university students benefit from an 8-week online acceptance and commitment therapy (ACT) -based intervention course, which aims to improve their psychological flexibility and organized studying skills, as means to positively impact their well-being and studying. A total of 189 university students participated in the study in the spring of 2021. Students' risk of burnout was measured pre- and post-intervention with a School Burnout Inventory survey (SBI-9). Students were divided into four groups based on their pre-intervention burnout risk scores. The experienced benefits of the course were identified from students' reflective reports at the end of the course and were statistically compared amongst students in different burnout risk groups. The results showed that the intervention course led to a positive change in students' risk of burnout. The content analysis revealed seven main categories of benefits of the course; 1. improved general well-being, 2. improved self-knowledge, 3. increased psychological flexibility, 4. improved study practices and study motivation, 5. increased self-compassion, 6. gained peer-support, and 7. improved organized studying. These benefits were experienced by students regardless of their initial risk of burnout. The study highlights the potential of ACT-based intervention courses to improve the well-being and studying skills of university students, suggesting a need for further exploration of burnout prevention through such measures.

#### **Introduction**

Promoting and supporting university students' well-being is crucial yet challenging. The ill-being and study-related burnout among university students calls for measures and research on the topic (e.g., Auerbach et al., 2018; Asikainen et al., 2020; Salmela-Aro & Read, 2017). In the beginning of the year 2020 most students were suddenly forced to shift into remote studies due to the COVID-19 pandemic, which has led to further decreased student well-being, for example in the form of increased study related burnout (Salmela-Aro et al., 2022; Sarasjärvi et al., 2022), anxiety, depression, and stress, (Elmer et al., 2020) as well as loneliness and lack of interaction (Asikainen & Katajavuori, 2022; Baltá-Salvador et al., 2021; Nguyen et al., 2021).

Prolonged stress may cause study-related burnout, which is associated with poor study progress, (Asikainen et al., 2020; Salmela-Aro & Read, 2017), diminished performance (May et al., 2015), dropouts, (Bask & Salmela-Aro, 2012) as well as students' decreased engagement and dedication to studies (Salmela-Aro & Upadyaya, 2017). It is suggested that it is important to support students' well-being and prevent burnout, particularly at the beginning of university studies, since burnout symptoms may increase during the studies (Salmela-Aro & Read, 2017).

Recent research has shown that psychological flexibility is a promising element in fostering well-being (Hayes et al., 2006; Asikainen et al., 2019; Puolakanaho et al., 2020). Psychological flexibility is defined as the ability to be present in the moment as a conscious human being, and to act upon one's values (Hayes et al., 2006). Studies have shown that psychological flexibility is an important element in reducing both job-related burnouts, (Lloyd et al., 2013; Puolakanaho et al., 2020) as well as study-related burnout (Johns et al., 2022; Szarko et al., 2022).

A widely used intervention for targeting various domains of mental health is acceptance and commitment therapy (ACT), which is based on improving participants' psychological flexibility. In the domain of higher education, psychological flexibility in addition to being related to overall well-being, is also found to be related to students' improved performance in their studies (Asikainen et al., 2018; Hailikari et al., 2022).

Further qualitative research on the benefits amongst students is needed to understand the mechanisms of how online ACT-based interventions support well-being. While studies have shown that psychological flexibility has a large variety of positive effects on well-being, such as decreasing burnout, there is a need for research on the mechanisms leading to these benefits to design and develop effective interventions and to promote student well-being.

A web-based intervention course based on ACT was developed in the efforts for promoting students' well-being and skills of organized studying (Asikainen & Katajavuori, 2021). In this study, we explore the experienced effects of the web-based ACT intervention course on students' risk of burnout, and how students' experienced benefits may explain the effectiveness of the course.

Whereas results of ACT-based intervention courses in higher education show various benefits measured especially quantitatively, (e.g., Asikainen et al., 2019; Levin et al., 2018; Räsänen et al., 2016) this study combines both quantitative and qualitative methods to explore the mechanisms behind the potential effects of the course.

Moreover, information is needed on whether the benefits of web-based ACT-interventions are similar for students with different levels of risk of burnout since it has not been addressed in previous research. Previous research suggest that ACT-interventions decrease stress more efficiently amongst participants who have higher levels of initial stress (Reeve et al., 2018). In addition, students with higher baseline depression showed significantly more improvements in their depression symptoms, as well as improved positive mental health in an online ACT-intervention (Zhao et al., 2022). These findings suggest that ACT-based interventions may be more effective for students with lower initial well-being, which is why it is important to explore the mechanisms behind the course effects in detail. In this study, we compare the results among students with different initial burnout risk. This is important especially

because helping students with higher risks of burnout is challenging, and they are at a higher risk of drop-out and other negative outcomes (Bask & Salmela-Aro, 2012).

## **Theoretical background**

### **Study-related burnout**

The concept of burnout has been widely studied in the work context and has been defined as a “prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by the three dimensions of exhaustion, cynicism, and inefficacy” (Maslach et al., 2001, p.397). Attention to study-related burnout has increased in recent years, since an alarming portion of students experience study-related burnout (Salmela-Aro et al., 2022; Sarasjärvi et al., 2022). In the context of higher education, burnout is a severe issue, since study-related burnout may lead to depression later in life (Salmela-Aro, 2009; Salmela-Aro & Upadyaya, 2014), as well as dropping out of university (Bask & Salmela-Aro, 2012).

The definition of study-related burnout is adapted from the original definition from working life, and it is described as a syndrome which consists of emotional exhaustion, which is caused by the high demands of studying, a cynical and detached attitude towards studies, as well as feelings of inadequacy in the study context (Salmela-Aro et al., 2009; Schaufeli et al., 2002). *Exhaustion* is defined as feelings of strain, stress, and chronic fatigue as well as perceived overtaxing study loads, and study demands. *Cynicism* in the study context refers to students’ distant attitudes and loss of interest towards studying and viewing their studying as insignificant. The lack of efficacy related to studying and *feelings of inadequacy* as a student in turn refers to lowered feelings of competence, successful achievement, and accomplishment (Salmela-Aro et al., 2009; Salmela-Aro & Read, 2017).

### **Psychological flexibility and well-being**

Psychological flexibility is rooted in acceptance and commitment therapy (ACT). Psychological flexibility is described as the ability to act in line of long-term values, to be consciously present in the moment, and to being conscious and accepting of unpleasant feelings and thoughts (Hayes et al., 2006). ACT aims to improve psychological flexibility, further promoting well-being in all its aspects: emotional, psychological, and social well-being (Hayes et al., 2006). ACT aims to target psychological inflexibility with the general goal of increasing psychological flexibility through its six core processes: *acceptance*, *cognitive defusion*, *being present*, *self as context*, *values*, and *committed action*. The processes are positive psychological skills, not only ways of avoiding psychopathology (Hayes et al., 2006).

Hayes and colleagues (2006) have described the core processes of psychological flexibility in their article which discusses and reviews the theory of psychological flexibility. The process of *acceptance* is an alternative to experiential avoidance, which is described as one’s attempts to alter the occurrence of one’s thought and emotions even when doing so causes harm to the individual. Acceptance involves embracing one’s private events, including thoughts, memories, and feelings, rather than attempting to change them. Acceptance is not the end goal of ACT; it is rather a tool to support acting in terms of one’s values. *Cognitive defusion* represents the process of alternation of those unpleasant

thoughts, and the ability to view these thoughts as separate parts of internal behavior, rather than seeing them as the truth of the world or oneself (Luoma & Hayes, 2008).

