JYU DISSERTATIONS 299

Sanna Kinnunen

Mindfulness-, Acceptance-, and Value-Based Intervention for Burnout

Mechanisms of Change and Individual Variation in Outcomes

UNIVERSITY OF JYVÄSKYLÄ
FACULTY OF EDUCATION AND PSYCHOLOGY

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ABSTRACT

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The aim of these studies was to investigate the effects of a brief mindfulness-, acceptance-, and value-based (MAV) intervention on burnout during an eight-week intervention and 10-month follow-up. The mechanisms of change and individual variation in outcomes were focused on. The participants experiencing high burnout symptoms were divided to intervention group (n = 106) receiving the MAV intervention in addition to treatment-as-usual (TAU) and to control group (n = 96) receiving only TAU. Study I investigated whether the five separate mindfulness facets (observing, describing, acting with awareness, non-judging, and non-reacting) mediated the changes in burnout dimensions (exhaustion, cynicism, and reduced professional efficacy) during the intervention and 10-month follow-up. Study II investigated individual differences in intervention effects by identifying profiles of mindfulness skills and burnout during the intervention and 4-month follow-up. Furthermore, the profiles were compared in terms of practice quantity, frequency, and continuation, as well as learning experiences. Study III compared the profiles of Study II on the changes in subjective well-being during the 12-month study period (intervention and 10-month follow-up). The results of the three studies indicated that a brief MAV intervention could be a valuable addition to TAU for burnout since this approach could effectively and long-lastingly alleviate even severe burnout. Furthermore, the positive intervention effects were likely to spread to other areas of well-being. However, the intervention outcomes were not the same for everyone, and a minority of the participants did not benefit from the intervention. It is important to recognize these participants early, since the well-being gap between those who initially benefited and those who did not was likely to widen over time. Improvement in mindfulness skills was a mechanism of change. All mindfulness facets mediated the decreases in burnout dimensions, but improvement in non-judging was the most essential for burnout alleviation. Learning of non-judging skills could be emphasized in burnout interventions. Practice quantity and frequency during the intervention did not differentiate the profiles with differing intervention outcomes. However, positive learning experiences during the intervention and practice continuation after the intervention were associated to better outcomes. These could be emphasized in the MAV interventions to obtain long-lasting benefits.

Keywords: mindfulness, burnout, well-being, intervention, acceptance and commitment therapy, practice, process-based intervention research

TIIVISTELMÄ (FINNISH ABSTRACT)

Kinnunen, Sanna Maria
Mindfulness-, hyväksyntä- ja arvopohjainen interventio työuupumukseen: Muutosmekanismit ja yksilöllinen vaihtelu vaikutuksissa
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Osatutkimusten tavoitteena oli tutkia, kuinka lyhyt mindfulness-, hyväksyntä- ja arvopohjainen (MIHA) interventio vaikutti työuupumukseen sekä kahdeksan viikon intervention että 10 kuukauden seurannan aikana. Tutkimuksissa keskityttiin muutosmekanismeihin ja yksilölliseen vaihteluun intervention vaikutuksissa. Runsaasti työuupumusoireita kokevat osallistujat jaettiin interventioryhmään (*n* = 106), jolle tarjottiin MIHA-interventio tavanomaisen hoidon lisäksi, ja kontrolliryhmään (*n* = 96), jolla oli käytettävissään vain tavanomainen hoito. Osatutkimus I tutki, välittivätkö viisi tietoisuustaitoa (havainnointi, kuvailu, tietoinen toiminta, hyväksyvä suhtautuminen, välittömän reagoinnin välttäminen) muutoksia työuupumuksen osa-alueissa (uupumusasteinen väsymys, kyynistyminen, ammatillisen itsetunnon heikkeneminen) intervention ja 10 kuukauden seurannan aikana. Osatutkimus II tarkasteli yksilöllisiä eroja intervention vaikutuksissa tunnistamalla erilaisia tietoisuustaitojen ja työuupumuksen kehitysprofiileja intervention ja neljän kuukauden seurannan aikana. Profiileita myös vertailtiin harjoittelun määrän, tiheyden ja jatkamisen sekä oppimiskokemusten osalta. Osatutkimus III vertaili osatutkimuksessa II tunnistettuja kehitysprofiileja henkilökohtaisen hyvinvoinnin muutoksissa 12 kuukauden tutkimusjakson aikana (interventio ja 10 kuukauden seuranta). Tulokset osoittivat, että lyhyt MIHA-interventio voi olla arvokas lisä tavanomaiseen työuupumuksen hoitoon, sillä menetelmä lievitti tehokkaasti ja pitkäkestoisesti jopa vakavia työuupumusoireita. Lisäksi myönteiset vaikutukset laajenivat muille hyvinvoinnin osa-alueille. Vähemmistö osallistujista ei kuitenkaan hyötynyt interventiosta. On tärkeää tunnistaa nämä osallistujat varhain, koska hyvinvointierot niiden välillä, jotka hyötyivät ja jotka eivät hyötyneet, kasvoivat seurannan pidentyessä. Kaikki viisi tietoisuustaitoa välittivät muutoksia työuupumuksen osa-alueissa, mutta hyväksyvä suhtautuminen oli keskeisin työuupumuksen lievittymiselle. Hyväksyvän suhtautumisen harjoittelua voisikin korostaa työuupumusinterventioissa. Harjoittelun määrä tai tiheys eivät erotelleet kehitysprofiileja toisistaan. Harjoiteltavien taitojen oppiminen ja harjoittelun jatkaminen intervention jälkeen sen sijaan olivat yhteydessä parempiin interventiotuloksiin. Näihin voisi panostaa MIHA-interventioissa pitkäkestoisten hyötyjen saavuttamiseksi.

Avainsanat: mindfulness, työuupumus, hyvinvointi, interventio, hyväksymis- ja omistautumisterapia, harjoittelu, prosessipohjainen interventiotutkimus

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Jyväskylä, September 2020

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II Kinnunen, S. M., Puolakanaho, A., Tolvanen, A., Mäkikangas, A., & Lappalainen, R. (2019). Does mindfulness-, acceptance-, and value-based intervention alleviate burnout? - A person-centered approach. *International Journal of Stress Management, 26*(1), 89–101.

III Kinnunen, S. M., Puolakanaho, A., Mäkikangas, A., Tolvanen, A., & Lappalainen, R. (2020). Does a mindfulness-, acceptance-, and value-based intervention for burnout have long-term effects on different levels of subjective well-being? *International Journal of Stress Management, 27*(1), 82–87.

Considering the instructions given and comments made by the co-authors, the author of the present thesis participated in designing the research plan, planning and execution of the intervention, and collecting the data. The author also contributed to the statistical analyses and was the main author of all three publications.

FIGURES

TABLES

CONTENTS

1 INTRODUCTION

1.1 Burnout

1.1.1 Definition, prevalence, and consequences

Several definitions for burnout have been presented, but the most widely used is the definition by Maslach and her colleagues (Maslach, Jackson, & Leiter, 1996). This definition has been recently acknowledged by the World Health Organization (2019) that announced including burnout as an occupational condition to ICD-11, with wording that follows Maslach Burnout Inventory – General Scale (Leiter & Schaufeli, 1996). According to this definition, burnout is a persistent, job-related state of ill-being that is a consequence of prolonged job stress (Leiter, Bakker, & Maslach, 2014; Maslach et al., 1996; Näätänen, Aro, Matthiesen, & Salmela-Aro, 2003). It is characterized by dimensions of exhaustion, cynicism, and reduced professional efficacy. Exhaustion refers to feelings of both physical and emotional fatigue that develop when one's own demands or the ones of the environment constantly surmount the resources that one has. Cynicism refers to questioning the meaningfulness of one's job and distancing oneself from work. Tasks are often completed mechanically, and the person is not likely to strive for a better performance. Reduced professional efficacy refers to experiencing one's capabilities as inadequate for satisfactory job performance. The person is likely to evaluate oneself negatively and feel constant inadequacy at work. In human service professions, cynicism is often replaced with depersonalization that refers to psychological detachment from social interactions and difficulties in showing genuine interest towards others at work (Maslach & Jackson, 1981).

In Finland, one out of four employees experience symptoms of burnout. Suvisaari et al. (2012) reported that at 2011, 2% of men experienced severe and 23% mild burnout, and for women, the numbers were 3% and 24%, respectively.

Even larger number of employees experience severe burnout as a potential risk at work. In 2018, 58% of Finnish employees reported this risk, and the number had increased over 10% from the last measurement at 2013 (Sutela, Pärnänen, & Keyriläinen, 2019). The risk was evaluated especially high among the predominantly female industries and in the work of senior specialists. In Europe, at recent evaluation, 10-44% of the employees were affected by burnout, and in many countries, there had been an increase in these numbers over the years (Eurofound, 2018). Based on these statistics, burnout is a relatively common phenomenon in the work life and its risk has increased over time.

Burnout has detrimental consequences for individuals, organizations, and the society. In the individual level, burnout has caused problems with executive functioning, concentration, and memory (Deligkaris, Panagopoulou, Montgomery, & Masoura, 2014; Grossi, Perski, Osika, & Savic, 2015). Burnout has also been identified as a risk factor for health issues, such as type 2 diabetes, cardiovascular diseases, musculoskeletal pain, gastrointestinal issues, respiratory problems, and mortality below the age of 45 years (Ahola & Hakanen, 2014; Leiter et al., 2013; Salvagioni et al., 2017). In these studies, burnout has also been associated with depression, insomnia, and psychological symptoms. Furthermore, burnout has been identified as a risk factor for disability pension and hospitalization for either somatic or mental disorders (Salvagioni et al., 2017). In turn, organizational consequences have included impaired job performance (Morse, Salyers, Rollins, Monroe-DeVita, & Pfahler, 2012; Taris, 2006), reduced organizational commitment (Alarcon, 2011; Morse et al., 2012), presenteeism (Salvagioni et al., 2017), absenteeism (Morse et al., 2012; Salvagioni et al., 2017; Ybema, Smulders, & Bongers, 2010), as well as turnover intentions and actual turnover (Alarcon, 2011; Morse et al., 2012). In addition, burnout has had negative effects on customer satisfaction (Taris, 2006) and patient safety (Hall, Johnson, Watt, Tsipa, & O'Connor, 2016). Burnout has also been strongly associated to job dissatisfaction (Costello, Walsh, Cooper, & Livingston, 2018; Morse et al., 2012; Salvagioni et al., 2017; Ybema et al., 2010). Burnout has been unlikely to diminish on its own (Mäkikangas & Kinnunen, 2016; Schaufeli & Enzmann, 1998; Toppinen-Tanner, Kalimo, & Mutanen, 2002). Therefore, it is important to develop effective treatments to respond to this growing work well-being risk and to mitigate its adverse effects.

1.1.2 Treatment approaches for burnout

A considerable number of reviews and meta-analyses of the effectiveness of different kinds of burnout interventions has been conducted (Ahola, Toppinen-Tanner, & Seppänen, 2017; Awa, Plaumann, & Walter, 2010; Dreison et al., 2018; Iancu, Rusu, Măroiu, Păcurar, & Maricuţoiu, 2018; Jaworska-Burzyńska, Kanaffa-Kilijańska, Przysiężna, & Szczepańska-Gieracha, 2016; Johnson et al., 2018; Luken & Sammons, 2016; Maricuțoiu, Sava, & Butta, 2016; Panagioti et al., 2017; Perski, Grossi, Perski, & Niemi, 2017; Walsh et al., 2019; West, Dyrbye, Erwin, & Shanafelt, 2016; Westermann, Kozak, Harling, & Nienhaus, 2014). Treatment approaches have been categorized as organization-directed, person-directed, or

combination of these two (Hätinen, 2008; Schaufeli & Enzmann, 1998). In the abovementioned reviews and meta-analyses, organization-directed approaches included job training and education, work scheduling, job restructuring, teamwork training, and supervision. Person-directed approaches contained mindfulness and meditation programs, cognitive behavioral therapy interventions, training on coping and psychosocial skills, peer support groups, stress management workshops, relaxation techniques, physical activity, and music-making.

In the meta-analyses, the effect sizes for the intervention effects have generally been small (Ahola et al., 2017; Dreison et al., 2018; Iancu et al., 2018; Maricuțoiu et al., 2016; Panagioti et al., 2017; Perski et al., 2017; West et al., 2016). Some of the studies also indicated that the interventions were mainly effective in reducing exhaustion (Maricuțoiu et al., 2016; Schaufeli & Enzmann, 1998). None of the tested treatment approaches was superior compared to others, although cognitive behavioral interventions and mindfulness or relaxation programs were highlighted in some studies (Iancu et al., 2018; Maricuțoiu et al., 2016). When organization- and person-directed approaches have been compared, organization-directed were often more effective (Awa et al. 2010; Panagioti et al., 2017; Westermann et al., 2014). Furthermore, in their meta-analysis, Ahola et al. (2017) noticed that person-directed interventions did not show significant effects on exhaustion and cynicism. However, there have also been studies stating that person-directed interventions were more effective (Dreison et al., 2018) or that both yielded comparable results (West et al., 2016). When time intervals for treatment effects have been considered, person-directed interventions alleviated burnout in short-term (less than 6 months after the intervention), while organization-directed or combined approaches led to long-term improvements (12 months or more after the intervention) (Awa et al., 2010; Westermann et al., 2014).

These reviews and meta-analyses support the notion that burnout is difficult to treat and that proceedings at both individual and organizational levels are needed to alleviate burnout effectively. However, little is known of why the interventions work or do not work. Hence, better understanding is needed of through which mechanisms the interventions achieve their effects to determine what kind of strategies are the most effective for burnout treatment. When the mechanisms of change are identified, this knowledge could be used to design interventions combining essential components for change. This way, the effectiveness of the interventions could likely be increased. Process-based intervention research is an approach that can answer to the need to understand how the interventions work.

1.2 Process-based intervention research

Process-based intervention research focuses on identifying which therapeutic processes should be targeted in a specific situation with a specific client to obtain the desired therapeutic goal (Hayes & Hofmann, 2017; Hofmann & Hayes, 2019). It focuses on the "why" questions of intervention research and intends to explain through which mechanisms the interventions work and what factors affect the change processes. Process-based research has historical roots (Paul, 1967), although during the recent decades the focus of intervention research has been on syndrome- and protocol-based approaches (Hofmann & Hayes, 2019; Mansell, Harvey, Watkins, & Shafran, 2009). Process-based research has received considerable attention after the rise of third wave of cognitive behavioral treatment that is characterized by the focus on the contextual and functional changes and flexible inclusion of different methods to affect the essential processes for well-being change (Hayes, 2004). Process-based approach has similarities with transdiagnostic approach in that it is concerned with processes that contribute to the development and maintenance of the symptoms, rather than focusing on the exact diagnosis the person is having (Mansell et al., 2009).

Process-based approach defines therapeutic processes as theory-based, empirically supported, dynamic, and progressive biopsychosocial processes that lead to multilevel changes towards the desired outcomes (Hofmann & Hayes, 2019). Biopsychosocial refers to the holistic nature of the therapeutic processes; hence, they are likely to affect simultaneously biological, psychological, and social functioning of the individual. When therapeutic processes are theoretically derived, they can be used to predict the intervention outcomes. For example, if a person has improvements in the targeted therapeutic processes, one can be expected to have beneficial intervention outcomes. Dynamic refers to the possibility of non-linear change in the intervention process and its association to the outcome. For example, process can show rapid improvement at some phase of the intervention and then more steady levels at other phases. It is also possible that the changes in the outcome further affect the targeted therapeutic process, creating feedback loops. Progressive entitles that the therapeutic process has long-term effects on the outcome. Multilevel changes are considered when some therapeutic processes precede others or supersede them when advancing towards the desired outcome. For example, it can be essential to learn certain skills before others during the intervention to achieve the therapeutic goal.

Important questions in process-based and transdiagnostic intervention research include whether the process is essential through different conditions or symptoms, whether the manipulation of the process is efficacious in alleviating the targeted symptoms, and whether the given treatment has the capacity to manipulate the process in a desired way (Hofmann & Hayes, 2019; Mansell et al., 2009). Hofmann and Hayes (2019) have proposed that the same essential process could be affected by different procedures, and because of this differing intervention strategies could lead to similar outcomes. In turn, Mansell et al.

(2009) have pondered whether a certain process has similar effects across different client groups and situations. These considerations have led to important questions of how the treatment context affects the outcomes and whether the processes work similarly across different individuals. Hence, the interest for person-centered approach has increased.

Hofmann and Hayes (2019; also, Hayes & Hofmann, 2017; Hayes et al., 2019) have presented process-based research as a way to merge person-centered approach with evidence-based intervention research that has mainly been focused on variable-centered effectiveness studies. Traditionally, person- and variable-centered approaches have been considered to differ both theoretically and methodologically (Bergman & Trost, 2006; Bergman & Lundh, 2015), and this way they have been difficult to combine. Theoretically, variable-centered approach intends to find generalizable rules or laws of how the population reacts to certain conditions, while person-centered approach considers the individual to be an entity that has different factors affecting its functioning (Bergman & Lundh, 2015; Bergman & Trost, 2006). Variable-centered approach expects individuals in a population to be similar in respect to investigated variable; for example, when studying change, it is expected that the change patterns are universal across the population (Laursen & Hoff, 2006). Variable-centered methods are well suited to answer questions of relationships between variables and to investigate how one variable affects the other in a certain population (Howard & Hoffman, 2018). This approach can yield general inferences of associations between different phenomena and help to link causes and effects in a large group of people. Person-centered approach is interested in finding subpopulations that share certain attributes or relations of attributes with each other but differ significantly from other subpopulations on those (Laursen & Hoff, 2006). This way the population is expected to be heterogenous in respect to the studied phenomena. Person-centered methods are well suited for finding subgroups in relation to the phenomena under investigation and studying differing developmental patterns to understand how individuals differ from one another. This approach allows the investigation of which factors explain the differences between the subpopulations (Howard & Hoffman, 2018). Methodologically, variable-centered approach focuses on relations between variables and person-centered approach is interested in how variables are represented within individuals. Prediction is the strength of variable-centered approach, while description is the strength of person-centered approach (Laursen & Hoff, 2006).

When these approaches are combined in process-based intervention research, the variable-centered methods can identify the common processes for the successful change, while the person-centered methods can detect how those processes are manifested in different subpopulations. Person-centered approach can also shed light on whether the change processes and mechanisms of change are similar for different subpopulations. Furthermore, person-centered approach can answer to whom interventions work. In burnout research, the combination of these research approaches can yield comprehensive understanding of how the

interventions work and whether there are differences in the change processes between subgroups of intervention participants. This kind of information could be used for emphasizing the processes that are the most likely to induce change in burnout. Furthermore, if there were differences in essential processes for positive change between different participant groups, this information could be used to tailor the interventions for the different needs.

1.3 Mindfulness-, acceptance-, and value-based interventions

1.3.1 Theoretical background

In the current work, the term mindfulness-, acceptance-, and value-based (MAV) interventions include Acceptance and Commitment Therapy (ACT) interventions as well as other mindfulness-based interventions since the focus of this thesis was on mindfulness processes. However, the theoretical background of the present work is based on ACT (Hayes, 2004; Hayes, Pistorello, & Levin, 2012; Hayes, Luoma, Bond, Masuda, & Lillis, 2006b) which offers a process-based research approach to burnout treatment. ACT has its roots in philosophical approach, called functional contextualism (Biglan & Hayes, 2016; Hayes, 2004), and theory of human language and cognition, called Relational Frame Theory (RFT; Blackledge, 2003; Hayes, 2004; Hayes, Bunting, Herbst, Bond, & Barnes-Holmes, 2006a). Functional contextualism is focused on the role of context in explaining what is happening and why it is occurring (Biglan & Hayes, 2016, Hayes, 2004). It emphasizes the importance of workability in determining how the chosen action affects the functioning of the individual. In line with the assumptions of functional contextualism, ACT conceptualizes private experiences (e.g., thoughts and emotions) as ongoing interactions between the person and their historical and situational context (Hayes, 2004). Workability and contextuality entail that ACT does not classify behaviors to beneficial or harmful per se but is rather interested in how these behaviors affect the well-being of the individual in their current context. In ACT, it is expected that by changing the context in which the problematic behavior occurs, well-being benefits can be achieved. In the case of burnout, changing the context to alleviate burnout could refer, for example, either to changing the job circumstances or changing the way the person observes these circumstances.

RFT understands human language to largely form the experience of human mind which gives purpose for actions and is responsible for the sense of self (Barnes-Holmes, Barnes-Holmes, Stewart, & Parling, 2019). From an early age, people can relate experiences to one another flexibly and derive the properties of a certain stimulus based on how that stimulus is related to other experiences (Hayes, 2004). For example, words can have functions of the events they describe (Blackledge, 2003), in a way that person does not need to directly experience the described event (e.g., getting bad feedback from the client) to have the emotional reaction related to that event (e.g., fear, shame, frustration). Merely, hearing or

thinking about the event may evoke the emotional reaction. In relation to ACT, RFT implicates the importance of experiential avoidance and cognitive fusion in creating the human suffering (Hayes, 2004; Hayes et al., 2006b). Experiential avoidance entails that people intend to avoid painful experiences, even when the attempt has harmful effects on their overall well-being and functioning. Experiential avoidance often leads to a situation where more and more situations remind of the original painful event and thus start to be avoided. Cognitive fusion refers to the tendency to evaluate private experiences (e.g., thoughts and feelings) as literal truths and act according to them, even when the situation would warrant different kind of behavior. ACT intends to develop skills that help to defuse from these literal truths and to approach even painful experiences with acceptance, not avoidance (Hayes, 2004). This way, actions could be led by what the person really wants, rather than by what the person fears. In the case of burnout, for example, an employee could tell about the problems with work well-being for the employer, even though one fears the consequences of doing this for the future employment. Another example of this is that an employee could stop reading work emails in the evening in order to be with one's family, even though this would evoke fear of not keeping up with the job demands.

ACT targets six psychological core processes to increase psychological flexibility which is defined as the ability to be in contact with the present moment and to act according to one's values even when facing obstacles (Hayes et al., 2006b, 2012). The improvement of these processes is expected to have wide-ranging effects on the well-being and functioning of the individual. *Acceptance* counters experiential avoidance by embracing private experiences (e.g., thoughts and feelings) without the intention to alter them (Hayes et al., 2012). Acceptance is an active process of exposing oneself to difficult experiences willingly and in service of increasing value-based actions (Hayes, 2004). *Defusion* helps people to relate differently to their private experiences and enables person to question the literal truth of these experiences (Hayes et al., 2012). When one defuses from the private experiences, the believability of them and the emotional attachment to them decreases. Cognitive defusion is an effective way to change the functions of these experiences to better service value-based living (Hayes, 2004). *Contact with the present moment* entails focused, flexible, and voluntary contact with the present moment. This is important since life happens only in here and now, although people have tendency to get entangled with past and future. *Self as context* refers to knowing that there is a continuous and unchanging conscious experiencer within that creates a safe place to experience even painful thoughts and feelings with less concern that psychological harm may occur (Hayes, 2004). The ability to transcend the conceptualized self with different stories about oneself, others, and the world helps to choose more flexibly value-based behaviors even in difficult situations (Hayes et al., 2012). *Values* are chosen and internally meaningful patterns that guide behavior. They give meaning for life and create the rationale for accepting even painful private experiences since avoidance is recognized to create barriers for valued living (Hayes, 2004). *Value-based actions* refer to continuous redirection of behavior towards a valued living

(Hayes et al., 2012). It enables flexible and effective responding to different situations.

These six processes are interrelated and can be divided into two groups (Hayes et al., 2006b, 2012). Commitment and behavior change processes involve values and value-based actions. Mindfulness and acceptance processes involve acceptance, defusion, contact with the present moment, and self as context. Mindfulness and acceptance processes together offer a functional definition for mindfulness rooted in RFT (Fletcher & Hayes, 2005). According to this definition, mindfulness is defused, accepting and open contact with the present moment where private events (e.g., thoughts and feelings) are a part of conscious experience, but not truths that strictly guide behavior. Mindfulness is seen important for commitment and behavior change processes since it empowers people to act according to their values even when facing difficulties (Hayes et al., 2012). Hence, mindfulness is a central expected mechanism of change in ACT-based interventions and should be studied as a mechanism of change also in burnout treatment. If mindfulness is an essential process for burnout change, procedures to improve it could be added to treatment approaches to yield more positive effects. ACT model and its relation to functional definition of mindfulness is presented in Figure 1.

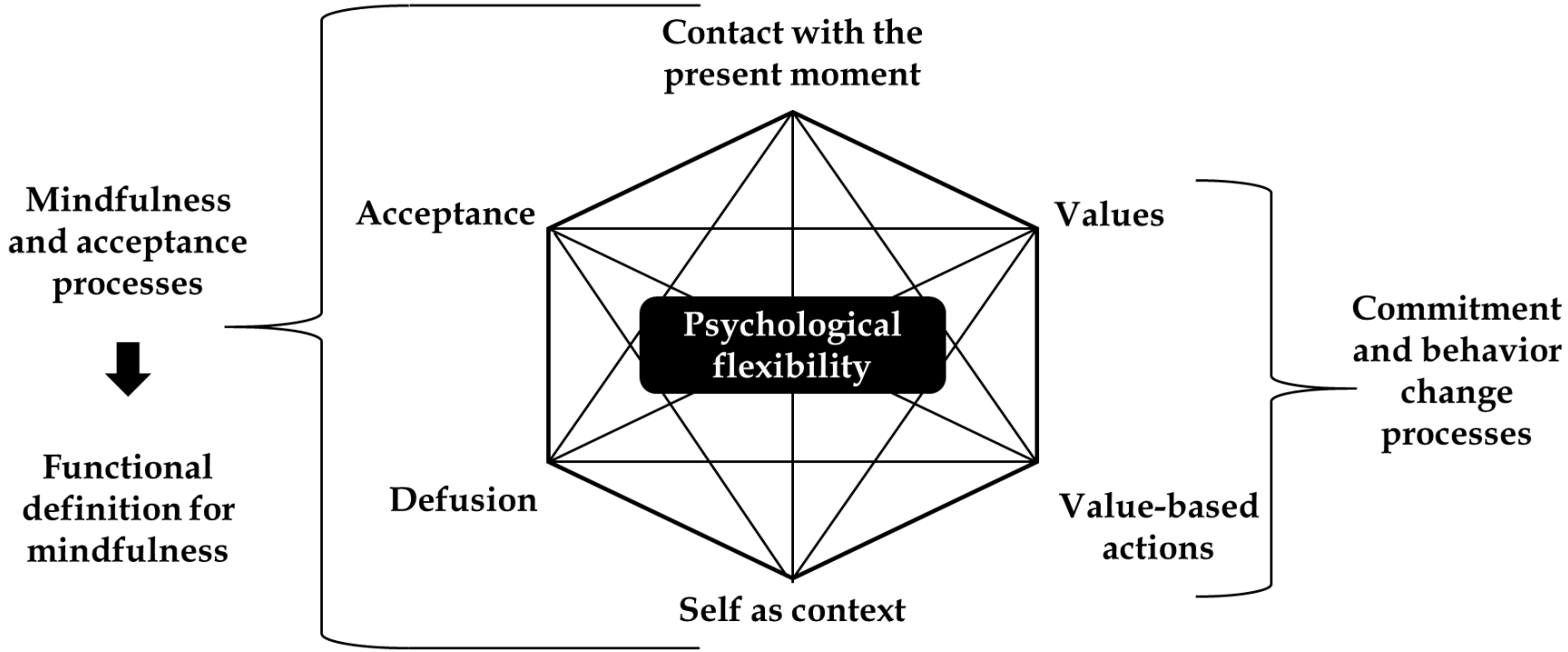

FIGURE 1 The ACT model.

1.3.2 ACT in relation to other mindfulness interventions

Crane et al. (2017) distinguish between mindfulness-based and mindfulness-informed intervention programs. The traditional mindfulness-based programs include, for example, Mindfulness-Based Stress Reduction (Kabat-Zinn, 1982, 2003) and Mindfulness-Based Cognitive Therapy (Segal, Williams, & Teasdale, 2002). These intervention programs have roots in Buddhism but have recontextualized their model and practices to serve the mainstream across different cultures (Crane et al., 2017; Kabat-Zinn, 2003). In turn, mindfulness-informed programs belong to the third wave of cognitive behavioral treatment (Crane et al., 2017; Hayes, 2004). In the classification by Crane et al. (2017), ACT belongs to these mindfulness-informed programs. Other examples include Compassion Focused Therapy (Gilbert, 2009), Dialectical Behavioral Therapy (Linehan, 1993), and Mindful Self Compassion (Neff & Germer, 2013). Crane et al. (2017) state that mindfulness-based programs see mindfulness practice as central for both therapeutic procedure and theoretical model, while the mindfulness-informed programs include mindfulness as one component among the others in their models. In mindfulness-informed models, mindfulness is often considered as an instrument to support behavioral change. For example, in ACT, mindfulness is seen as one component of the model, and a way to increase value-based living (Hayes et al., 2012). Although, the emphases of the diverse forms of MAV interventions differ, they all share the inclusion of mindfulness processes as mechanisms of change in the interventions.