By *being present*, one is in constant non-judgmental contact with psychological and environmental events and thoughts. Thus, one's behavior is more flexible, and their actions are in line with their values. Being present includes seeing *self as context*. This means seeing oneself as a container of one's thoughts and experiences, hence being able to see them separate from the self, and thus being able to observe them non-judgmentally. *Values* are the foundation for fostering psychological flexibility, they offer guidance in terms of behavior, and value-based action and behavior are necessary to life satisfaction and the experience of a meaningful life (LeJeune & Luoma, 2019; Luoma & Hayes, 2008). The sixth process of psychological flexibility – *committed action* leads to a life that is emphasized by values, through acting in terms of one's values, instead of behavior guided by the avoidance of negative thoughts. Importantly, the core ACT processes are not separate from one another, rather they are both overlapping and interrelated. (Hayes et al., 2006).

Recent research shows multiple benefits of psychological flexibility in the university context. Psychological flexibility has been found to be an important element in supporting well-being and decreasing stress (Räsänen et al., 2016; Katajavuori et al., 2021), depression and anxiety, (Levin et al., 2013) as well as study-related burnout (Frögeli et al., 2015; Johns et al., 2022; Riihämä et al., 2021; Szarko et al., 2022). In addition, recent research suggests that psychological flexibility is also related to performance in studies, in the form of study success and pace, (Asikainen et al., 2018; Hailikari et al., 2022) as well as positive emotions towards studying (Hailikari et al., 2022; Asikainen et al., 2018), integration into studying (Asikainen, 2018), and self-regulation (Eisenbeck et al., 2019; Dionne et al., 2016). Furthermore, psychological flexibility also has a strong individual role in explaining procrastination along with time and effort management skills (Hailikari et al., 2021)

ACT-based interventions have been found to be beneficial for students' well-being. Recent research exploring the benefits of ACT-based intervention courses with the same course design used in this study, showed that the intervention course improved students' experienced well-being and organized studying (Asikainen et al., 2019; Katajavuori et al., 2021), increased students' psychological flexibility and decreased experienced stress and the risk of burnout (Katajavuori et al., 2021; Riihämä et al., 2021). This suggests that ACT-based intervention courses promote student well-being by improving important elements comprising it, such as decreasing stress and burnout, as well as supporting students' study skills.

### **Organized studying**

Along with psychological flexibility, the intervention course aims to promote organized studying skills. Organized studying includes time-management and effort management skills, as well as self-regulation skills (Entwistle & McCune, 2004). In the university context, skills of organized studying have been found to be an important element regarding student well-being and their study performance and progress (e.g., Asikainen et al., 2020; Hailikari & Parpala, 2014). Students who have the skills to manage their time and effort are more likely to experience better overall well-being and less stress and burnout (e.g., Asikainen et al., 2020; Heikkilä et al., 2012; Katajavuori et al., 2021).



Students who have the skills to manage their studies through organized studying are more likely to have higher academic achievements and study progression than students without organized studying skills (Asikainen et al., 2020; Hailikari & Parpala, 2014; Herrmann et al., 2017; Rytönen et al., 2012). It has been suggested that problems in organizing one's studies may be partly behind academic procrastination (Wolters et al., 2017; Hailikari et al., 2021) – which is defined as the “voluntary delay of an intended and necessary and/or (personally) important activity, despite expecting potential negative consequences that outweigh the positive consequences of the delay” (Klingsieck, 2013, 26). Procrastination may explain lower academic performance (Steel et al., 2001) stress (Sirois et al., 2003) and problems with mental health (Stead et al., 2010), as well as burnout (Turhan et al., 2022).

Interventions have been found to help promote skills of organized studying (Häfner et al., 2014; Glick et al., 2014; Katajavuori et al., 2021). In the context of ACT-based interventions, there is evidence that psychological flexibility is related to higher levels of organized studying (Asikainen et al., 2019). Thus, students with higher psychological flexibility are more likely to be organized with their studies and procrastinate less.

Based on existing literature, an ACT-based intervention course aiming to promote students' psychological flexibility, with additional modules targeting organized studying skills can be an efficient way of promoting students' overall well-being, decreasing, and preventing study-related burnout, as well as promoting their academic achievement and progression. There is a fair body of quantitative evidence on the benefits of ACT-based interventions in higher education students. However, there is a lack of qualitative research on how students experience and describe the benefits of the ACT-based intervention course to their well-being. What is also yet to be explored is how ACT-based intervention courses benefit students with different kinds of starting points in their well-being, specifically, risk of burnout.

### **Aim of the study**

The purpose of this study is to explore the benefits of an online ACT-based intervention course to students' well-being and study skills. Previous research has shown the importance of study-related burnout prevention through promoting well-being, especially at the beginning of studies (Salmela-Aro & Read, 2017) as well as the effectiveness of ACT-based interventions on reducing the risk of burnout (Frögéli et al., 2015; Johns et al., 2022; Rähkä et al., 2021; Szarko et al., 2022)). In-depth understanding of the benefits and mechanisms of ACT-based interventions will inform higher education actors on designing interventions and how to best support students with different starting points.

In this study, we compare how students with different levels of risk of study burnout experience the benefits of the course and how they differ regarding their change in risk of burnout. The study provides important information on how the intervention benefits students with low, average, and increased risks of burnout, or whether the course has similar benefits regardless of the risk of burnout. It is essential to explore how especially students with a high risk of burnout benefit from the course, since they are at a higher risk of dropping out (Bask & Salmela-Aro, 2012). Based on the reasons mentioned above, we set four research questions:

1. How did students' experienced burnout risk change during the online ACT-based intervention course aiming to promote their well-being and studying?
2. What kinds of benefits did students experience during the course?
3. How did the change of burnout risk differ among students with different levels of initial risk of burnout?
4. How did the experienced benefits differ among students with different levels of initial risk of burnout?

## **Methods**

### **Context**

An eight-week web-based intervention course based on ACT (Acceptance and Commitment therapy) "Towards better well-being and studying" ("Kohti parempaa opiskelua" in Finnish) was organized to promote and develop university students' well-being and study skills (Asikainen & Katjavuori, 2021). The course was optional, worth 3 ECTS (1 ECTS=27h of work), and available for all students from the University of Helsinki. It took place in an online learning platform called "Moodle" in the spring of 2021.

The course progressed week by week, each week having different themes related to psychological flexibility, study processes, as well as daily habits influencing well-being and studying, such as sleep, nutrition, and physical exercise. The course included weekly individual exercises that aimed to develop students' psychological flexibility with themes such as values, being present, and the acceptance of thoughts. In addition, to promote their well-being and studying students completed exercises designed to improve their studying, including exercises practicing time management, effort management and planning their studies. Additionally, group discussions were held on a web-based platform and/or via video conference to offer students peer support and a platform to reflect on their experiences. (Asikainen & Katjavuori, 2021.)

### **Participants**

In total, 238 students participated in the intervention course, of which 194 students participated in the study. Participation in the study was voluntary and did not affect the completion of the course in any way. Informed consent was obtained from the participants prior to the pre-intervention surveys. From the 194 participants, 171 stated that they were female, 13 male, 3 others, and 10 preferred not to answer. From the 194 participants, 189 students turned in the final report and completed the quantitative surveys, which were both used as data of the study.

### **Instruments**

At the beginning and end of the intervention course, students completed a self-assessment survey on different aspects of their well-being, one being the risk of study-related burnout. The survey is based on

Study Burnout Inventory (SBI-9) (Salmela-Aro, 2009). The survey consisted of 9 items measuring the three factors of study-related burnout: (1) exhaustion in higher education (four items) (2) cynicism toward the meaningfulness of studying (three items), and (3) a sense of inadequacy as a student in higher education (two items). All the items were rated on a 6-point Likert-type scale ranging from 1 (completely disagree) to 6 (completely agree). The reliability of the study burnout scale has been previously tested showing that it is a reliable method for testing study burnout (Salmela-Aro et al., 2009).

At the end of the course, students were instructed to write a 2–3-page reflective report where they were to reflect on their experiences about the effects of the course regarding their well-being and studying (Appendix 1.). These reports were used to explore the experienced benefits from the course.

## **Analysis**

### ***Content analysis of experienced benefits***

The reflective reports ( $n=189$ ) were used to analyze students' experiences on the benefits of the course by following the principles of qualitative content analysis. The data was analyzed using Atlas version 23. The data was analyzed using an abductive approach, which includes both inductive content analysis, as well as deductive content analysis. Inductive content analysis includes coding, creating categories, and abstraction (Elo & Kyngäs, 2008). In turn, when using deductive content analysis, the data is explored through existing knowledge. Combining the two methods can be described as an abductive approach, where data is analyzed shifting back and forth between inductive and deductive approaches (Elo & Kyngäs, 2008).

First, all the segments of the reports, (ranging from one to several sentences) where students described the benefits of the course were identified and coded by the first author. Each segment could include one or more codes representing course benefits. Additionally, segments describing the lack of any benefits from the course were coded. The codes were developed through an iterative process (Forman & Damschroder, 2007, p. 53), where each code was reviewed after the first round of coding of the whole data. The trustworthiness of the analysis was ensured by constant discussions on the codes that were open to various interpretations. The final coding was accomplished via mutual understanding among the three authors. Altogether 111 preliminary codes were generated in this phase of the analysis.

Using an abductive approach, codes were created both inductively and deductively. Deductive codes are “identified and constructed from theoretical frameworks, relevant empirical work, research questions, data collection categories, or the unit of analysis” (Forman & Damschroder, 2007, 47). For example, in the case of recognized processes of psychological flexibility (i.e., values and committed action) the codes stem from an existing theoretical framework (Hayes et al., 2006). In turn, inductive codes emerge from the data itself during preliminary coding as analytical insights.

After the preliminary coding, the codes were categorized according to which sectors of life or situations the portrayed benefits belonged to. In this phase of the analysis, subcategories were identified and named ( $n = 24$ ). These categories were then grouped further into broader main categories ( $n = 7$ ).

Altogether, seven main categories and 24 sub-categories were identified. The categorized benefits were quantified based on whether a category of benefit was found in a report or not. From the

quantification, data was obtained which represented the benefit categories in the reports as binary variables expressing whether a benefit category was present in the report or not, indicating that the student had or had not experienced the benefit in question.

### *Statistical analyses*

The quantitative analyses related to the risk of burnout was conducted with SPSS Statistics version 28. After completing the SBI-9 survey, students were divided into four groups based on their scores in the beginning of the course – higher score denotes a higher risk of burnout (Salmela-Aro, 2009). The four groups of burnout risks are shown in Table 1.

To calculate the change in students' risk of burnout, change variables were created by deducting each students' score from the pre-intervention risk of burnout survey from the post -intervention test score. Tests of normality showed that the post-intervention data was not normally distributed, thus appropriate alternatives for non-parametric data were used to analyze the data. To test the change in students' risk of burnout during the intervention course, Wilcoxon Signed-Rank Test was used.

To test whether there was a difference in the change of burnout risk between the burnout risk groups, Kruskal–Wallis  $H$  test with pairwise comparison using Bonferroni correction were conducted. Further, to analyze whether students with different risks of burnout had experienced the benefits of the intervention course differently, each identified course benefit category was cross tabulated with the burnout risk groups. Differences between the groups were tested with Pearson's chi-squared test.

**Table 1**  
Groups of burnout risk and score range (Salmela-Aro., 2009).

Score	Burnout risk group
9 – 20	No risk
21 – 25	Average
26 – 33	Increased risk
34 – 54	Obviously increased risk

## **Results**

### **Change in students' risk of burnout**

A Wilcoxon signed-rank test showed that an 8-week online ACT-based intervention course did elicit a statistically significant change in participants' risk of burnout,  $Z = -5.768$ ,  $p = < .001$ . The median ranks were 30.00 pre-intervention and 28.00 post-intervention. Frequencies pre- and post-intervention are shown in Table 2.

**Table 2**

Frequency of students in each burnout risk group pre- and post-intervention.

Risk of burnout	Frequency pre-intervention <i>n, (%)</i>	Frequency post-intervention <i>n, (%)</i>
No risk	27 (14,3)	42 (22,2)
Average	24 (12,7)	37 (19,6)
Increased risk	64 (33,9)	61 (32,3)
Obviously increased risk	74 (39,2)	49 (25,9)

### **Students' experienced benefits of the intervention course**

After analyzing the students' reflective reports, results showed that the course had various effects on the students. From the analysis, 7 categories of experienced benefits were identified with 24 subcategories. The seven categories were identified and named to be the following: Improved general well-being, improved self-knowledge, improved psychological flexibility, improved study practices and study motivation, improved self-compassion, gained peer support, and improved organized studying. These categories are further presented in Table 3, along with the identified subcategories, quotations demonstrating the category, and the number of students who had experienced the benefit category in question. The identified benefit categories will be described in the following subsections.

#### ***Improved general well-being***

In total, 136 (71,6%) students experienced that the course had generally improved their well-being in some way. This category consisted of all the mentions, where students described that some or many aspects of their well-being had improved or that they have gained tools to improve their well-being in some way. Students had for example improved their daily habits such as eating, sleeping, and exercising. Students described that their coping with everyday life had improved due to, for example stress management and decreased stress, decreased burnout and anxiety, and increased energy levels. Students also experienced that they had learned how to relax more, due to the breathing exercises from the course or overall had gained a more relaxed way of managing situations. Students also experienced an improvement in their free time, due to a better balance between work, study, and free time, for example, they can now enjoy their free time with better self-conscience, thus improving the quality of it. Students also reported an increase in positive emotions, such as better mood, overall feelings of happiness, and feelings of meaningfulness.

#### ***Improved self-knowledge***

Altogether, 128 (67,4%) students experienced that the course had improved their self-knowledge in different ways. Students described that they had learnt to reflect upon their actions and thoughts, learnt something new about themselves, and have gained new perspective during the course. For example, students reported that thanks to the course, they now recognize a need for improvement in their studying methods, time management, or different aspects of well-being. Students also described that now they

recognize harmful actions or ways of thinking in general. In addition, students described how they have learned to listen to themselves and recognized their thinking and behavioral patterns, as well as recognized their strengths.

### ***Increased psychological flexibility***

Most students ( $n = 125, 65,8\%$ ) reported that their psychological flexibility had improved during the course. In total, three core processes of psychological flexibility were identified from the analysis. Students described that due to the exercises of clarifying their values, they now had a clear view on their values and can now act according to them. Students described that thanks to the course, they could now better cope with negative thoughts and emotions through acceptance and viewing them separately from themselves. Students also expressed how they had improved their skills to being consciously present in the moment, which was practiced during the course. There were also a few mentions about the general improvement of psychological flexibility, that did not include an elaboration or reflection of the mechanism behind it.

### ***Improved study practices and study motivation***

The course had improved students' study practices and increased motivation towards studying ( $n=123, 64,7\%$ ) in various ways. For example, many students described how the course exercises increased their study efficiency, decreased multitasking and procrastination, and increased their motivation towards studying. For example, due to the exercises related to multitasking and procrastination, students had identified their harmful patterns and gained tools to avoid multitasking and procrastination. In addition, students described that with the help of useful apps and study techniques that were introduced during the course they have been able to study more efficiently.