Other conceptualizations for mindfulness have been offered in addition to the abovementioned ACT definition. In traditional mindfulness-based programs, the conceptualizations are usually related to the Buddhist roots of the programs. Kabat-Zinn (2003, p. 145) describe mindfulness as "the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment". This mindfulness conceptualization is rather general and as an elaboration of it, more operational definition was provided by Bishop et al. (2004). Their model proposed that mindfulness comprises of two components, namely self-regulation of attention to the present moment and adopting a curious, open, and accepting stance towards the experiences in this moment. In both these definitions, the role of systematic practice is emphasized to maintain mindfulness. In turn, Dimidjian and Linehan (2003) linked mindfulness more intricately to overt action by conceptualizing mindfulness to involve non-judgmentally observing, describing, and participating, as well as focusing on one thing at a time and being effective. These conceptualizations have both similarities and differences with the ACT definition of mindfulness (Fletcher & Hayes, 2005). The ACT definition contains the interrelated processes of acceptance, defusion, contact with the present moment, and self as context that are also in some extent considered in other conceptualizations (Bishop et al., 2004; Dimidjian & Linehan, 2003; Kabat-Zinn, 2003). However, Fletcher and Hayes (2005) argue that the ACT definition is the only one to incorporate all these aspects of mindfulness. Furthermore, ACT

definition offers a theory-based description of how mindfulness is related to commitment and behavior change processes and offers this way deeper understanding of how mindfulness can lead to positive change. Furthermore, the ACT definition does not tie mindfulness to specific techniques, like meditation, but considers several methods to influence it (Fletcher & Hayes, 2005). In sum, the strength of the ACT definition compared to other conceptualizations is that it is theory-based, considers several aspects of mindfulness simultaneously, links mindfulness to behavioral change processes, and is not tied to practice of mindfulness meditation per se.

1.3.3 Effectiveness of MAV interventions for burnout

The previous research on the effectiveness of MAV interventions for burnout show variability. Limited amount of research of ACT interventions for burnout have been conducted. So far, ACT interventions have not been effective for burnout in many cases (Reeve, Tickle, & Moghaddam, 2018; Habibian, Sadri, & Nazmiyeh, 2018). Contrary to these findings, Lloyd, Bond, and Flaxman (2013) reported that their ACT intervention had a positive impact on burnout, and that the effects were mediated by ACT-related mechanism of change. Generally, the effectiveness results have been more promising when traditional mindfulness-based programs have been considered. Review of randomized controlled trial (RCT) studies of mindfulness-based interventions showed strong evidence for their use in the burnout treatment (Luken & Sammons, 2016). However, the meta-analysis of traditional mindfulness-based interventions by Khoury, Sharma, Rush, & Fuornier (2015) observed only small effects on burnout. In turn, the meta-analysis consisting of various forms of interventions using mindfulness, acceptance, and value practices found moderate effects on burnout (Lomas, Medina, Ivtzan, Rupprecht, Eiroa-Orosa, 2019).

In addition to the aforementioned meta-analyses and reviews, a few studies have shown that different forms of MAV interventions were able to alleviate burnout during the intervention (Fortney, Luchterhand, Zakletskaia, Zgierska, & Rakel, 2013; Hamilton-West, Pellatt-Higgins, & Pillai, 2018; Kang et al., 2019; Krasner et al., 2009). In studies with follow-up, the positive outcomes were maintained from 3 to 15 months (Bazarko, Cate, Azocar, & Kreitzer, 2013; Hamilton-West et al., 2018; Krasner et al., 2009). A few studies have found effects only for some of the burnout dimensions. A meta-analysis by Iancu et al. (2018) including different forms of MAV interventions indicated that they were effective only for exhaustion and personal accomplishment. The same was observed in the study by Flook, Goldberg, Pinger, Bonus, and Davidson (2013). In turn, Nguyen et al. (2020) noticed decreases only in exhaustion and Smith and Gore (2012) only in depersonalisation after MAV interventions.

In sum, different forms of MAV interventions appear to be promising for burnout treatment but many open questions remain. More research is needed to determine whether all kinds of MAV interventions are equally effective for burnout treatment. Especially ACT interventions should be studied more since the results of their effectiveness showed discrepancies. It is also important to

investigate whether the effects of MAV interventions concern only certain burnout dimensions. If MAV interventions are effective only for certain burnout symptoms, they could be offered mainly to those suffering from the symptoms that are likely alleviated with MAV interventions. Furthermore, it is essential to study the mechanisms of change in these interventions to understand why they work or do not work. By strengthening the mechanisms associated to more positive outcomes, the effects of the MAV interventions could likely be increased. The present studies focus on the mindfulness-related mechanisms of change. Since mindfulness processes are included in all forms of MAV interventions, the differentiation to ACT and other mindfulness-based interventions was deemed unnecessary on the following inspection.

1.4 Mechanisms of change in MAV interventions

1.4.1 Mindfulness as a mechanism of change

In cross-sectional studies, mindfulness, acceptance, and value processes had a unique association with burnout even after job characteristics and general well-being were considered (Vilardaga et al., 2011; Puolakanaho, Tolvanen, Kinnunen, & Lappalainen, 2018). The cross-sectional associative research has also shown a consistent negative relationship between burnout and mindfulness. This was observed with firefighters (Chen et al., 2019), school staff (Guidetti, Viotti, Badagliacca, Colombo, & Converso, 2019; Sun, Wang, Wan, & Huang, 2019), health care staff (Di Benedetto & Swadling, 2014; Kriakous, Elliott, & Owen, 2019; Samios, 2018; Silver, Caleshu, Casson-Parkin, & Ormond, 2018; Testa & Sangganjanavanich, 2016; Voci, Veneziani, & Metta, 2016; Yang, Meredith, & Khan, 2017), human service professionals (Harker, Pidgeon, Klaassen, & Kling, 2016), and employees from various fields (Charoensukmongkol, 2016; Taylor & Millear, 2016). In the studies where overall correlations between burnout and mindfulness were reported, they were relatively high (*r* between -41. and -.60). When separate burnout dimensions were concerned, there were some variation in the magnitude of correlations with overall mindfulness (Charoensukmongkol, 2016; Guidetti et al., 2019; Kriakous et al., 2019; Voci et al., 2016). In regression models, high mindfulness predicted lower levels of burnout (Chen et al., 2019; Sun et al., 2019).

In addition to theoretical expectation of the central role of mindfulness, the cross-sectional studies indicate that mindfulness could be an essential process in burnout interventions. Improvements in mindfulness correlated with reduction in exhaustion and increase in personal accomplishment in the intervention study by Krasner et al. (2009). Mediation research of mindfulness as a mechanism of change in burnout interventions is scarce. However, Roeser et al. (2013) noticed mindfulness to mediate burnout reduction. Furthermore, Lloyd et al. (2013) observed increase in psychological flexibility (includes mindfulness and acceptance processes) to mediate the decrease in exhaustion, which in turn

prevented the later increase in depersonalization. In their meta-analysis, Gu, Strauss, Bond, and Cavanagh (2015) identified mindfulness as a mediator of intervention outcomes for conditions that share attributes with burnout, like stress (Lee, Lim, Yang, & Lee, 2011) and depression (Schonfeld & Bianchi, 2016). Mindfulness improvement also mediated the association between mindfulness practice and psychological functioning (Carmody & Baer, 2008). More research is needed of the role of mindfulness as a mechanism of change in MAV interventions for burnout.

1.4.2 Separate mindfulness facets as mechanisms of change

Recent research has indicated that the associations between mindfulness and burnout can vary when separate mindfulness facets and burnout dimensions are considered (e.g., Kriakous et al., 2019; Taylor & Millear, 2016). Hence, in addition to studying the general associations between mindfulness and burnout, the associations between separate mindfulness facets and burnout dimensions should be studied. A measure that is well-suited for investigating separate facets of mindfulness is Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Baer et al. (2006) did an empirical research using several measures of mindfulness and combined them to create one measure evaluating five mindfulness facets, namely a) observing, b) describing, c) acting with awareness, d) non-judging, and e) non-reacting. *Observing* entails noticing inner and outer stimuli, such as thoughts, feelings, and bodily sensations. It contains the observation of both pleasant and unpleasant experiences, and consciously staying aware of one's feelings. *Describing* refers to the ability to describe observed stimuli and one's experiences with words. This ability also enables to express one's opinions and ideas deliberately. *Acting with awareness* describes being aware of one's situation and acting with deliberate intention rather than just reacting automatically. One can stay focused on the action one is completing and be aware of different phases of the action. *Non-judging* refers to refraining from evaluating one's private experiences (e.g., thoughts, feelings, and sensations) as good or bad. With non-judging stance one can observe all kinds of experiences without believing in them or criticizing them. *Non-reacting* refers to the ability to let inner experiences come and go without getting entangled in them or impulsively reacting to them. Distressing experiences do not derail person from the chosen actions. Mindfulness facets depict the processes included in the functional definition of mindfulness by Fletcher and Hayes (2005). The operationalization by Baer et al. (2006) has also been widely used in previous studies, especially when components of mindfulness have been studied.

In the study by Di Benedetto and Swadling (2014), all facets, except observing, were associated with overall burnout. Of the facets, acting with awareness was the strongest predictor of both exhaustion and cynicism or depersonalisation in many studies (Kriakous et al., 2019; Testa & Sangganjanavanich, 2016; Yang et al., 2017). On the other hand, Taylor and Millear (2016) noticed that exhaustion was predicted by non-judging and non-reacting, while cynicism was predicted by acting with awareness and non-

judging. In their study, reduced professional efficacy was predicted by observing. Describing was one of the protective factors against burnout in longitudinal follow-up study by Nevil and Havercamp (2019). In the intervention context, especially acting with awareness correlated with the significant decrease in exhaustion (Flook et al., 2005). In the study by Flook et al. (2005), non-reacting correlated with the decrease in depersonalisation, although this decrease was insignificant. These studies show differing associations between burnout dimensions and mindfulness facets, but no facet appears to be clearly above the others in relation to change in any of the burnout dimensions. More intervention research is needed to establish how mindfulness facets affect burnout dimensions and whether some facets are more important than others for burnout change.

Although intervention research of the associations between separate mindfulness facets and burnout is scarce, the role of mindfulness facets has been studied in the interventions for other well-being indicators. In some intervention studies, single facets have risen as important for well-being changes. Increase in acting with awareness predicted decrease in organizational stress and increase in non-judging predicted decrease in operational stress of police officers after the intervention (Bergman, Christopher, & Bowen, 2016). Acting with awareness also mediated the intervention effects on rumination, fatigue, and sleep quality of employees (Querstret, Cropley, & Fife-Schaw, 2016). In turn, the intervention effects on perceived stress and anxiety were mediated by increases in non-judging (Querstret, Cropley, & Fife-Shaw, 2018). A review by Mizera, Bolin, Nugent, & Strand (2016) showed that non-judging had also the strongest association with anxiety change after the interventions. In other intervention studies, several facets have been associated with positive intervention outcomes. Heeren et al. (2015) noticed that improvements in non-reacting and observing mediated decreases in depression and improvements in non-reacting and describing decreases in psychological symptoms during the intervention. In both cases, a mere increase in the skills to observe or describe stimuli appeared not to be enough, but a simultaneous change in a way to react to these stimuli was also needed. Non-reacting was also noticed to moderate the association between observing and depression in a longitudinal study without intervention, in a way that high observing was associated to less depression only when non-reacting was also high (Barnes & Lynn, 2010). Similar notion of simultaneously needed change in both observation-related and reaction-related facets was observed in another intervention study for depression (Kohtala, Muotka, & Lappalainen, 2018). In this study, decreases in depression during the 5-year follow-up were predicted by simultaneous increases in non-judging and either observing, describing, or acting with awareness. Querstret et al. (2018) also noticed that intervention effects on depression were mediated by improvements in both non-judging and describing. In terms of the psychological distress of employees, increases in non-reacting and observing mediated the positive intervention outcomes (Waters, Frude, Flaxman, & Boyd, 2018). In an intervention study by Webb et al. (2019), non-reacting and acting with awareness predicted improvements in depression and anxiety.

In sum, all mindfulness facets appear to have some role in the changes of different indicators of well-being. However, there was discrepancy in whether a single mindfulness facet was enough for positive outcomes or if a combination of different facets was needed. The role of acting with awareness, non-judging, and non-reacting were highlighted in many studies which indicates that these three could be important processes for many well-being changes. It seemed also likely that the essential facets vary between well-being indicators. Based on the abovementioned results it is possible that separate mindfulness facets have differing associations also with burnout and its dimensions. More process-based research is needed to understand better which combination of mindfulness facets would yield the most beneficial results in burnout treatment. By understanding how mindfulness is associated to outcomes, the interventions could be designed to support the learning of mindfulness skills that are the most likely to alleviate burnout.

1.4.3 MAV practices and learning as mechanisms of change

In addition to studying mindfulness skills improvement as a mechanism of change, the role of mindfulness practices in both improving mindfulness and producing positive well-being outcomes has been studied. In the context of burnout interventions, there are only few studies of the role of practice. In the study by Duarte & Pinto-Gouveia (2016), those who did more mindfulness practices during the intervention experienced less burnout. Furthermore, the continuation of practices after the intervention was associated to lower level of burnout (Bazarko et al., 2013). Since the research of practices and burnout is scarce, results of practice in relation to other well-being outcomes is considered. In studies comparing meditators and non-meditators, meditation experience has been associated with better mindfulness skills (Hanley, Warner, & Garland, 2015; Soler et al., 2014), better psychological and emotional well-being (Hanley et al., 2015; Keune & Perczel-Forintos, 2010), and better physical health (Allen, Henderson, Mancini, & French, 2017). Although links between meditation experience and well-being have been found, there is discrepancy if mindfulness practice is an essential mechanism of change in MAV interventions.

In their review, Vettese, Toneatto, Stea, Nguyen, and Wang (2009) noticed that only half of the studies measuring practice showed at least some support for the association between mindfulness practice and intervention outcomes. A similar notion was made in a more recent review by Lloyd, White, Eames, and Crane (2018). They observed that four of the seven reviewed studies assessing the associations between home practice and clinical outcomes found that mindfulness practice was associated with positive intervention outcomes. However, in the other three studies, no association between the two was found. In studies not included in these reviews, mindfulness practices have been related to intervention outcomes, such as improved mindfulness skills (Bowen & Kurz, 2012; Keng, Lee, & Eisenlohr-Moul, 2019), increased positive emotions (Fredrickson et al., 2017) and psychological functioning (Goldberg, Del Re, Hoyt, & Davis, 2014), as well as mood improvements (Tamagawa et al., 2015). In some

studies, mindfulness practices have been divided to formal (guided meditation practices, such as sitting meditation, body scan) and informal (mindfulness in daily living). Results have been mixed in terms of whether these different forms of mindfulness practices are associated to well-being changes and whether one form of practices is more essential for beneficial changes than the other. For example, Carmody and Baer (2008) and Crane et al. (2014) noticed that formal practices were associated to positive outcomes, while informal were not. In turn, Morgan, Graham, Hayes-Skelton, Orsillo, and Roemer (2014) observed the opposite, namely that informal practices were beneficial, while formal were not.

In addition to mindfulness practice quantity, the role of practice frequency and continuation have been studied. Perich et al. (2013) noticed that those who practiced on at least three days a week had better outcomes than those that practiced less often. Crane et al. (2014) also observed that practicing on at least three days a week significantly decreased the risk of relapsing to depression over a 12-month follow-up. When practice continuation after intervention has been considered, the findings have been mixed. Perich et al. (2013) noticed no difference in outcomes between those who continued mindfulness practices after the intervention and those that did not. On the other hand, McClintock, Brown, Coe, Zgierska, and Barrett (2019) observed that continued practice was associated to stress levels after the intervention. When studying different forms of mindfulness practice, Bergomi, Tschacher, and Kupper (2015) noticed that continued practice in the present was more essential for mindfulness skills improvement than accumulated practice over time, further indicating that practice continuation could be important.

In sum, there appears to be no consensus on if the quantity, frequency, or continuation of mindfulness practices are relevant for intervention outcomes. More research is needed on mindfulness practice as a mechanism of change, and possible reasons for mixed results in relation to its role should be explored. One suggested mechanism to explain why the practice results differ is practice quality. Practice quality is defined as a perseverance in receptive attention in the present moment during the mindfulness practice (Del Re, Flückiger, Goldberg, & Hoyt, 2013). Quality considers not only the time that a person engages in mindfulness practices, but also how focused the person is on that practice. It could be that to benefit fully from the practices, the person should complete them with attention and effort. In intervention studies that measured practice quality, it predicted better psychological functioning (Del Re et al., 2013; Goldberg et al., 2014). Furthermore, practice quality mediated the association between practice quantity and improvements in both mindfulness skills and psychological symptoms (Goldberg, Knoeppel, Davidson, & Flook, 2019). These results indicate that practice quality should be considered in addition to practice quantity.

In addition to mindfulness practices, practices related to commitment and behavior change processes have been associated to intervention outcomes in MAV interventions. In cross-sectional studies, McCracken and colleagues (2008, 2010) associated value-based actions to less exhaustion, and better health, as well as better physical, social, and emotional functioning. In intervention study by

Lundgren, Dahl, and Hayes (2008), values attainment mediated positive intervention effects on quality of life and well-being. Increases in value-based actions have been related to reductions in distress, depression, or pain-related disability also in other intervention studies (Bramwell & Richardson, 2018; Vowles & MacCracken, 2008; Vowles, McCracken, & O'Brien, 2011). However, value practices did not enhance the effects of mindfulness practices in a study combining daily mindfulness practice with value pondering (Berghoff, Forsyth, Ritzert, Eifert, & Anderson, 2018). Furthermore, in one study, the effects of the intervention were mediated by mindfulness and acceptance processes, but not by commitment and behavior change processes (Morin, Grégoire, & Lachance, 2020).

Based on the abovementioned results, different forms of mindfulness, acceptance and value practices can be linked to outcomes in MAV interventions and could be associated to burnout change as well. However, discrepancies of the importance of practice-related factors exist. Instead of studying only mindfulness skills improvement as a mechanism of change, the role of practices for the intervention outcomes should also be investigated more closely. If mindfulness skills are an important process for burnout change, it is important to understand the type of and amount of training that increases these skills. Increased knowledge of relevant intervention components responsible for the changes in both therapeutic processes (e.g., mindfulness skills) and well-being outcomes (e.g., burnout) is important for designing more effective interventions. By focusing the intervention on the most beneficial practices, the interventions could be made more feasible for exhausted employees.

1.5 Individual variation in intervention results

Recent research on both burnout and mindfulness has indicated that both can be divided to separate subtypes with differing developmental trajectories and associations to other well-being indicators (e.g., Mäkikangas & Kinnunen, 2016; Gu et al., 2020). Mäkikangas and Kinnunen (2016) completed a review of person-centered research on burnout. They noticed that in cross-sectional studies of burnout subtypes, typically 3 or 4 profiles were found. The most typical profiles showed either low or high levels of all burnout dimensions (exhaustion, cynicism, and reduced professional efficacy). Also profiles high on just one or two burnout dimensions were discovered. After the review, similar profiles (3–5) have been found in other cross-sectional studies (Bauernhofer et al., 2018; Berjot, Altintas, Grebot, & Lesage, 2017; Leiter & Maslach, 2016; Pyhältö, Pietarinen, Haverinen, Tikkanen, & Soini, 2020; Tikkanen, Pyhältö, Pietarinen, & Soini, 2017). In exception to 3–5 profiles, Schult, Mohr, and Osatuke (2018) found eight separate profiles with different combinations of the three burnout dimensions, using a large sample of employees (over 80 000). However, the identified combinations of dimensions largely reflected the profile types described in the review by Mäkikangas and Kinnunen (2016). In these studies, the participants in the profiles

with the lowest levels of burnout had better coping skills (Pyhältö et al., 2020; Tikkanen et al., 2017). In turn, participants in the profiles with the highest levels of burnout had higher risks of emotional ill-being, health problems, and sick leaves (Bauernhofer et al., 2018; Leiter & Maslach, 2016; Schult et al., 2018). In their review, Mäkikangas and Kinnunen (2016) also noticed that the developmental trajectories of burnout varied. In longitudinal studies without intervention, typical profiles showed stable levels of either all burnout dimensions, combination of two dimensions, or just one dimension. Majority of the participants belonged to these typical trajectories. However, atypical patterns of development were also detected in several reviewed studies, namely, decreasing or increasing levels of burnout or curvilinear development (usually U-shaped or reverse U-shaped). These results indicate that burnout manifest with different combinations of symptoms and that the change processes of burnout vary across individuals. The results of differing developmental trajectories raise the question if these kinds of differences could also be identified in the burnout development of the intervention participants.

Person-centered intervention research of burnout development is scarce. However, Hätinen and colleagues (2009, 2013) studied burnout profiles among intervention participants during a 1-year rehabilitation and 6-month follow-up. The rehabilitation programs used in these studies included evaluation of the physical, psychological, and social conditions of each participant, and the individual rehabilitation plan was created based on these evaluations. The rehabilitation included individual-level activities (e.g., discussions with rehabilitation professionals, physical activities, and relaxation) and individual-organizational level activities (e.g., group discussions and counseling sessions). Three profiles were detected based on general burnout scores, namely "Low burnout" (46% of the participants), "High burnout – benefited" (34%), and "High burnout – not benefited" (20%) (Hätinen et al., 2009). They also noticed that recovery from burnout was related to decreased job demands and increased job resources, as well as to decreased depression and increased job satisfaction. In the study by Hätinen et al. (2013), burnout dimensions were considered separately, and four trajectories were found for exhaustion and three for both cynicism and reduced professional efficacy. Exhaustion and reduced professional efficacy were at least mild in all profiles, while cynicism also showed one profile with no symptoms. In this study, burnout recovery was observed only in terms of exhaustion, while the profiles of cynicism and reduced professional efficacy were either stable or increasing over time. Decreased exhaustion was associated with decreased emotion-oriented coping. Stable or increased burnout dimensions were associated with increased use of avoidance-oriented coping (Hätinen et al., 2013). These results showed that burnout symptoms express individual patterns of change within the same intervention, indicating that the developmental trajectories of burnout among intervention participants could differ in significant ways.

Same as burnout, mindfulness has also shown varied subtypes and developmental trajectories. In an intervention study by Kiken, Garland, Bluth,

Palsson, and Gaylord (2015), developmental profiles of mindfulness differed during the intervention and intervention outcomes varied between these profiles. Participants in the profiles with increasing mindfulness skills tended to have less distress than the participants in the profiles with less mindfulness skills improvement. However, most of the person-centered research on mindfulness is cross-sectional (Gu et al., 2020). In most of the studies, four mindfulness profiles have emerged, namely "High mindfulness", "Low mindfulness", "Judgmentally observing" (high on observing, but low on non-judging and acting with awareness), and "Non-judgmentally aware" (high on non-judging and acting with awareness, but low on observing) (Bravo, Boothe, & Pearson, 2016; Bravo, Pearson, & Kelley, 2018; Gu et al., 2020; Kimmes, Durtschi, & Fincham, 2017; Lam, Lim, Kua, Griva, & Mahendran, 2018; Pearson, Lawless, Brown, & Bravo, 2015). The profiles "Non-judgmentally aware" and "Judgmentally observing" have been found also in the studies by Calvete, Fernández-González, Echezarraga, and Orue (2019) and Sahdra et al. (2017). In these studies, the other profiles showed varying levels of overall mindfulness. However, a few studies have found also differing number and classification of mindfulness profiles (Lilja, Lundh, Josefsson, & Falkenström, 2013; Zhang et al., 2019). In most of the profile studies, the participants in the profiles showing high overall mindfulness had the highest psychological and emotional well-being, as well as the most adaptive coping strategies. The participants in the profile "Non-judgmentally aware" had well-being benefits close to the participants in the profile with overall high mindfulness skills (Bravo et al., 2016; Pearson et al., 2015). In turn, the participants in the profiles of "Low mindfulness" and "Judgmentally observing" had larger amount of well-being problems than the participants in the other profiles (e.g., Lam et al., 2018; Pearson et al., 2015).

Abovementioned studies indicate that the effects of burnout interventions are not necessarily the same for all participants, for example, it could be that some participants benefit more from the intervention than others. Individual differences in outcomes could shed light on whether the small effect sizes in burnout intervention meta-analyses (e.g., Iancu et al., 2018; Maricuțoiu et al., 2016) are the same for all participants or whether these whole-sample level values obscure profiles with differing levels of effects. Furthermore, it is important to understand which processes are responsible of the differences in outcomes. In terms of one potential mechanism of change in MAV interventions, namely mindfulness (Hayes et al., 2012; Roeser et al., 2013), person-centered research indicates that the mindfulness skills could develop in different ways and that these developmental differences could be associated with intervention outcomes (Kiken et al., 2015). More person-centered intervention research is needed of MAV interventions for burnout to better understand intervention effects and how the psychological skills are connected to the intervention outcomes. Research on individual differences in simultaneous development of mindfulness and burnout can offer valuable information on how intervention process and outcome develop jointly. Furthermore, since the studies of the role of practices in MAV interventions have yielded inconsistent results (Lloyd et al., 2018; Vettese

et al., 2009), it is possible that person-centered approach could shed light to this issue as well. It could be that in profiles with the most beneficial outcomes, the role of practice is different than in the profiles with less impressive intervention results.

1.6 Well-being effects of MAV intervention for burnout

MAV interventions can be viewed as transdiagnostic process-based treatments that lead to improved well-being and satisfaction in several life domains through the improvement of psychological core processes, such as mindfulness (Dindo, Van Liew, & Arch, 2017; Hayes & Hofmann, 2017). In the context of MAV interventions for burnout, this means that instead of merely alleviating burnout symptoms, the intervention could have positive effects on multiple indicators of subjective well-being. Subjective well-being can be described as a combination of three levels, namely evaluative, eudaimonic, and experiential (Deaton & Stone, 2016; Kahneman, Diener, & Schwarz, 1999). Evaluative well-being describes overall life satisfaction which is formed by the evaluations (e.g., good or bad, gain or loss) that a person makes about the situations one is in. Eudaimonic well-being refers to experiences of meaning and purpose in life and describes whether the person is experiencing life to be led by valued goals and themselves to have important tasks in life. Experiential well-being describes the everyday experiences of well-being and is affected by joys and pains that each moment brings to attention. Of these levels, experiential well-being is most susceptible to change, while eudaimonic and evaluative well-being are usually more stable.

Work well-being has been noticed to be intricately connected to general well-being in life in a reciprocal way (Reichl, Leiter, & Spinach, 2014), further indicating that by alleviating burnout the subjective well-being could also be increased. Furthermore, burnout and mindfulness skills have both been associated to the indicators of different levels of well-being (Baer et al., 2008; Burstein, Hawes, Arroyo, & Bodenlos, 2020; Carmody and Baer, 2008; Christopher & Gilbert, 2010; Hakanen & Schaufeli, 2012; Hanley et al., 2015; Harrington, Loffredo, & Perz, 2016; Howell, Digdon, & Buro, 2010; Manzano-García & Ayala, 2017; Mullen, Blount, Lambie, & Chae, 2017; Pacewicz, Mellano, & Smith, 2019; Ríos-Risquez , Garíca-Izquierdo, Sabuco-Tebar, Carrillo-Garcia, & Solano-Ruiz, 2019; Shaufeli, Taris, Van Rhenen, 2008; Sun et al., 2019; Thuynsma & de Beer, 2017; Yang et al., 2017). Person-centered research has also shown that different levels of either burnout or mindfulness were connected to different levels of well-being (e.g., Bravo et al., 2016; Gu et al., 2020; Leiter & Maslach, 2016; Schult et al., 2018).

Based on the assumptions of MAV literature and the findings of associations between mindfulness, burnout, and subjective well-being, it is presumable that MAV intervention for burnout can have wide-ranging effects on both work and subjective well-being. It is important to study these kinds of spreading effects to determine how work well-being interventions shape

participants' general perception of life and if the positive results in terms of one well-being indicator could be generalized to other areas of well-being. In the current busy and demanding work life, interventions that affect several areas of well-being simultaneously could be a cost-effective treatment option for both the individuals and organizations. Furthermore, it is important to recognize the processes that are responsible for the wide-ranging effects to design work well-being interventions to affect these processes.

1.7 Aims

To develop more effective interventions for burnout, it is important to understand through which therapeutic processes the intervention effects are produced and how to effectively enhance these processes with intervention practices. Furthermore, it is essential to know whether these processes and practices have similar effects for all employees or whether differing treatment approaches are needed for different client groups. The present three studies utilized process-based intervention research approach (Hayes & Hofmann, 2017; Hofmann & Hayes, 2019) to increase the understanding of these important questions in burnout treatment. The studies combined variable- and person-centered methods to investigate the effects of a brief MAV intervention for burnout during the 8-week intervention and 10-month follow-up. The associations between mindfulness skills (expected therapeutic process in MAV interventions) and burnout development were of special interest. In addition to the expectations based on the ACT model of the clinical importance of mindfulness skills (Haeys et al., 2012), burnout literature has considered mindfulness as a personal resource that decreases the risk of burnout development (Guidetti et al., 2019). Guidetti et al. (2019) suggested that mindfulness leads to fewer burnout symptoms by helping the employee to lessen the negative appraisal of stressful job conditions and by fostering the perception about the meaningfulness of the job. Thus, better mindfulness skills are seen as a self-regulatory resource that helps to adopt open and non-judging stance toward present moment experiences and re-evaluate habitual stressful appraisals of job conditions. The role of different MAV intervention practices in improving mindfulness and alleviating burnout were also studied. The data was gathered from a single sample which allowed to study both the general manifestation and individual variation of the phenomena in the same sample. The RCT study by Puolakanaho, Tolvanen, Kinnunen, and Lappalainen (2020) showed that by adding the present MAV intervention to treatment-as-usual (TAU), significantly better results in several areas of well-being were obtained compared to using only TAU. Furthermore, the MAV intervention appeared to alleviate burnout both short- and long-termly. In the present studies, the focus was on the mechanisms of change and individual variation in the intervention outcomes.