### ***Improved self-compassion***

In total, 101 (53,2%) students had experienced improved self-compassion. This includes descriptions of viewing oneself more positively and compassionately, for example recognizing one's adequacy and capabilities. For example, students described that they gained tools to view their mistakes and flaws in a more neutral and compassionate way, and that their internal speech had a more friendly and compassionate tone, instead of being overly self-critical. In addition, some descriptions stated that due to the well-being surveys that took place in the beginning of the course, they have now identified and accepted that they are in a risk of, for example, burnout and therefore have been more compassionate towards themselves. This category also included descriptions of students experienced having a more compassionate attitude towards setbacks, which included for example mentions where students described compassion towards difficult situations and failure.

### ***Gained peer support***

Around half of the students ( $n=99, 52,1 \%$ ) experienced positive collective experiences thanks to the intervention course. The mentions in this category were related to the experienced peer support from the

group discussions during the course. The students described that peer support was extremely important and needed during remote studies due to the pandemic. Mentions of peer support consist of general experiences of the importance of peer support, getting advice from the group regarding studying and life in general, gaining a sense of common human experience through the group discussions, and general expression of feeling joy from the group discussions.

### ***Improved organized studying***

Almost half (92, 48,4%) of the students experienced that the course had helped them with organized studying. Students described that they were in better control of their studies with better time management and planning. For example, that with the help of a time management exercise students were instructed to track their time usage for a whole week, students now realized how much time they spend on different tasks during their week. With this realization, students had invested and paid more attention to their time management. Many students described how they did not plan their studies at all before the intervention course but now had started to do so. In addition, many students mentioned that they had reduced their screen time and therefore improved their time management skills. Some students described that they had now started to prioritize and plan their studies according to their values and goals. For some students this meant realizing that not all courses are as important as others, and that they can invest more in courses that are important for them. Students also had realized how it is not necessary to excel in all courses, which has decreased pressure and stress and improved their well-being and studying.

### ***No significant experienced benefits***

Altogether, 6 reports (3,2 %) were identified, where students described that they did not gain any benefits from the course, and they did not mention any benefits from the course. However, altogether in 25 reports (7,2 %), students described that they did not feel that they gained any significant benefits from the course, but still some clear benefits were identified from the reports. For example, some of the students started their reflection by stating that they did not experience any significant benefits from the course, but going forward with their reflection, they realized that they indeed did have some benefits from the course.

” [...] I did not notice this course having a big impact on my well-being or studying. However, the tips I got from the course eased my stress and improved my focus at least briefly [...] Exercises targeting relaxation worked well for me, as I was able to lower my stress levels with their help [...] I have noticed I have been able to be more easy-going than before, and I think the course had an impact on this [...] From the group discussions I gained peer support, when I noticed that others were also struggling with similar issues as I am.” (148)

**Table 3.** Identified benefit categories, subcategories, quotations, and number of students in each category.

Category	Subcategories	Quotation	n	%
Improved general well-being	Overall experienced increase in well-being (n = 86) Decreased stress and burnout (n = 67) Improved daily habits (n = 44) Improved coping with daily life (n = 21) Improved skills to relax (n = 30) Improved quality of free time (n = 12) Increased positive feelings (n = 27)	I have learnt to prioritize my own well-being and realized how much enough of good quality sleep, enough exercise and good quality nutrition affects well-being. (021)	136	71,9
Improved self-knowledge	Recognition of the need for development (n = 69) Improved self-reflection skills (n = 75) Gained perspective (n = 55)	Reflecting on my own behavior and the reasons behind it has been beneficial. I have noticed that I don't always act in a way that is the best for myself. For example, acknowledging procrastination in my studying and neglecting my health helps me make a change regarding them. (179)	128	67,7
Increased psychological flexibility	Improved skills to cope with negative thoughts and feelings (n = 69) Contact with the present moment (n = 16) Values and committed actions (n = 80) The overall experience of increased psychological flexibility (n = 19)	Only through this course have I understood that you can make your values visible in your everyday life and this is how a happy everyday life is formed. Through this realization I have consciously reflected on my values every day and made choices according to them. (035)	125	66,1
Improved study practices and study motivation	Tools to develop study methods (n = 77) Increased study efficiency (n = 35) Decreased multitasking (n = 7) Decreased procrastination (n = 37) Increased motivation to study (n = 34) Balance between free-time and studying (n = 20)	Discussing psychological flexibility and procrastination has helped me understand what is causing procrastination, and therefore it has made it easier to recognize the moments where the mind is trying to come up with supplementary activities, even though the unpleasant feeling eases only by starting to work. The course has affected my studying this way. (111)	123	65,1
Increased self-compassion	A positive way of viewing oneself (n = 65) Compassionate approach towards setbacks (ns = 62)	If I compare my well-being to the time before the course, the difference is quite clear. I have learnt to respect myself and truly believe that I can do anything if I just try. (041)	101	53,4
			97	51,3
Gained peer support	Receiving peer support (n = 97)	I felt that the group discussions were important especially in gaining and sharing peer support. Especially now during the time of remote studying it was valuable to get contact with other students ja to read interesting thoughts about well-being and studying. (025)		
Improved organized studying	Improved time management (n = 80) Improved organization of studies (n = 28)	During this course I have learnt a lot of things. The most important thing is time management. By observing how I use my time I realized why was I always behind and why I felt like I didn't have enough time... Now I can manage my time better and know how to prioritize. (006)	92	48,7
No significant experienced benefits		However, I do not feel that any major changes happened in my studying or on thought level in this short amount of time. In addition, I do not feel that my well-being has improved significantly, because I believe that these kinds of changes would be visible only after several weeks. (082)	6	3,2



### *Differences in change of risk of burnout*

Kruskal-Wallis  $H$  test showed that there is a statistically significant difference between at least one pair of groups of burnout risk, regarding their change of burnout risk during the intervention  $X^2(3) = 16.43, p = <.001$  (Table 4). A pairwise comparison test showed that there was a statistically significant difference between the groups “No risk of burnout” and “Obviously increased risk of burnout” (Bonferroni adjusted  $p = .001$ ), where risk of burnout decreased more among students with a “obviously increased risk of burnout” compared to students with “no risk of burnout”. In addition, there was a nearly statistically significant difference between the groups “Increased risk of burnout” and “No risk of burnout (Bonferroni adjusted  $p = .077$ ), where the risk of burnout decreased more among student with an “increased risk of burnout” compared to students with “no risk of burnout”.

**Table 4**

Means of pre and post intervention risk of burnout scores. Means and standard deviations of change in risk of burnout between different groups. The difference between the groups “No risk” and “Obviously increased risk” was found to be statistically significant (Bonferroni adjusted  $p = .001$ ), and groups “No risk” and “Increased risk” are almost statistically significantly different (Bonferroni adjusted  $p = .007$ ).

Risk of burnout, (N)	Burnout risk averages pre- and post-intervention				Change of burnout risk	
	Mean pre	SD	Mean post	SD	Mean	SD
No risk (27)	17.11	2.44	17.78	4.90	.67	4.10
Average (24)	23.21	1.32	21.29	6.03	-1.92	5.63
Increased risk (64)	29.14	2.26	26.89	6.57	-2.25	6.28
Obviously increased risk (74)	40.85	5.07	35.51	8.69	-5.34	7.65

### *Differences in experienced benefits*

Comparison between the different burnout risk groups and their experienced benefits showed that the course had benefitted students similarly regardless of their initial risk of burnout. The cross-tabulation chi-squared test showed no statistically significant results (Table 5). However, there were indicative results between the risk of burnout and gained peer support,  $X^2(3) = 6.69, p = .083$ . Students who were at an obviously increased risk of burnout had experienced more peer support, whereas students with lower risks of burnout had experienced less peer support or didn't find it as valuable to them during the course.