Study I. The aim of this variable-centered study was to investigate whether the five separate mindfulness facets (i.e., observing, describing, acting with awareness, non-judging, and non-reacting) were mediators of change in burnout dimensions (i.e., exhaustion, cynicism, and reduced professional efficacy) during the intervention and 10-month follow-up. FFMQ (Baer et al., 2006) was chosen as a mindfulness measure and hence, the operationalization of mindfulness facets followed its formulation. The items of the FFMQ facets are presented in the appendix to show in more detail how mindfulness facets were measured. This study aimed to offer valuable insights on whether burnout should be treated as a unified condition or whether MAV interventions should be tailored based on the specific burnout symptoms that the person is experiencing. Furthermore, it intended to increase understanding of mindfulness as a multifaceted mechanism of change in MAV interventions for burnout. The study addressed the following research questions:

1) Did the changes in five mindfulness facets during the intervention mediate the changes in three burnout dimensions both during the intervention and 10-month follow-up?
2) Were there differences between the burnout dimensions on which mindfulness facets mediated the changes?

Mindfulness is the expected mechanism of change in MAV interventions (Hayes et al., 2012). It has also been suggested to act as a personal resource that reduces the risk of burnout development (Guidetti et al., 2019). Furthermore, mindfulness mediated burnout reduction in the previous intervention study by Roeser et al. (2013). However, there has been limited and partially contradictory findings on the associations between separate burnout dimensions and mindfulness facets (Kriakous et al., 2019; Taylor & Millear, 2016). Based on theoretical expectations and previous findings, the general hypothesis was the following:

1) Mindfulness facets mediated the changes in burnout dimensions.

Study II. The aim of this person-centered study was to investigate individual differences in intervention effects on mindfulness skills and burnout during the intervention and 4-month follow-up. The purpose was to study whether the changes in mindfulness skills were connected to changes in burnout symptoms at the intraindividual level and whether the intervention effects were similar for all participants. Furthermore, this study aimed to offer insights on which intervention practices explained the differences between the outcomes. The research questions of this study were the following:

1) Could different profiles be identified based on burnout and mindfulness skills and their changes both during the intervention and the 4-month follow-up?
2) How these profiles differed from one another?

3) Were there differences in the following intervention practices between the profiles?
    a. Practice quantity during the intervention
    b. Practice frequency during the intervention
    c. Practice continuation after the intervention
    d. Learning experiences during and after the intervention

Since there was no previous research of the intraindividual associations of burnout and mindfulness, no detailed hypotheses were set regarding the number, level, or direction of the burnout–mindfulness skills profiles or their association to intervention practices.

Study III. This person-centered study utilized the profile solution of Study II. The aim of this study was to compare the profiles of burnout and mindfulness skills on the changes in subjective well-being during the 12-month study period (intervention and 10-month follow-up). The purpose was to offer insights on whether the MAV intervention for burnout also facilitated long-term favorable development of other areas of well-being. The person-centered approach was intended to provide information on whether the differing change processes of mindfulness skills and burnout were associated to the change processes of subjective well-being. This study used indicators from three levels of subjective well-being (Deaton & Stone, 2016). Here, the evaluative well-being was investigated via life satisfaction which refers to the overall satisfaction with different areas of life (Pulkkinen, Feldt, & Kokko, 2005). The eudaimonic well-being was studied via psychological well-being, describing thriving in personal life (Ryff, 1989), and social well-being, describing thriving in social life (Keyes, Shmotkin, & Ryff, 2002). The experiential level was investigated via perceived stress that describes fluctuating experiences of short-term stress caused by different daily happenings (Cohen, Kamarck, & Mermelstein, 1983). The study addressed the following research questions:

1) What kinds of well-being changes were experienced in the profiles of mindfulness skills and burnout during the 12-month study period in the following levels of well-being?
    a. Evaluative well-being investigated via life satisfaction
    b. Eudaimonic well-being investigated via psychological and social well-being
    c. Experiential well-being investigated via perceived stress
2) Were there differences between the profiles of burnout and mindfulness skills in the well-being changes?

Theoretically, MAV interventions are expected to affect core psychological processes, and consequently lead to wide-ranging benefits in several areas of well-being (Hayes, 2004; Dindo et al., 2017). Based on this theoretical expectation and empirical research on the associations between burnout, mindfulness, and

subjective well-being indicators (e.g., Baer et al., 2008; Yang et al., 2017), the general hypothesis of this study was:

1) The participants in the profiles with the largest positive changes in mindfulness skills and burnout during the 6-month study period also showed the largest increases in the three levels of subjective well-being during the 12-month study period.

2 METHOD

2.1 Procedure and participants

The three studies were carried out as a part of an RCT titled "The Effectiveness of Mindfulness Practices in the Recovery of Burnout" (Finnish abbreviation Muupu). The project was an RCT study designed to investigate if a MAV intervention combined with TAU alleviated burnout and promoted well-being more effectively than TAU alone. It was funded by the Finnish Social Insurance Institution and registered under ClinicalTrials.gov (NCT number: NCT01920230). The research protocol was approved by the ethical committee of the Central Finland Health Care District. The data was collected during the years 2013 to 2015. Detailed description of the procedure for the RCT and its results are presented in Puolakanaho et al. (2020).

Participants were recruited mainly using web page announcements and newspaper advertisements. A few participants were recruited with the help of partner employee health care units. Enrollment took place via a web questionnaire and was open to anyone interested in participating in the study. After registration, candidates were interviewed. The participants were selected based on the information they offered in the enrollment questionnaire and during the telephone interview. Inclusion criteria were currently working, age between 25 and 60 years old, had an Internet connection that was available daily, and had high burnout according to the cutoff score of the Bergen Burnout Indicator (BBI). The BBI cutoff was set at the 75th percentile (39–47 points) of the age group, according to the manual by Näätänen et al. (2003). Noteworthy is that the cutoffs of BBI are not clinically validated, but they were deemed useful for including only the participants with substantial amount of burnout symptoms. Candidates were excluded if they had severe psychological or somatic disorders, were susceptible to major pharmaceutical-induced mood swings (for example, starting on medication affecting mood states), or were in regular psychotherapy.

The participants gave their informed consent and received the intervention free of charge. Data were collected via personalized web questionnaires at four measurement points: before the intervention (pre), after the intervention (post, 8 weeks after pre), four months after the post-measurement (fup4), and ten months after the post-measurement (fup10). The pre-measurement questionnaire was completed within two weeks before intervention start. Reminders were sent via e-mail and telephone. If the participants did not complete the questionnaires after four separate reminders they were interpreted as dropouts.

Participant flow is shown in Figure 2. The participants were matched into pairs based on sex, age, and level of education. Within each pair, participants were allocated either to an intervention group (MAV+TAU, n = 133; 12 separate groups) or to a control group (only TAU, n = 133). The great majority (81%) of the participants (n = 109 for both groups) were blindly randomized to the groups, while a minority (18%) of the participants (n = 24 for both groups) were matched without randomization. This procedure was chosen to increase the sample size to allow more sophisticated statistical analyses of the associations between mindfulness and burnout (Wolf, Harrington, Clark, & Miller, 2013). The same inclusion criteria and matching procedure were applied for both non-randomized and randomized participants to lower the risk of confounding variables affecting the results. A pilot study with 24 intervention participants was completed before the RCT, and a matching procedure was carried out to acquire corresponding controls for the pilots. These control participants were obtained from participants that filled the inclusion criteria but were not able to participate in the group meetings. Thus, they were not randomized. Non-randomized participants went through the same procedure as randomized participants in both the intervention and control groups. No significant differences were found between the non-randomized and randomized controls in terms of demographic variables (sex, age, education), and the main study variables (mindfulness and burnout) at enrollment, pre-, post-, or fup10 measurements based on independent samples *t*-tests. In the intervention group, non-randomized participants experienced less exhaustion at the enrolment and had lower reduced professional efficacy at the pre-measurement than randomized participants based on independent samples *t*-tests. Otherwise, there were no differences between non-randomized and randomized intervention participants.

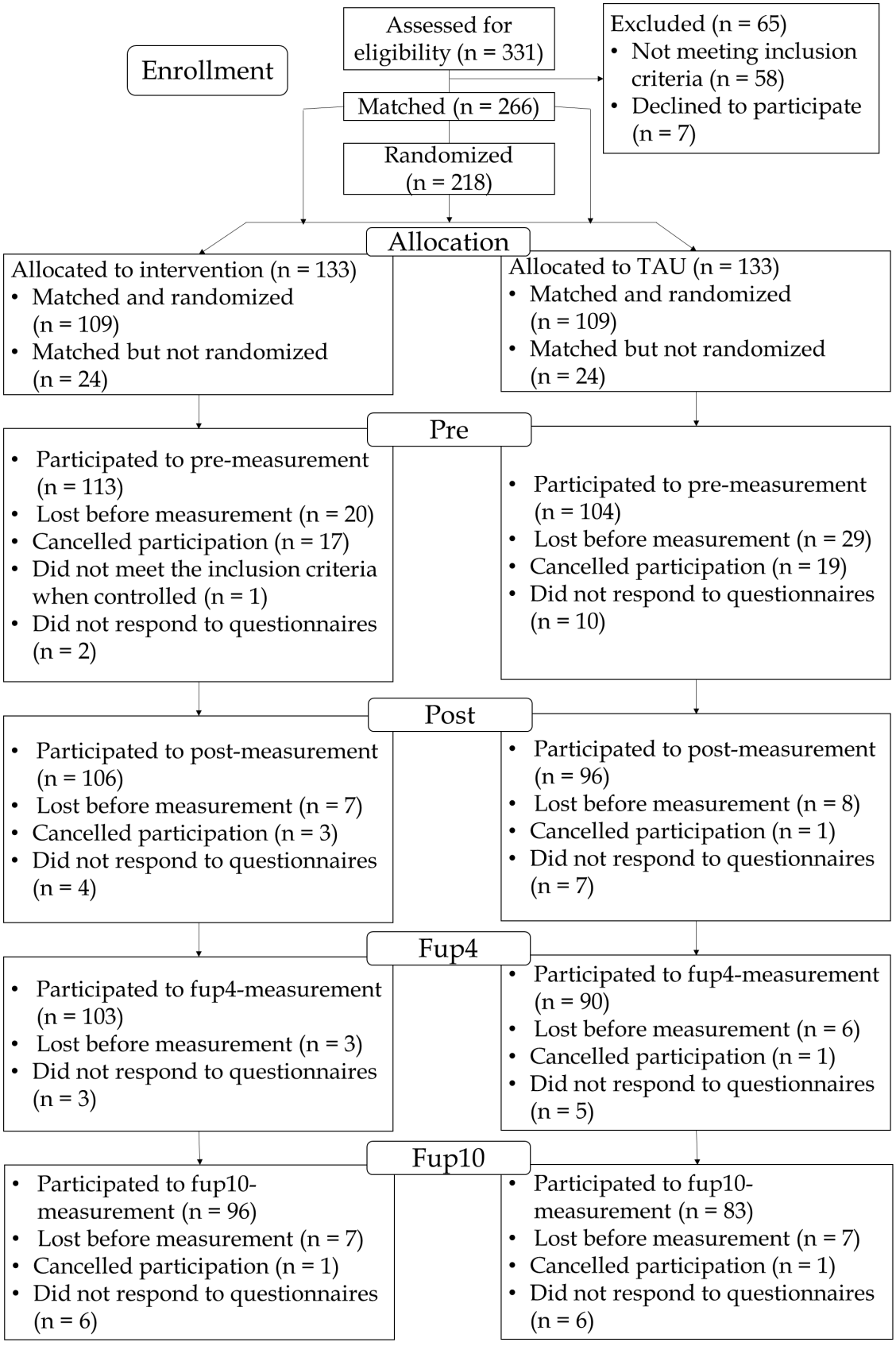

FIGURE 2 Flow of the participants.

At first, there were 266 participants (133 in intervention and 133 in control groups). Before the post-measurement, 63 participants withdrew from the study. 59% (n = 37) of these dropouts came from the control group and 41% (n = 26) from the intervention group. Additionally, 1 participant from the intervention group was excluded from the analyses because burnout score dropped significantly between enrolment and pre-measurement (in the enrollment phase the burnout score matched the inclusion criteria). The dropouts did not differ significantly from those participants that continued in the study in terms of sex, age, education, or initial level of reduced professional efficacy based on an independent samples *t*-tests. However, dropouts experienced more exhaustion and cynicism in the enrolment than those who stayed.

The sample that was used in the analyses consisted of 202 participants of which 106 belonged to the intervention group and 96 to control group. These participants completed both pre- and post-measurements. By the 4-month follow-up, 9 participants (4%) dropped out of the study, and by the 10-month follow up, additional 14 participants (7%) dropped out. During the entire follow-up time, there were no significant differences between dropouts and those who stayed in any of the demographic or main study variables (mindfulness and burnout) according to independent samples *t*-tests.

Most of the participants (80%) were women and all were Caucasian. Mean participant age was 47.5 (SD = 8.05, a range of 27–60 years). The majority (67%) had a polytechnic or university degree. Of the participants, 30% had vocational education and 3% had participated in short employment courses. The participants mean hours worked weekly was 40 (*SD* = 9.55). Of the participants, 75% were married or cohabiting, 13% were divorced or widowed, and 11% were single. Ten percent rated their economic situation as very good and 57% considered it as rather good, whereas 29% and 4% evaluated it rather tight and very tight, respectively. Study I utilized data from both the intervention and control groups, while studies II and III used only the data from the intervention group. In studies II and III, 1 additional intervention participant was excluded from the analyses since the burnout score of that participant differed significantly from the score of the rest of the group (> 3 *SD*s from the sample mean). Utilized data was from pre-, post-, and fup10 measurements in Study I, from pre-, post-, and fup4 measurements in Study II and from all measurements in Study III.

TABLE 1 Contents of the MAV intervention.

Theme of the week	Targeted processes	Contents of the group meeting	Homework
0) Informing participants of the study and intervention (email + voluntary meeting)		Information about the study Practicing the use of the web program	
1) Differentiating oneself from one's thoughts and feelings, and evaluating one's resources and the use of one's time	Mindfulness Values	Psychoeducation of the weekly theme *Practices:* Eating chocolate with awareness Reflection of personal resources and the use of one's time Mindfulness meditation of the body and breath	Mindfulness meditation of the body and breath MFACT, HABIT RELEASER Homework diary and own reflection Practice via the web program
2) Practicing observing without judgment, clarifying one's values, and defining individual intervention objectives	Mindfulness Acceptance Values	Psychoeducation of the weekly theme *Practices:* Body scan meditation Reflection of one's values and goals Thoughts about oneself meditation	Body scan meditation MFACT, HABIT RELEASER, CARE Homework diary and own reflection Setting goals for the intervention Practice via the web program
3) Experiencing mind-body connection and identifying the reactions that emerge in difficult situations	Mindfulness Acceptance	Psychoeducation of the weekly theme *Practices:* Mindful movement meditation Reflection of the difficult experiences in mind and body (part I) Three-minute breathing space	Mindful movement meditation Three-minute breathing space MFACT, HABIT RELEASER, CARE Homework diary and own reflection Practice via the web program
4) Recognizing the automaticity of thinking, distancing oneself from one's mind (thoughts and feelings) and letting go of the control of the mind	Mindfulness Acceptance	Psychoeducation of the weekly theme *Practices:* Sounds and thoughts meditation Reflection of the difficult experiences in mind and body (part II) Tug-of-war with exercise in pairs	Sounds and thoughts meditation Three-minute breathing space MFACT, HABIT RELEASER, CARE Homework diary and own reflection Practice via the web program

continues

TABLE 1 continues

5) Learning to face difficult situations with curiosity, openness, and empathy	Mindfulness Acceptance Values	Psychoeducation of the weekly theme *Practices:* Exploring difficulties meditation Doing the opposite exercise in pairs Valued living meditation	Exploring difficulties meditation Three-minute breathing space MFACT, HABIT RELEASER, CARE, EXP Homework diary and own reflection Practice via the web program
6) Practicing acceptance and compassion, clarifying life and work values, and increasing value-based actions in daily living	Mindfulness Acceptance Values	Psychoeducation of the weekly theme *Practices:* Loving kindness meditation Reflection of values in life and work Mindful listening exercise in pairs	Loving kindness meditation Three-minute breathing space MFACT, HABIT RELEASER, CARE, EXP Homework diary and own reflection Practice viathe web program
7) Investigating the connection between daily routines and mood, and recognizing the sources of gratitude and joy	Mindfulness Values	Psychoeducation of the weekly theme *Practices:* Mindfulness meditation of the body and breath (shorter version) Reflection of reminders for mindful and valued living (part I) Gratitude walk exercise	Choosing one preferable and one undesirable meditation from the previous weeks and completing them alternately Three-minute breathing space MFACT, HABIT RELEASER, CARE Homework diary and own reflection Practice via the web program
8) Recognizing coping strategies for future use, and forming reminders of being present in different situations	Mindfulness Acceptance Values	Psychoeducation of the weekly theme *Practices:* Bells of being present and personal resources meditation Reflection of reminders for mindful and valued living (part II) Leaves in the stream meditation	Web program was available for one week after the group meetings ended

Note. MFACT = Mindful awareness of a routine daily activity, HABIT RELEASER = Performing a daily routine differently than usually, CARE = Doing value-based actions in daily living, EXP = Exploring difficulties with observing stance and without judgment.

2.2 Conditions

2.2.1 Intervention

The eight-week MAV intervention combined elements from traditional mindfulness program and ACT. The used MAV intervention could be classified as person-oriented treatment (Hätinen, 2008; Schaufeli & Enzmann, 1998). Theoretically the intervention was founded in principles of ACT and its theoretical background (Hayes et al., 2012; Lappalainen et al., 2009). Hence, the informatory content was based on ACT principles. However, the main structure of the intervention and most homework assignments were based on the mindfulness intervention by Williams and Penman (2011). The group intervention combined with a web-based intervention program aimed at increasing mindfulness and acceptance skills and clarifying the values of the participants. Weekly themes and practices were presented in group meetings and participants were guided to deepen their experiences through practices and information provided via the Muupu-website. The weekly themes were the same in both the group meetings and web program, and group and web format complimented each other by offering different practices related to the same themes. However, the main practices were the same in both formats. Intervention contents are described in Table 1.

Group meetings (2 hours at a time) had elements from both the program by Williams and Penman and ACT interventions. Meetings progressed as follows: 1) Discussion of the experiences of the previous week; 2) Completion of the main mindfulness practice of the week via audiotape (practices from Williams and Penman); 3) Presentation of the theme of the week with PowerPoint (theme was selected as in Williams and Penman, but modified in a way that the theme was handled from the perspective of ACT principles); 4) Completion of a value- or acceptance-related practice and discussion of it (practices related to ACT); 5) Completion of an another mindfulness practice (practices from Williams and Penman or ACT); 6) Presentation of homework exercises via web program (from Williams and Penman and ACT). Discussions started with individual reflection, which was then broadened to pair and group conversations. The purpose of the different levels of discussion was to help the participants to better observe their experiences and enable them to identify how they react to different situations.

As homework, the participants were instructed to do longer formal mindfulness practices (e.g., breathing meditation and body scan, 10–15 minutes each) twice a day for six days a week. Formal practices included also short breathing space that was instructed to be done once a day from week 3 onwards. They were also advised to carry out informal activities, such as daily tasks, mindfully (MFACT) and to perform value-based actions in their daily lives (CARE). They were further instructed to change daily routines to demonstrate automatic behavioral patterns and the automaticity of mind (HABIT RELEASER). At the later stage of the program, the participants also practiced exploring

difficulties in a non-judging manner (EXP). MFACT practices were instructed to be done once a day, and the other informal practices at least once a week. Homework were presented in the web program and formal practices could be completed through the program. In addition, the participants had access to a variety of videos and audiotapes based on ACT principles through the web program. They were encouraged to use these to help them abandon their belief in the literal truth of their thoughts and to pursue valued lives despite of difficulties.

The intervention was standardized and delivered by two licensed clinical psychologists who had experience and education related to MAV interventions. The other one had a special psychologist's qualification in education and development and had several years of experience in both clinical work and mindfulness practice. The other had completed several courses on delivering MAV interventions and had a couple of years of experience in both clinical work and mindfulness practice. Both instructors received clinical supervision from an experienced MAV practitioner during the delivery of the intervention program. Adherence to the intervention protocol was relatively high both in terms of completion of homework and participation to group meetings. 97 % of the intervention participants completed at least five of the eight group meetings. Completion of homework was assessed using both subjective home diary (available from 95 participants) and objective log data from the web program. Based on the home diaries, participants completed weekly an average of 10.9 (*SD* = 4.2) formal practices (both long and short) and 7.3 (*SD* = 5.9) informal practices. Voluntary material was used approximately 6.3 (*SD* = 5.6) times per week. According to the web log, the participants spent circa 45 minutes (*SD* = 42.5) in the web program each week and opened circa 28 different pages (*SD* = 2.4).

2.2.2 Treatment-as-usual (TAU)

Since the aim of the main research project was to investigate if adding the MAV intervention to TAU would have superior effects compared to only TAU in burnout alleviation, both the intervention and control group participants were able to use TAU services. Especially the control group participants were encouraged to use the services, but the researchers did not direct them to a certain service. The participation was voluntary. The control group participants did not receive any intervention from the investigators, but they were promised to gain access to the web program after the 12-month study period was over. In Finland, several approaches are used to ameliorate burnout. However, it is noteworthy that burnout is not diagnosed as an independent condition in Finland, and often related conditions (e.g., anxiety and depression) are the formal causes of treatment.

Detailed account of the utilized services was gathered at each measurement point. Thus, the reports of the utilized TAU services were based on the evaluations of the participants. During the intervention, 63% of intervention and 62% of the control participants utilized at least one support form. During the follow-up, 70% of intervention and 80% of control participants used TAU

services. The utilized services included meetings with occupational health care and employer, changes in job conditions, sick-leaves, medications that affected mood states, support conversations with nurse or psychologist, psychotherapy, group activities, and rehabilitation. In addition to TAU services, participants reported using self-help and other activities (e.g., physical exercise) to improve their well-being.

2.3 Measures

Summary of the measures is presented in Table 2. All measures had acceptable reliabilities and were deemed valid for the purposes of the present studies.

2.4 Statistical analyses

2.4.1 Study I

Latent change score modeling (McArdle & Hamagami, 2001) with a measurement model was performed for each combination of the burnout dimensions and mindfulness facets (15 independent models in total). The used model for all combinations is presented in Figure 3. Reliability statistics (Cronbach's alphas) were counted for the mindfulness and burnout scales, and they were acceptable. The use of measurement model could further eliminate the effect of error variance in the constructs and ensure the reliability of the constructs in the final model.

Construct-specific parcels were created based on recommendations from Little et al. (2002) to improve the ratio of variable to sample size. Previously identified structures of three burnout dimensions (Näätänen et al., 2003) and five mindfulness facets (Baer et al., 2006) were used as a basis for parcel creation. Confirmatory factor analyses (CFAs) were carried out at pre-, post-, and fup10 measurements for each construct to validate the use of existing structural definitions for burnout dimensions and mindfulness facets. Since the CFA models fitted the data acceptably and the factor loadings of the items were approximately the same size for the given factors, the parcels were formed by combining items in the order they were presented in the original questionnaires. This way, the items of each of the three burnout dimensions were divided into three parcels, as were the items of the five mindfulness facets. In the parcels, an individual level was found that was unassociated to any other parts of the model and was stable over time. This was considered in the model by adding a level correction for the parcels. The scalar equivalence (e.g., equal factor loadings and equal intercepts of observed variables) was expected to hold over time.

TABLE 2 Study measures.

Measure	Measure description	Scale	Time points	Use in studies
Bergen Burnout Indicator (BBI-15) Näätänen et al., 2003	Three subscales: Exhaustion (five items, e.g., *"I am snowed under with work."*) Cynicism (five items, e.g., "*I feel dispirited at my work and I think of leaving my job."*) Reduced professional efficacy (five items, e.g, "*I frequently question the value of my work."*)	Six-point scale ranging from 1 (completely disagree) to 6 (completely agree)	Pre Post Fup4 Fup10	Study I: Mean scores for each subscale (pre, post, fup10) Studies II and III: Total mean score, 6-point scale was transformed to 5-point (pre, post, fup4)
Five-Facet Mindfulness Questionnaire (FFMQ) Baer et al., 2006	Five subscales: Observing (eight items, e.g., *"When I'm walking, I deliberately notice the sensations of my body moving."*) Describing (eight items, e.g., "*I'm good at finding the words to describe my feelings."*) Acting with awareness (eight items, e.g., *"When I do things, my mind wanders off and I'm easily distracted."*, reverse-scored) Non-judging (eight items, e.g., "*I criticize myself for having irrational or inappropriate emotions."*, reverse-scored) Non-reacting (seven items, e.g., "*I perceive my feelings and emotions without having to react to them."*)	Five-point scale ranging from 1 (never or very rarely true) to 5 (very often or always true)	Pre Post Fup4 Fup10	Study I: Mean scores for each subscale (pre, post, fup10) Studies II and III: Total mean score (pre, post, fup4)

continues

TABLE 2 continues

Practice quantity (PRAQ) and frequency (PRAF) Week calendar of all available practices	Formal, informal, and voluntary mindfulness, acceptance, and value practices (36 different practices during the intervention)	Practice quantity: The sum score of all practices Practice frequency: The overall frequency of days per week when participants practiced	During the intervention	Study II: Sum score of practice quantity and mean score of practice frequency
Continuation of mindfulness practices (COMF)	Performance of the following: a) formal mindfulness practices b) other mindfulness practices c) applying mindfulness to daily living d) engaging in the material related to mindfulness?	0 (I do not do them at all) 1 (less than 1 hour a week) 2 (1–2 hours a week) 3 (2–3 hours a week) 4 (over 3 hours a week)	Fup4	Study II: Total mean score at fup4
Continuation of value practices (COVA)	The following questions: a) How often do you ponder what the meaningful things in your life/work are? b) How often do you consciously act to promote meaningful things in your life/work?	0 (not at all) 1 (occasionally) 2 (monthly) 3 (weekly) 4 (almost daily)	Fup4	Study II: Total mean score at fup4
Learning experiences (LEQ) Learning Experiences Questionnaire developed for this study	13 items assessing the following: Learning to recognize one's thoughts, reactions, and behavior patterns Learning to apply mindfulness in one's daily life Learning to clarify one's values and to perform value-based action Learning to find opportunities to affect one's well-being at work	Five-point scale ranging from 1 (not at all) to 5 (very well)	Post Fup4	Study II: Total mean score at post and mean change score from post to fup4
Life Satisfaction Questionnaire Pulkkinen et al., 2005	Satisfaction in seven life domains: Housing, financial situation, choice of occupation, present occupational situation, present intimate relationship or lack of it, content of leisure time, and present friendly relations	Four-point scale ranging from 1 (very dissatisfied) to 4 (very satisfied)	Pre Fup10	Study III: Mean change score from pre to fup10

continues

TABLE 2 continues

Ryff Scales of Psychological Well-Being Ryff, 1989	18 items measuring self-acceptance, autonomy, and environmental mastery (e.g., *"When I look at the story of my life, I am pleased with how things have turned out."*)	Four-point scale ranging from 1 (strongly disagree) to 4 (strongly agree)	Pre Fup10	Study III: Mean change score from pre to fup10
Scales of Social Well-Being Keyes et al., 2002	15 items evaluating social situations and relationships (e.g., *"I don't feel I belong to anything I'd call a community."*, reverse-scored)	Four-point scale, ranging from 1 (strongly disagree) to 4 (strongly agree)	Pre Fup10	Study III: Mean change score from pre to fup10
Perceived Stress Scale (PSS) Cohen et al., 1983	Ten questions on the frequency of stressful feelings and thoughts during the past month (e.g., *"In the last month, how often have you been upset because of something that happened unexpectedly?"*)	Five-point scale ranging from 1 (never) to 5 (very often)	Pre Fup10	Study III: Mean change score from pre to fup10

Latent change score modeling combines features from latent growth curves and cross-lagged regression modeling (McArdle, 2009; McArdle & Hamagami, 2001). In latent change score modeling, variable *Y* is described at a time t defining ΔYt as the change in *Y* from *t* – 1 to *t* (McArdle, 2009). Here, the change scores were calculated for factors instead of observed variables; hence, *Y* referred to factor. The coefficients relating to Yt and Yt - 1 were constrained to 1, and there were no error terms in the equation for Yt. Yt was a direct sum of Yt - 1 and ΔYt. This way, ΔYt could be used as a latent variable, directly showing the amount of change in the variable in question between given time points. Latent change scores were created for the changes from pre- to post-measurement and from post- to fup10 measurement in the burnout dimensions and mindfulness facets (marked with D in the Figure 3). Modeling was performed adjusting the effect of non-normality, with the robust full information maximum likelihood estimator. A few outliers represented genuine observations of the participants with different intervention outcomes. Possible effects of outliers were evaluated by comparing the results after the exclusion of problematic observations and no significant changes in the results were observed. Thus, these observations were included in the models. Standardized model results were reported. From these, the magnitudes of effects were directly observable without further effect size calculations.