**Table 5***Differences in benefits of the course according to burnout risk groups.*

Experienced benefit	No risk (n = 27)	Average risk (n= 24)	Increased risk (n= 64)	Obviously increased risk (n= 74)	Pearson Chi-Square test $\chi^2$ (3), p
Improved general well-being	18	19	44	54	$\chi^2$ (3) = 1.32, p = .725
Improved self-knowledge	19	17	49	42	$\chi^2$ (3) = 6.47, p = .091
Increased psychological flexibility	21	15	44	44	$\chi^2$ (3) = 3.40 p = .335
Improved study practices and motivation	18	16	43	45	$\chi^2$ (3) = .747, p = .862
Increased self-compassion	13	14	36	37	$\chi^2$ (3) = 1.07, p = .785
Gained peer-support	11	8	37	43	$\chi^2$ (3) = 6.69, p = .083
Improved organized studying	16	14	32	30	$\chi^2$ (3) = 4.11, p = .250
No significant benefits	1	1	0	4	$\chi^2$ (3) = 3.40, p = .334

## Discussion

This study was designed to investigate students' experiences of the ACT-based intervention course regarding students' risk of study burnout. While studies have shown ACT-interventions effectiveness on several outcomes, this study shows what kinds of mechanisms may be behind their effectiveness. The present findings show that whereas the experienced risk of burnout decreased the most for the students with initially high risk of burnout, students experienced qualitatively similar benefits regardless of their initial risk of burnout. The experienced benefits ranged from concrete improvements of well-being, such as decreased stress to improvements in studying and gained peer support. From these benefits, only peer support displayed possibly as particularly important for students with the highest levels of risk of burnout.

### Changes in students' risk of burnout

Recent research shows well-being among higher education students has declined during the pandemic, and has manifested in the form of, for example burnout, stress, anxiety, and depression among other well-being debilitating symptoms (e.g., Elmer et al., 2020; Salmela-Aro et al., 2022; Sarasjärvi et al., 2022). This study also shows how a large portion of students were experiencing high levels of risk of burnout at the beginning of the intervention. The present study suggests that an online ACT-based intervention course can decrease students' experienced burnout risk, as the results reveal how a statistically significant portion of the students experienced a decrease in their risk of burnout, and the number of students in the higher burnout risk groups reduced. These findings are strengthened by previous research, as it has shown that students who participated in an ACT-based intervention, experienced decreases in their study burnout

(e.g., Frögeli et al., 2015; Rähkä et al., 2021), as well as our qualitative findings that further explore students' experienced benefits on the course.

### **Students' experienced benefits of the intervention course**

The results showed that students participating in the intervention course experienced various benefits including improved general well-being, improved self-knowledge, increased psychological flexibility, increased study practices and motivation, increased self-compassion and organized studying, as well as gained peer support from the course.

Research from past semesters on ACT-based intervention courses with the same course design revealed similar course benefits –improvements in overall well-being, stress-management, studying, as well as psychological flexibility and self-knowledge (Asikainen et al., 2019; Katajavuori et al., 2021). Quantitative research on ACT-based interventions show how they can promote student well-being, (Asikainen et al., 2018; Hailikari et al., 2022) organized studying skills, decreased stress and burnout, (e.g., Rähkä et al., 2021) and study performance (Asikainen et al., 2018; Hailikari et al., 2022). The results of this study reveal that the intervention course provided similar benefits for most of the student participants.

The results of this study explore the experienced benefits in careful detail; thus, this study brings further knowledge on the possible mechanisms on how an online ACT-based intervention course benefits students. What is particularly positive, is how wide-ranging benefits the course had to its participants – from self-knowledge to study motivation, but also improvements in several domains of overall life management, as well as social domains. The results show how students experienced the course as a comprehensive intervention in several domains of their everyday lives – through giving tools to cope and organize their day-to-day lives, as well as offering them much needed peer support to process and reflect difficult and profound topics together. Previous research suggests that peer support plays an important role in online learning (Engel et al., 2023; Geary et al., 2023). Therefore, ACT-based interventions could be developed even further by emphasizing the aspect of peer support throughout the course, since it was found to be extremely meaningful for students and it could enhance their adaption of the tools given by the course. By doing this, the positive outcomes of the course could be emphasized further.

As anticipated based on previous research, the results of this study show that an ACT-based intervention course can improve psychological flexibility, (e.g., Hayes et al., 2006). Students described improvements in their psychological flexibility through its core processes, as well as generally describing that their psychological flexibility had increased. Previous research on ACT- based interventions has shown that the core processes are visible in students' experiences of the course (Katajavuori et al., 2021). Similarly, in the present study, students described improvements in coping with, confronting, and accepting negative thoughts and feelings by, for example, seeing them merely as thoughts and not as truths. These descriptions can be interpreted to be adapting tools of acceptance, cognitive defusion, and seeing self as a context, which are three of the core processes of psychological flexibility (Hayes et al., 2006). The results suggest that many students adapted tools to be mindfully, non-judgmentally present in the moment with the help of, for example mindfulness exercises provided by the course. This represents the core process of contact with the present moment (Hayes et al., 2006). The results imply that the course

enabled students to clarify and reflect on their values, and thus, act upon those values. These represent the core processes of values and committed actions (Hayes et al., 2006). The present study strengthens the view of the overlapping and interrelated nature of the core processes of psychological flexibility, (Hayes et al., 2006) as this can be seen from the students' reflections of the online ACT-based intervention course. Thus, supporting all the core processes simultaneously is possible, and more importantly, necessary in an ACT-based intervention course.

The improvement of students' psychological flexibility may explain the various experienced benefits regarding their overall well-being, including increased positive feelings, decreased stress and burnout, and improved daily habits, as psychological flexibility skills have been found to be related to several domains of well-being.

This study shows how organized studying skills can be developed simultaneously with psychological flexibility by integrating exercises targeting time and effort management skills to the intervention course. In addition to improvements of organized studying, the course improved students' study motivation and practices. This is resulted most likely due to the exercises targeting students' time and effort management skills, which in turn, gave additional benefits such as decreased procrastination and multitasking, and resulted in increased efficiency and motivation in studying. Indeed, previous research has shown that time and effort management skills, along with psychological flexibility, have a strong association with, for example, procrastination, (e.g., Hailikari et al., 2021), which in turn is related to study burnout (e.g., Turhan et al., 2022). Therefore, it could be concluded that improvements in students' organized studying and study practices and motivation along with psychological flexibility may partially explain how the intervention course is an aid in students' burnout and stress, as shown by previous research (e.g., Heikkilä et al., 2012; Asikainen et al., 2019).

This study took place in a unique time in history, where students were forced to stay at home and learn new ways of studying by shifting into study fully remotely due to the pandemic. It has been found that students experienced more loneliness and lack of interaction during the pandemic and longed for peer interaction (Asikainen & Katajavuori, 2022; Baltá-Salvador et al., 2021; Nguyen et al., 2021). Consequently, the results of this study reveal how students found peer support being especially meaningful for them. It could be assumed that due to the timing of the course, students valued peer support and found that it was particularly important to share difficult experiences and have the experience that they are not alone with their thoughts and feelings. This may enhance the positive experiences from the course. This study shows that it is important to offer students' the possibility of peer support in online ACT-based intervention courses.

### **Differences among burnout risk -groups regarding the change of burnout risk during the course and experienced course benefits**

Previous research suggests that ACT-based interventions may be more effective for participants with higher initial ill-being, such as baseline depression and stress (Reeve et al., 2018; Zhao et al., 2022). Similarly, this study reveals that students' who were at a higher risk of burnout before the intervention, experienced the most drastic changes in burnout risk during the intervention, compared to students with lower levels of initial burnout risk. However, this study shows that ACT-based interventions are

beneficial for students regardless of whether they were at a risk of burnout or not at the beginning of the intervention course, as the experienced benefits of the course were similar for all students. Therefore, it could be said that through an online ACT-based intervention course students' psychological flexibility, organized studying, and importantly, well-being and burnout can be supported through diverse, yet similar, mechanisms, regardless of their risk of initial study-related burnout. This is an important observation, since it shows that the course can have great benefits for students also at a high risk of burnout, and it is not an obstacle to participate and gain benefits from the course. In addition, such an intervention may also act as prevention for burnout and other unwanted symptoms since it also had several benefits for students with no burnout risk.

The results, however, indicate that the importance and value of peer support may be highlighted for the students with a high risk of burnout. Students with higher risks of burnout may experience higher levels of strain, cynicism, and a sense of inadequacy towards their studies, which may explain why those students found peer support from the course to be especially meaningful. Sharing feelings and experiences about difficulties in studying and life in general with other students may give students a sense of communality and that they are not alone with their problems. Indeed, recent research shows that during remote studies, peer support can buffer the negative outcomes of remote studying, such as decreased study engagement and satisfaction, that may contribute to study-burnout (Wissing et al., 2022). As the importance and value of peer support was reflected in many reports, and especially amongst those with a high risk of burnout, the importance of offering peer support in online ACT-based intervention courses is emphasized even further.

### **Limitations**

The present study is subject to some limitations. Firstly, as the intervention course was held during a critical period of the COVID-19 pandemic, it was under exceptional circumstances and thus may have influenced the experiences of the course for some participants. However, it is an encouraging finding that regardless of the exceptional and difficult time, the intervention course had such a positive effect on students' lives in various ways.

Secondly, the quantitative results are based solely on students' self-reported experiences on their burnout risk. Further, the study did not include a control group. Therefore, the quantitative results are to be interpreted with a degree of caution. However, the quantitative results are strengthened by the qualitative results of the study. The qualitative results show how students experienced a large variety of benefits, which most likely explain the quantitative results of the study.

Lastly, the benefits were identified from reflective reports, which left out the possibility of elaborative questions and required a certain level of the authors' own interpretation. However, the reflective reports were analyzed by breaking the identified benefits down in a very specific manner, and there was no attempt of reading hidden meanings between the lines. In addition, all the authors were involved in the analysis process and a common understanding was achieved regarding the categorization process. In the future, it would be meaningful to conduct interviews for the participants of the course to gain even deeper knowledge of the mechanisms behind the course benefits.

## Conclusions

This study shows that the benefits of an ACT-intervention course aiming to promote students' psychological flexibility and organized studying can reduce students' risk of burnout through a wide range of benefits. While students with the most risk of burnout can benefit the most from an ACT-intervention, the mechanisms behind the benefits are mostly the same. In addition to the apparent benefits of promoting psychological flexibility, it is possible to simultaneously promote students' study skills, which in part contributes to increasing student well-being. Importantly, emphasizing peer support in online ACT-based courses is important – it may contribute to decreasing students' burnout and enhance the effects of the many other benefits that the course has to offer.

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## Appendices

### Appendix A

Reflective report questions. Translated from Finnish.

1. What did you learn during the course and what were some focal things that you became aware of?
2. What kind of effect did the course have on your studying and well-being? To help you answer this question, you can utilize the results and changes in the results from the well-being evaluations at the beginning and end of the course.
3. If you feel that the course did not have effects on your studying, what do you think that this results from?
4. How did your evaluations on your well-being/stress-level/burnout change during this course? What do you think affected this?
5. How did you experience the group discussions?
6. What are some things that you will pay attention to in your studies in the future? Why and how will you do this?
7. What concrete measures will you take to develop your studying and well-being in the future? Recognize at least one concrete measure.

## **APPENDIX 2**

### **Original open-ended questions in the reflective reports**

1. Mitä opit kurssin aikana ja mitkä olivat keskeiset oivaltamasi asiat?
2. Millaisia vaikutuksia kurssilla on ollut omaan opiskeluusi ja hyvinvointiisi? Apuna voit käyttää kurssin alussa ja lopussa saamiasi arvoja hyvinvoinnistasasi ja niiden muutosta.
3. Jos koet, ettei kurssilla ole ollut vaikutusta omaan opiskeluusi, mistä luulet tämän johtuvan?
4. Miten omat arviosi hyvinvoinnistasasi/stressitasostasi/uupumuksestasi muuttuivat kurssin aikana? Mikä mielestäsi vaikutti tähän?
5. Miten koit pienryhmän keskustelut?
6. Mihin asioihin aiot jatkossa kiinnittää enemmän huomiota omassa opiskelussasi? Miksi ja miten käytännössä aiot tämän tehdä?
7. Mihin konkreettisiin toimenpiteisiin aiot ryhtyä oman opiskelun kehittämiseksi ja hyvinvoinnin lisäämiseksi? Tunnista ainakin yksi konkreettinen toimenpide.

## **APPENDIX 3**

### **Translated questions in the reflective reports**

1. What did you learn during the course and what were some focal things that you became aware of?
2. 2. What kind of effect did the course have on your studying and well-being? To help you answer this question, you can utilize the results and changes in the results from the well-being evaluations at the beginning and end of the course.
3. If you feel that the course did not have effects on your studying, what do you think that this results from?
4. How did your evaluations on your well-being/stress-level/burnout change during this course? What do you think affected this?
5. How did you experience the group discussions?
6. What are some things that you will pay attention to in your studies in the future? Why and how will you do this?
7. What concrete measures will you take to develop your studying and well-being in the future? Recognize at least one concrete measure.

## APPENDIX 4

### Study Burnout Inventory (SBI-9) (Salmela-Aro et al., 2009).

Opiskelu-uupumus (SBI-9) (Salmela-Aro ym., 2009)

1 = Täysin eri mieltä, 2 = Eri mieltä., 3 = Osittain eri mieltä., 4 = Osittain samaa mieltä.,  
5 = Samaa mieltä., 6 = Täysin samaa mieltä.

1. Tunnen hukkuvani opintoihin liittyvän työmäärään
2. Tunnen itseni haluttomaksi opinnoissani ja ajattelen usein lopettaa opiskelun. (k)
3. Minulla on usein riittämättömyyden tunteita opinnoissani. (r)
4. Nukun usein huonosti erilaisten opiskeluasioiden takia. (e)
5. Minusta tuntuu, ett. olen menettämässä kiinnostukseni opiskelua kohtaan. (k)
6. Pohdin alituisen, onko opiskelullani merkitystä. (k)
7. Murehdin opiskeluasioita paljon myös vapaa-aikana (e)
8. Ennen odotin saavani opinnoissani paljon enemmän aikaa kuin nyt. (r)
9. Opiskelujen paine aiheuttaa ongelmia läheisissä. ihmissuhteissani (e)

Uupumuksen osatekijöihin liittyvät kysymykset:

- Ekshaustio (e)
- Kyynisyys (k)
- Riittämättömyys (r)

## APPENDIX 5

### Research permit

#### *Suostumus tutkimukseen*

Suostun vapaaehtoisesti osallistumaan opiskelijoiden stressinhallintaan ja hyvinvointiin liittyvään tutkimukseen.