The fit of the models was evaluated using chi-square test ($\chi 2$), comparative fit index (CFI), Tucker-Lewis Index (TLI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA). As recommended by Hu and Bentler (1999), a good model fit was supposed when CFI and TLI were close to 0.95, SRMR close to 0.08, and the RMSEA close to 0.06.

In Figure 3, $\beta 2$, $\beta 9$, and $\beta 10$ were the most relevant coefficients to respond to the research questions about mediation effects. $\beta 2$ showed if the intervention influenced the change in mindfulness facet from pre- to post-measurement. $\beta 9$ and $\beta 10$ showed whether the change in mindfulness facet from pre- to post-measurement predicted the change in burnout dimension from pre- to post-measurement ($\beta 9$) and from post- to fup10 measurement ($\beta 10$). In turn, the pathways $\beta 2 * \beta 9$ and $\beta 2 * \beta 10$ presented if the intervention effects on burnout dimension were mediated by the change in mindfulness facet (indirect effect). $\beta 2 * \beta 9$ presented how the change in the mindfulness facet during the intervention was connected to the change in the burnout dimension during the intervention. $\beta 2 * \beta 10$ presented how the change in the mindfulness facet during the intervention was connected to the change in the burnout dimension during the follow-up. When the burnout change during the intervention was considered, mindfulness and burnout were measured at the same time, but when the burnout change during the follow-up was assessed, mindfulness change was measured before burnout change. Of the other coefficients, $\beta 3$ presented if the intervention had an additional direct effect on the burnout dimension change from pre- to post-measurement after the mediated effect through mindfulness facet had been considered.

95 % confidence intervals for the coefficients (estimate ± 2 standard errors) were calculated to evaluate the differences between burnout dimensions on the

significant predictors of change. If the confidence intervals for the equivalent coefficients (*β2 * β9, β2 * β10, β2, β9* and *β10*) of the five mindfulness facets in the case of each burnout dimension overlapped, there was no difference in the significance of predictors of change. If the confidence intervals did not overlap, the difference was significant. In addition, the differences between the significant mediators were compared between the burnout dimensions. The analyses were performed with Mplus 8 (Muthén & Muthén, 2017).

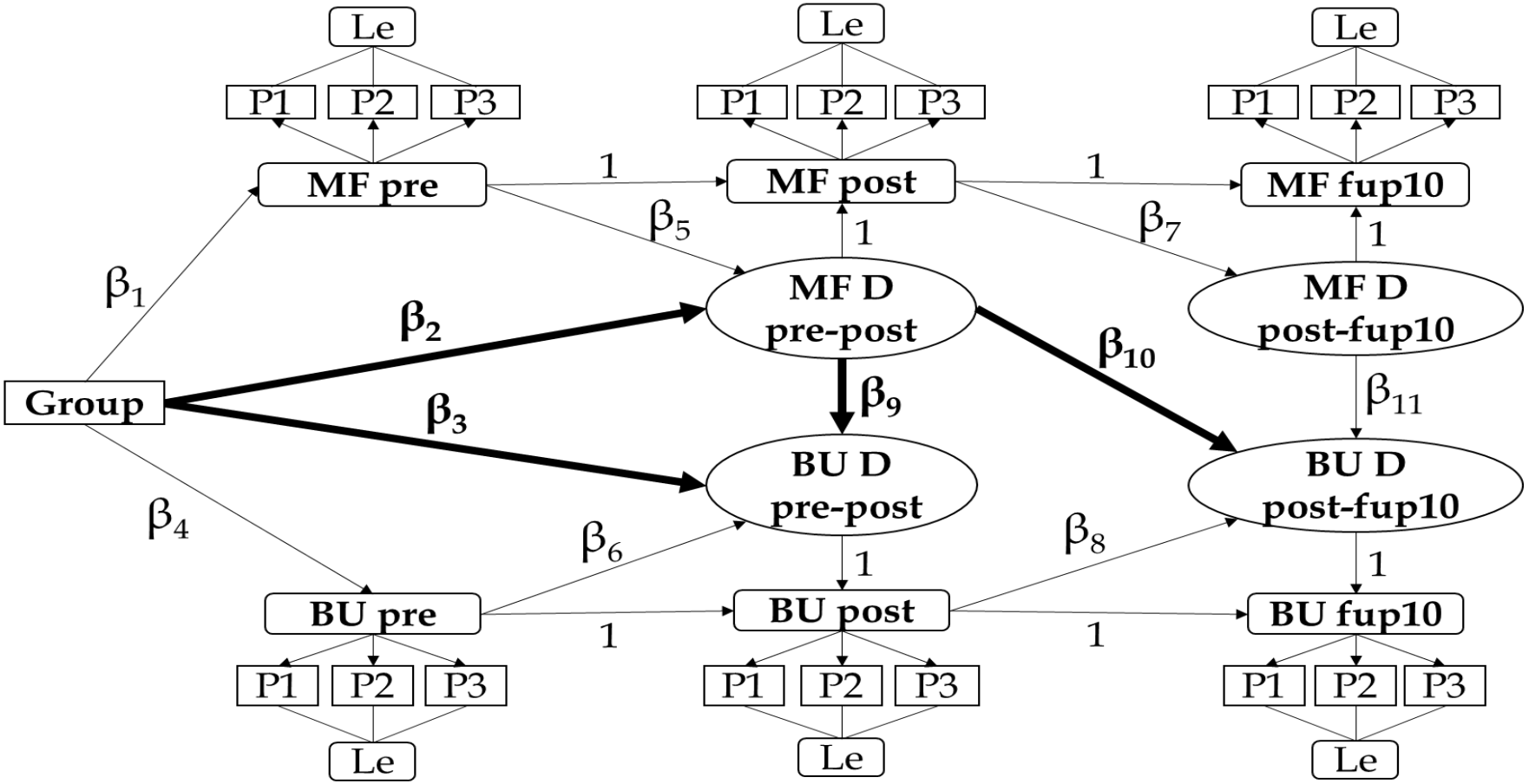

FIGURE 3 Latent change score model of mindfulness (MF) and burnout (BU).

Note. D = latent difference score, P = parcel, Le = individual level. Bolded arrows are presented in the figures of the Results section.

2.4.2 Study II

Latent profile analysis (LPA; Muthén & Muthén, 1998-2012; Sterba, 2013) was used to determine profiles based on the levels and changes of both burnout and mindfulness skills from pre- to post- and to fup4-measurement. LPA identifies latent classes from the observed data and estimates the parameters for these classes (Muthén & Muthén, 1998-2012). LPA can be divided into a within-class and a between-class model: The between-class model describes how classes differ from each other, while the within-class model describes how data is generated for persons in a certain class (Sterba, 2013). The differences between the profiles were assessed based on the mean differences in mindfulness skills and burnout. The within-class model was specified so that variances of mindfulness skills and burnout were set to be the same across the profiles. Mindfulness skills and burnout were not allowed to correlate with one another within the profiles. The observations were expected to follow multidimensional normal distribution within each latent profile. In LPA, subjects are not classified into certain profiles for subsequent analyses. Rather they are given the posterior probability of belonging to each profile, of which reason exact *n* values for the profiles are estimates (Vermunt & Magidson, 2002). This approach strengthens the analyses by considering the uncertainty of the classification. The parameters of the class solutions were estimated using the maximum likelihood estimation with robust standard errors (Muthén & Muthén, 1998-2012).

LPA offers statistical tests to determine the existence and number of latent classes (Muthén & Muthén, 1998-2012). The choice of group criteria is less arbitrary because LPA is a model-based approach (Vermunt & Magidson, 2002). The following statistical criteria were used: a) Bayesian information criterion (BIC) and b) bootstrap likelihood ratio test (BLRT). The BIC and BLRT are the most consistent criteria for identifying the best-fitting solution based on simulation studies, and they work well with small samples (Nylund, Asparouhov, & Muthén, 2007; Tolvanen, 2007). The solution with the lowest BIC value is expected to be the best-fitting model. The BLRT contrasts solutions with different numbers of latent profiles; a *p*-value below .05 suggests that the solution with *k* profiles fits the data better than the solution with *k-1* profiles. The distinctiveness of the profiles was evaluated using average latent class posterior probabilities (AvePP) and entropy. Entropy describes the accuracy of the overall classification, while AvePP assesses the certainty of placing an observation into a certain class using posterior probabilities. The values of both AvePP and entropy range from 0 to 1, and the values near 1 indicate a clear classification (Celeux & Soromenho, 1996). For the cases in the most likely latent class, an AvePP above .70 indicates that the found solution can be interpreted using the mean trajectories (Nagin, 2005). The theoretical interpretability of the solution was also considered.

The effect sizes for changes in mindfulness skills and burnout were calculated for each profile to evaluate the significance of the changes. The within-group effect size for change from pre- to post-measurement was calculated by dividing the mean change from pre to post by the combined standard deviation

of the three measurement points [($m_{post} - m_{pre}$)/sqrt(($v_{pre} + v_{post} + v_{fup}$)/3)] in the whole sample (Morris & DeShon, 2002). Corresponding calculations were performed for changes from post- to fup4-measurements as well as from pre- to fup4-measurements for both mindfulness skills and burnout. This effect size measure was comparable with Cohen's *d*, where .20 indicates a small, .50 signifies a medium, and .80 denotes a large effect size (Cohen, 1992). The significance of effect sizes was evaluated with confidence intervals.

The profiles were compared in terms of practices and learning experiences. Because class membership in the profile solution was used as an observed variable, uncertainty in the classification can manufacture distorted estimates and standard errors (Clark & Muthén, 2009). Therefore, the equality of means between profiles was tested using a chi-square test with posterior probability-based multiple imputations (Muthén & Muthén, 1998-2012). By executing analyses with posterior probabilities, the uncertainty of the classification was considered. The chi-square test was a robust analysis method for these calculations. The LPA and related analyses were conducted using Mplus 7 (Muthén & Muthén, 1998-2012).

2.4.3 Study III

Study III utilized the profiles of burnout and mindfulness skills formed in Study II. It evaluated the changes in subjective well-being of the profiles and compared the profiles to each other in these changes. The effect sizes for the changes in subjective well-being were calculated for each profile to evaluate the significance of the changes. The within-group effect size for each well-being change was calculated by dividing the mean change from pre- to fup10 measurement by the combined standard deviation of the pre and fup10 values [($m_{post} - m_{pre}$)/sqrt(($v_{pre} + v_{fup10}$)/2)] in the whole sample (Morris & DeShon, 2002). As in Study II, this effect size measure was comparable with Cohen's *d*, where .20 indicates a small, .50 signifies a medium, and .80 denotes a large effect size (Cohen, 1992). The significance of effect sizes was evaluated based on *t*-distribution.

When the profiles were compared on the well-being changes, similar procedure as in Study II was utilized. Namely, the equality of means between profiles was tested using a chi-square test with posterior probability-based multiple imputations (Muthén & Muthén, 1998-2012). The analyses were conducted using Mplus 7 (Muthén & Muthén, 1998-2012). Summary of the variables and analyses of the three studies is presented in Table 3.

TABLE 3 Summary of the variables and analyses used in Studies I, II, and III.

Study	Sample	Variables	Analyses
I	Intervention participants (n = 106) and control participants (n = 96)	Mindfulness facets: Observing Describing Acting with awareness Non-judging Non-reacting Burnout dimensions: Exhaustion Cynicism Reduced professional efficacy	Correlations and reliabilities CFAs Latent change score modeling
II	Intervention participants (n = 105)	Burnout Mindfulness skills Intervention practices: Practice quantity Practice frequency Practice continuation Learning experiences	Correlations and reliabilities Latent profile analysis Effect sizes χ^2 tests
III	Intervention participants (n = 105)	Burnout Mindfulness skills Subjective well-being: Life satisfaction Psychological well-being Social well-being Perceived stress	Correlations Latent profile analysis Effect sizes χ^2 tests

3 SUMMARY OF THE RESULTS

3.1 Study I

Aim. The objective of this study was to investigate whether the improvements of separate mindfulness facets during the 8-week intervention mediated the intervention effects on different burnout dimensions during the intervention and 10-month follow-up. Furthermore, the burnout dimensions were compared on which mindfulness facets mediated the changes in them. Specific hypotheses of the associations were not made but generally it was expected that mindfulness facets mediated intervention effects on burnout dimensions.

Results. The results of the structural equation modeling are presented in Figures 4 to 6 for each burnout dimension. Only the coefficients relevant for answering research questions are shown in the figures. All models had mostly satisfactory fit with the data based on statistical tests (CFI = .955–1.00, TLI = .949–1.01, SRMR = .053–.086, and RMSEA = .000–.057). In general, the intervention was effective in alleviating all burnout dimensions.

As can be seen from Figure 4, improvements in all mindfulness facets, except describing, mediated the intervention effects on exhaustion during the intervention. Based on confidence interval calculations, no facet was more important than others in explaining the change in exhaustion during the intervention. However, the intervention had also an additional direct effect on exhaustion. Only improvement of non-judging during the intervention mediated the additional reduction in exhaustion during the 10-month follow-up.

Figure 5 shows that the improvements in all mindfulness facets mediated the intervention effects on cynicism during the intervention. Improvements in describing and non-judging during the intervention mediated the additional reduction in cynicism during the 10-month follow-up. Based on confidence interval calculations, no facet was more important than others in explaining the change in cynicism during the intervention or follow-up.

As can be observed from Figure 6, improvements in all mindfulness facets, except observing, mediated the intervention effects on reduced professional efficacy during the intervention. Improvements in observing, describing, and non-judging during the intervention mediated the additional reduction in reduced professional efficacy during the 10-month follow-up. Based on confidence interval calculations, no facet was more important than others in explaining the change in reduced professional efficacy during the intervention or follow-up.

Key findings. The intervention was effective for all burnout dimensions. The general hypothesis of improvements in mindfulness facets mediating the intervention effects on burnout was supported. A large spread of mindfulness facets needed to improve during the intervention to have significant reduction in burnout dimensions. During the intervention, the differences between the dimensions in significant facets were minor. However, during the 10-month follow-up, there were a few differences. Non-judging was a significant mediator of additional reductions in all burnout dimensions. For cynicism and reduced professional efficacy, additional improvements in observing and describing were needed. There were no differences in the magnitude of the effects between the significant facets. Furthermore, intervention had an additional direct effect on exhaustion after controlling for the mediators, but not on the two other burnout dimensions.