Minulle on kerrottu ketkä aineistoa käsittelevät, miten aineistoa käsitellään ja miten aineisto säilytetään.

Minulle on selvitetty yllä mainitun tutkimuksen tarkoitus ja tutkimuksessa käytettävät tutkimusmenetelmät. Olen tietoinen siitä, että tutkimukseen osallistuminen on vapaaehtoista. Olen myös tietoinen siitä, että tutkimukseen osallistuminen ei aiheuta minulle minkäänlaisia kustannuksia, henkilöllisyyteni jää vain tutkijan tietoon, minua koskevaa aineistoa käytetään vain kyseiseen tutkimukseen ja aineisto hävitetään tutkimuksen valmistuttua. Olen myös tietoinen, että kurssin voi suorittaa osallistumatta tutkimukseen.

Suostun siihen, että kurssin aikana tehtyjä kyselyjä käytetään tässä tutkimuksessa.

Suostun siihen, että yksilö- ja ryhmätehtävieni vastaukset sekä loppuraportti toimivat tutkimusaineistona niin, että henkilöllisyyteni jää vain tutkijan tietoon.

Kyselyaineistossa, yksilö- ja ryhmätehtävieni vastauksissa sekä loppuraporttissani antamiani tietoja saa käyttää kyseisen tutkimuksen tarpeisiin. Annan myös luvan HUL-kyselyiden ja opintorekisteridatan tutkimuskäyttöön.

Voin halutessani keskeyttää tutkimukseen osallistumisen ilman seurauksia milloin tahansa ilman, että minun täytyy perustella keskeyttämistäni. Tällöin kurssilla tuotettua aineistoa käytetään vain kurssin suorittamiseen ja säilytetään ohjeiden mukaan vuosi kurssisuorituksen jälkeen

## APPENDIX 6

### Research announcement

Tutkimusprojekti: WELLS - Promoting students' well-being and life-long learning

Tutkimuspaikat: Helsingin yliopisto, Kasvatustieteiden tiedekunta

Tutkimuksen vastuulliset tutkijat: Henna Asikainen (Helsingin yliopisto, henna.asikainen@helsinki.fi) ja Nina Katajavuori, Helsingin yliopisto, nina.katajavuori@helsinki.fi)

Tutkimusorganisaatio: HYPE, yliopistopedagogiikan keskus, Kasvatustieteiden tiedekunta ja Helsingin yliopisto.

#### 1. TUTKIMUKSEN TARKOITUS, HYÖTY JA MERKITYS

Tämän tutkimuksen ensisijainen tarkoitus on löytää keinoja opiskelijoiden hyvinvoinnin edistämiseen ja tukea opiskelijoiden oppimista, hyvinvointia ja auttaa opiskelijoita stressinhallinnassa.

Tutkimuksessa selvitetään Helsingin yliopiston opiskelijoiden hyvinvointia sekä niihin vaikuttavia tekijöitä. Tutkimuksessa pyritään myös vaikuttamaan opiskelijoiden hyvinvointiin intervention avulla sekä tutkimaan sen vaikutuksia. Tutkimus on perustutkimusta. Tutkimus ei ota kantaa yksittäisen tutkittavan terveyteen tai hyvinvointiin, mutta vastausten perusteella jokainen osallistuja saa palautteen yleisellä tasolla.

#### 2. TUTKIMUKSEN TOTEUTUSTAPA

Tutkimus kohdistuu Kohti parempaa opiskelua 3 op –verkkokursseille, jotka järjestetään syksyllä 2020 toisessa periodissa ja keväällä 2021 kolmannessa periodissa. Kurssille voi hyvin osallistua osallistumatta tutkimukseen. Kurssilla tehdään erilaisia itsenäisesti ja ryhmässä tehtäviä verkkotehtäviä ja harjoitteita. Kurssin aikana opiskelijat tekevät viikottain ryhmä- sekä yksilötehtäviä. Kurssin loppuksi tehdään 2-3 sivun loppuraportti. Kyseessä on siis verkkokurssi, jonka aikana tehdään kyselyjä ja oppimistehtäviä, ja näitä aineistoja käytetään myös tutkimusaineistona, mikäli osallistuja antaa luvan niiden käyttöön tutkimusaineistona.

Kyseessä on kokeellinen asetelma, jossa kurssi järjestetään kaksi kertaa: syksyllä 2020 2. periodissa ja keväällä 2021 3. periodissa. Kevään kurssille osallistuvat opiskelijat toimivat kontrolliryhmänä. Tästä johtuen 3. periodin osallistujat täyttävät ensimmäiset kyselyt jo ensimmäisen kurssitoteutuksen aikana sekä itse kurssille osallistuessaan. Kyselyhin vastataan kurssi aluksi ja loppuksi. Kyselyyn vastaaminen kestää 15-20 minuuttia. Opiskelijat saavat päättää antavatko luvan kyselyiden käyttämiseen tutkimusaineistona.

Tutkimuksessa kerätään myös laadullista aineistoa, joka koostuu kurssilla kirjoitetuista reflektiivisistä yksilö- ja ryhmätehtävistä. Aineistoa käytetään tutkimuksessa vain, mikäli tutkittava siihen suostuu.

Kursseilla osa osallistujista osallistuu myös hyvinvoinnin mittauksiin Moodmetrics-sormuksella. Moodmetrics-sormus mittaa ihon sähkönjohtavuuden muutosta sekä



liikettä. Moodmetrics-sormusten avulla tutkitaan hyvinvoinnin muutoksia kurssin aikana. Sormusten käyttö on täysin vapaaehtoista ja kiinnostus niiden käyttöön kerätään erillisellä e-lomakkeella, jonka perusteella kiinnostuneet pyydetään tutkimukseen. Moodmetrics-sormusten ohessa tulee myös kännykkäsovellus, josta saa reaaliaikaista tietoa omasta hyvinvoinnistaan. Mittareiden käyttö edellyttää suostumusta tutkimukseen sekä sovelluksen käyttöön.

### 3. TUTKITTAVIEN OIKEUDET

Tutkimukseen osallistuminen on täysin vapaaehtoista ja siihen osallistumisen voi keskeyttää missä vaiheessa tahansa ilman seuraamuksia ja syytä ilmoittamatta. Tutkimuksesta voi kieltäytyä ilmoittamalla siitä kurssin opettajille, Nina Katajavuorella tai Henna Asikaiselle missä vaiheessa kurssia tai tutkimusta tahansa. Vain suostumuksen antaneiden opiskelijoiden materiaalia käytetään tutkimuksen aineistona. Voit hyvin osallistua kurssille osallistumatta tutkimukseen. Tutkijat antavat halutessanne mielellään lisätietoa tutkimusmenetelmistä tai tutkimuksen tarkoituksista. Kaikkiin kysymyksiinne pyritään vastaamaan, mikäli ne eivät vaikuta tutkimustuloksiin. Kaikilta tutkimukseen osallistujilta pyydetään suostumus tutkimukseen. Osallistujien, jotka eivät halua tutkimukseen osallistua, kurssitehtäviä ei käytetä tutkimusaineistona.

Tutkimukseen osallistumiseen ei kulu enempää aikaa kuin kurssin suorittamiseen, sillä tutkimusaineistona käytettävät kyselyt ja yksilö- sekä ryhmätehtävät kuuluvat kurssin suorittamiseen. Mikäli et halua osallistua tutkimukseen, kurssilla tekemiäsi kyselyitä ja tehtäviä ei käytetä tutkimuksessa, vaan suoritteet tarkistetaan ainoastaan kurssin suorittamista varten.

Kyseessä on kokeellinen asetelma, jossa kurssi järjestetään kaksi kertaa: syksyllä 2020 2. periodissa ja keväällä 2021 3. periodissa. Kevään kurssille osallistujat toimivat kontrolliryhmänä. Tästä johtuen 3. periodin osallistujat täyttävät ensimmäiset kyselyt jo ensimmäisen kurssitoteutuksen aikana sekä itse kurssille osallistuessaan. Kyselyyn vastaaminen kestää 15-20 minuuttia.

Kaikki tutkimusaineiston käsittely ja analysointi on täysin luottamuksellista. Aineisto raportoidaan yleisellä tasolla niin, ettei yksittäistä vastaajaa voi vastauksista tunnistaa. Tutkimusnäkökulma on tärkeä siksi, että opetuskäytäntöjä voidaan kehittää tutkitusti oikeaan suuntaan. Tutkimuksen ensisijainen tarkoitus on löytää keinoja opiskelijoiden hyvinvoinnin edistämiseen ja tukea opiskelijoiden oppimista ja hyvinvointia.

### 4. TUTKIMUSAINEISTON KÄYTTÖTARKOITUS

Tutkimus on rakennettu siten, että kyselyihin vastaajan henkilöllisyys tulee vain WELLS-tutkijoiden tietoon. Opiskelijoilta kysytään tunnistetietoja, jotta eri tutkimusdatat voidaan yhdistää keskenään ja tutkia näin kurssin vaikutuksia. Henkilötiedot säilytetään seurantaa varten, jotta seurantadata voidaan yhdistää osallistujien aikaisempiin vastauksiin. Osallistujille annetaan aineistossa järjestysnumerot, joiden avulla heidät erotetaan toisistaan. Tutkittavien henkilötietoja säilytetään eri paikassa kuin tutkimusdataa.

Tunnistetiedot poistetaan heti kun datat on saatu yhdistettyä ja aineistot koodataan, jotta voidaan taata tutkittavien anonymiteetti. Tutkimuksessa käytettävä aineisto muutetaan siis heti muotoon, josta poistetaan tunnistetiedot (nimi, opiskelijanumero). Ainoastaan WELLS-tutkimusryhmän jäsenet käsittelevät tutkimustietoa. Sähköisesti tallennettu aineisto säilytetään Helsingin yliopiston tarjoamalla verkkolevyllä, johon Henna Asikaisella, Nina Katajavuorella ja mahdollisella tutkimusavustajalla on pääsy

salasanalla ja käyttäjätunnuksella. Yksilö- ja ryhmätehtävien vastaukset sekä loppuraportit säilytetään Yliopistopedagogiikan keskuksessa salasanan ja tunnusluvun takana. Kyselyaineisto säilötään DDI-tietokantaan ilman tunnistetietoja. Moodmetrics-sormusten data tallentuu verkkopalvelimelle tunnuksen ja salasanan taakse.

Tutkimusaineisto hävitetään tutkijoiden arkistoista 10 vuoden kuluttua tutkimuksesta. Sen jälkeen aineisto ja suostumuslomakkeet tuhoataan. Aineiston analyysitulokset kuitenkin säilytetään. Tutkimusten tulokset julkaistaan kansainvälistä ja/tai kotimaista asiantuntija-arviota käyttävissä tieteellisissä julkaisusarjoissa sekä tieteellisissä kokouksissa. Tulosten raportoinnissa ei käytetä mitään sellaisia merkintöjä, joista tutkittavan henkilöllisyys olisi pääteltävissä.

Jos jokin muuhun tutkimusryhmään kuuluva tutkija esittää perustellun aineistopyynnön, kyselyvastausaineisto tai fysiologinen mittaustulokset voidaan lähettää uudelleen analysoitavaksi tai jatkoanalysoitavaksi johonkin muuhun tutkimusryhmään. Tällöin kiinnitetään erityistä huomiota siihen, ettei tutkimusaineistosta ole mahdollista päätellä tutkittavien henkilötietoja. Osa aineistosta voidaan julkaista ns. open science –periaatetta noudattavissa tutkimusaineistopankeissa. Myös tällöin kiinnitetään erityistä huomiota siihen, ettei tutkimusaineistosta ole mahdollista päätellä tutkittavien henkilötietoja.

Yhteenvedona, tutkimuksen osallistujat osallistuvat seuraaviin vaiheisiin, jotka kaikki kuuluvat myös osaksi kurssin suorittamista:

- Vastaaminen kyselylomakkeisiin

- Yksilö- ja ryhmätehtävien teko kurssilla sekä loppuraportin kirjoittaminen, jossa opiskelijat analysoivat kokemuksiaan kurssista ja kurssin merkitystä heidän hyvinvointinsa ja opiskelutaitojensa kehittymiselle

Lisäksi niille, jotka osallistuvat hyvinvointimittauksiin:

- Moodmetrics -mittaukset kurssin aikana

Mikäli kurssin aikaiset tehtävät tai mittaustulokset herättävät halun keskustella omasta hyvinvoinnista ole yhteydessä viipymättä kurssin vastuunopettajiin Henna Asikaiseen ja Nina Katajavuoreen. Ohjaamme sinut tarvittaessa eteenpäin, mutta voit myös ottaa yhteyttä opintopsykologiin tai YTHS:n palveluihin jos koet hyvinvoinnissasi ongelmia.

Lisätietoa tutkimuksesta antavat

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HYPE, Helsingin yliopisto, linkki Moodmetrics tietosuojaselosteeseen:

<https://www.moodmetric.com/fi/tietosuojaseloste/>

## APPENDIX 7

### Authors' contribution of the article manuscript

Asteikossa 1 tarkoittaa vähäistä kontribuutiota, 4 merkittävää kontribuutiota ja arvot 2 ja 3 vähäistä suurempaa mutta ei vielä merkittävää kontribuutiota.					
<b>Artikkelin tiedot:</b>	Exploring the Effects of an Acceptance and Commitment Therapy -based Intervention Course on University Students' Well-being				
<b>Kirjoittajat</b>	<b>Tutkimusidea ja tutkimuksen suunnittelu</b>	<b>Tutkimusaineiston hankinta</b>	<b>Tutkimusaineiston analyysi ja tulkinta</b>	<b>Tutkimustulosten raportointi</b>	<b>Käsikirjoituksen valmistelu ja kirjoittaminen</b>
<b>Ronja Ruuska</b>	4	1	4	4	4
<b>Henna Asikainen</b>	3	4	2	2	1
<b>Nina Katajavuori</b>	3	4	2	1	1
<b>Tutkielman tekijän oma selvitys / lisätietoa</b>	Tutkielman aineisto on kerätty osana WELLS -projektia ja aineisto on hankittu Kohti parempaa opiskelua -kurssilta. Osallistuin projektiin tutkimusavustajana ja graduntekijänä. Tutkimusaineiston keräsi projektin osallistujat. Tutkimuksen aiheen suunnitelimme yhdessä ohjaajien Henna Asikaisen ja Nina Katajavuoren kanssa. Aineiston analyysin ja tulkinnan, sekä raportoinnin tein lähes itsenäisesti, ohjaajat auttoivat epävarmoissa tilanteissa. Käsikirjoituksen valmistelun ja kirjoittamisen toteutin itsenäisesti.				