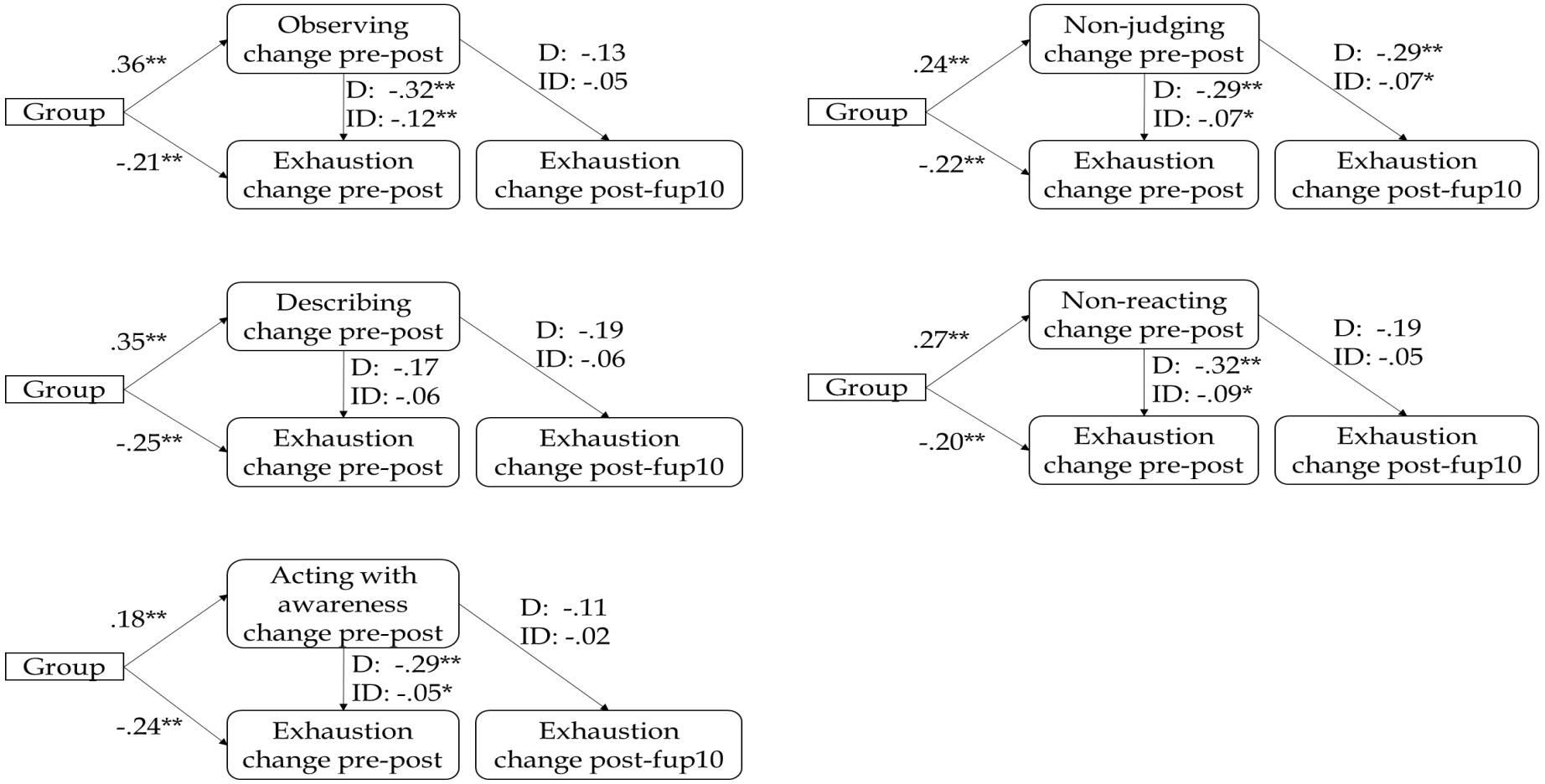

FIGURE 4 Mediation results for mindfulness facets and exhaustion.

Note. D = Direct effect, ID = Indirect effect (mediation). ** $p < .01$, * $p < .05$.

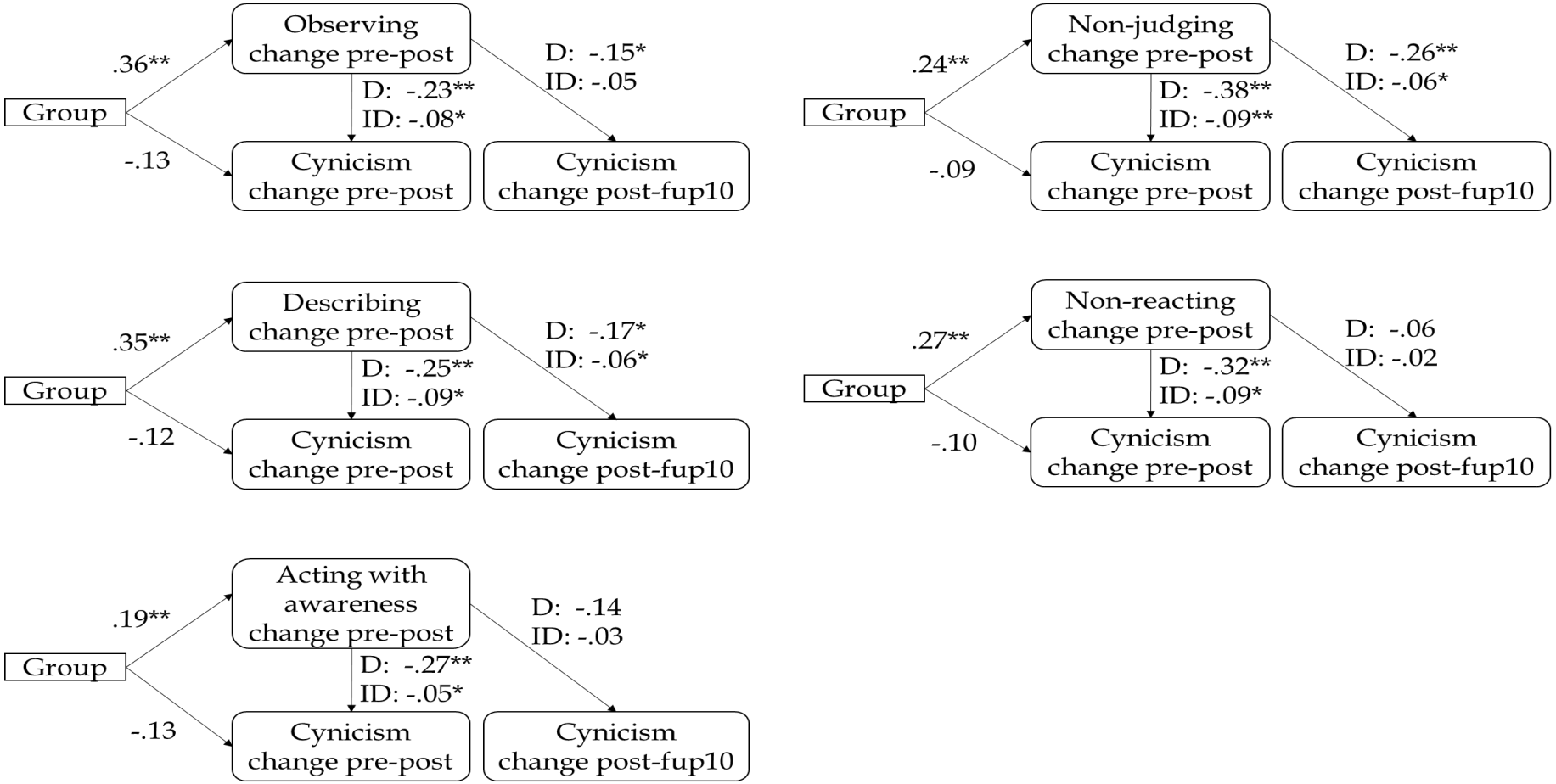

FIGURE 5 Mediation results for mindfulness facets and cynicism.

Note. D = Direct effect, ID = Indirect effect (mediation). ** $p < .01$, * $p < .05$

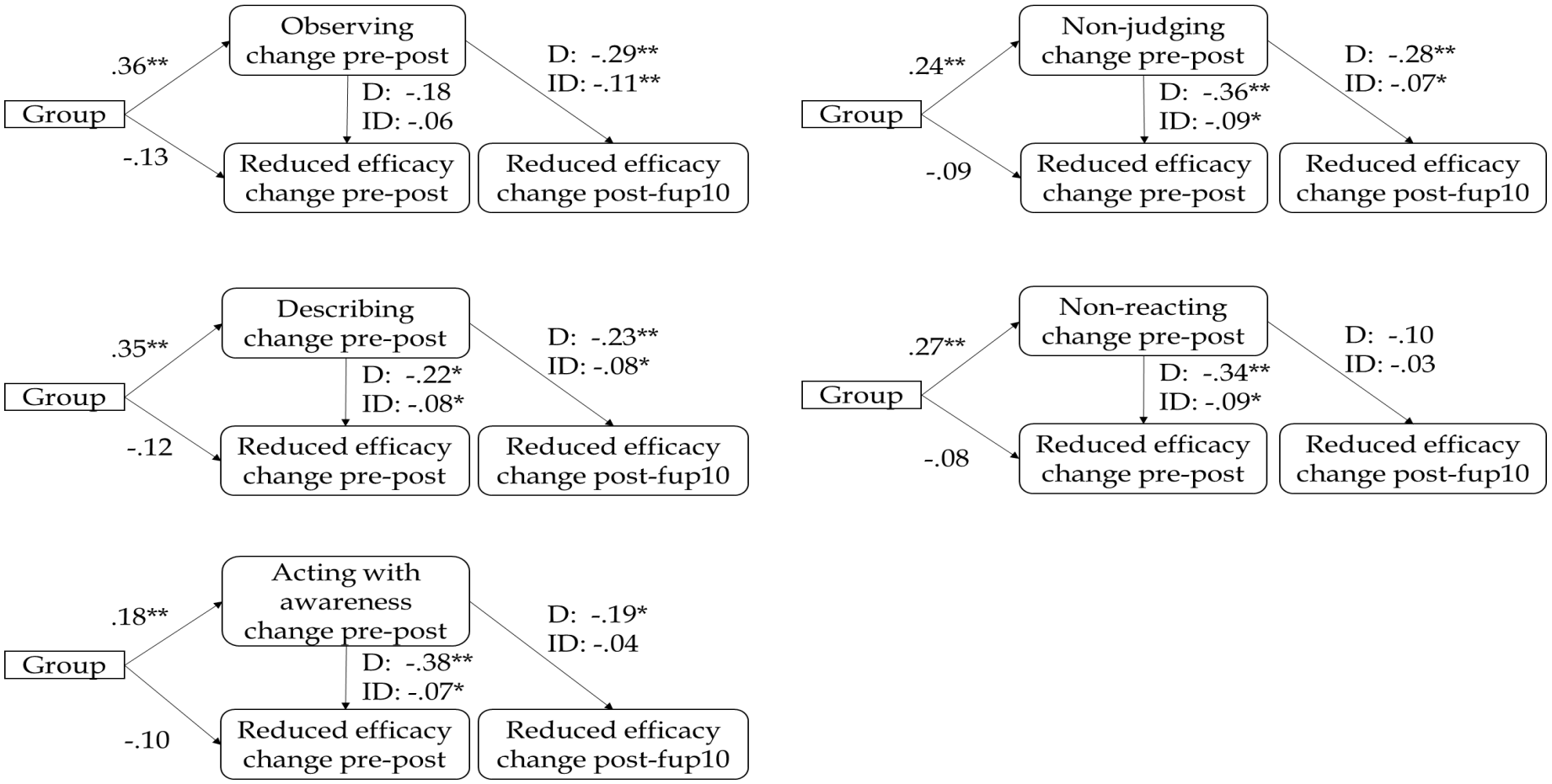

FIGURE 6 Mediation results for mindfulness facets and reduced professional efficacy.

Note. D = Direct effect, ID = Indirect effect (mediation). ** $p < .01$, * $p < .05$

3.2 Study II

Aim. The objective of this study was to investigate what kind of profiles mindfulness skills and burnout jointly formed during the 6-month study period (pre, post, and fup4 measurements). Since the study was exploratory, no hypotheses of the profile solution were set. The profiles were compared on intervention practices to study if these were associated to differences between the profiles. The profiles were compared on practice quantity, frequency, and continuation, as well as on learning experiences of the skills taught during the intervention.

Results. Profile solution with six profiles fitted the data best based on the statistical tests (lowest BIC and in BLRT, $p < .05$) and interpretation. Both the entropy value (.896) the AvePPs (range of .91–.99) were high, indicating that the profiles were distinctive. The profiles are presented in Figure 7.

Participants in Profile 1, "Mild burnout – benefited greatly" (30.1% of the participants), showed a continuing increase in mindfulness skills from pre-measurement to follow-up with a large effect size (ES = 1.56 from pre to fup4, $p < .001$). The participants in this profile had a significant decrease in burnout during the intervention. The decrease also continued until the follow-up, showing a large overall effect size (ES = 2.23 from pre to fup4, $p < .001$). At the follow-up, the participants in this profile did not meet the cut-off for even mild burnout, according to BBI (Näätänen et al., 2003).

Participants in Profile 2, "Severe burnout – not benefited, but improved MF skills" (29%), showed a significant increase in mindfulness skills during the intervention which was maintained at the follow-up. The overall effect size was large (ES = 0.99 from pre to fup4, $p < .01$). Burnout showed an insignificant decrease during the intervention and follow-up (ES = 1.03 from pre to fup4, p = ns).

Participants in Profile 3, "Moderate burnout – benefited slightly" (12.1%), showed a reverting effect in both mindfulness skills and burnout. During the intervention mindfulness skills increased and burnout decreased but part of the effect was reverted during the follow-up. Even though the effect was weakened due to the negative change during the follow-up, the overall increase in mindfulness skills was significant with a large effect size (ES = 0.88 from pre to fup4, $p < .05$) and the overall decrease in burnout with medium effect size (ES = 0.63 from pre to fup4, $p < .05$).

Participants in Profile 4, "Severe burnout – benefits not maintained" (11.5%), showed a significant decrease in burnout during the intervention. However, this decrease was reverted during the follow-up, yielding an insignificant overall decrease (ES = 0.35 from pre to fup4, p = ns). In mindfulness skills, an insignificant increase was noticed during the study period (ES = 0.77 from pre to fup4, p = ns).

Participants in Profile 5, "Severe burnout – benefited greatly" (9.5%), showed a significant increase in mindfulness skills during the intervention that

was maintained at the follow-up. The overall effect size was large (ES = 4.41 from pre to fup4, $p < .001$). The participants in this profile had a continuing decrease in burnout from severe to low during the intervention and follow-up with large overall effect size (ES = 4.92 from pre to fup4, $p < .001$). At the follow-up, the participants in this profile did not meet the cut-off for even mild burnout, according to BBI (Näätänen et al., 2003).

Participants in Profile 6, "Moderate burnout – benefited" (7.8%), showed a significant increase in mindfulness skills during the intervention that was maintained at the follow-up with large overall effect size (ES = 1.29 from pre to fup4, $p < .01$). With participants in this profile, burnout decreased from moderate to mild during the intervention and the decrease was maintained at the follow-up with a large overall effect size (ES = 1.09 from pre to fup4, $p < .01$).

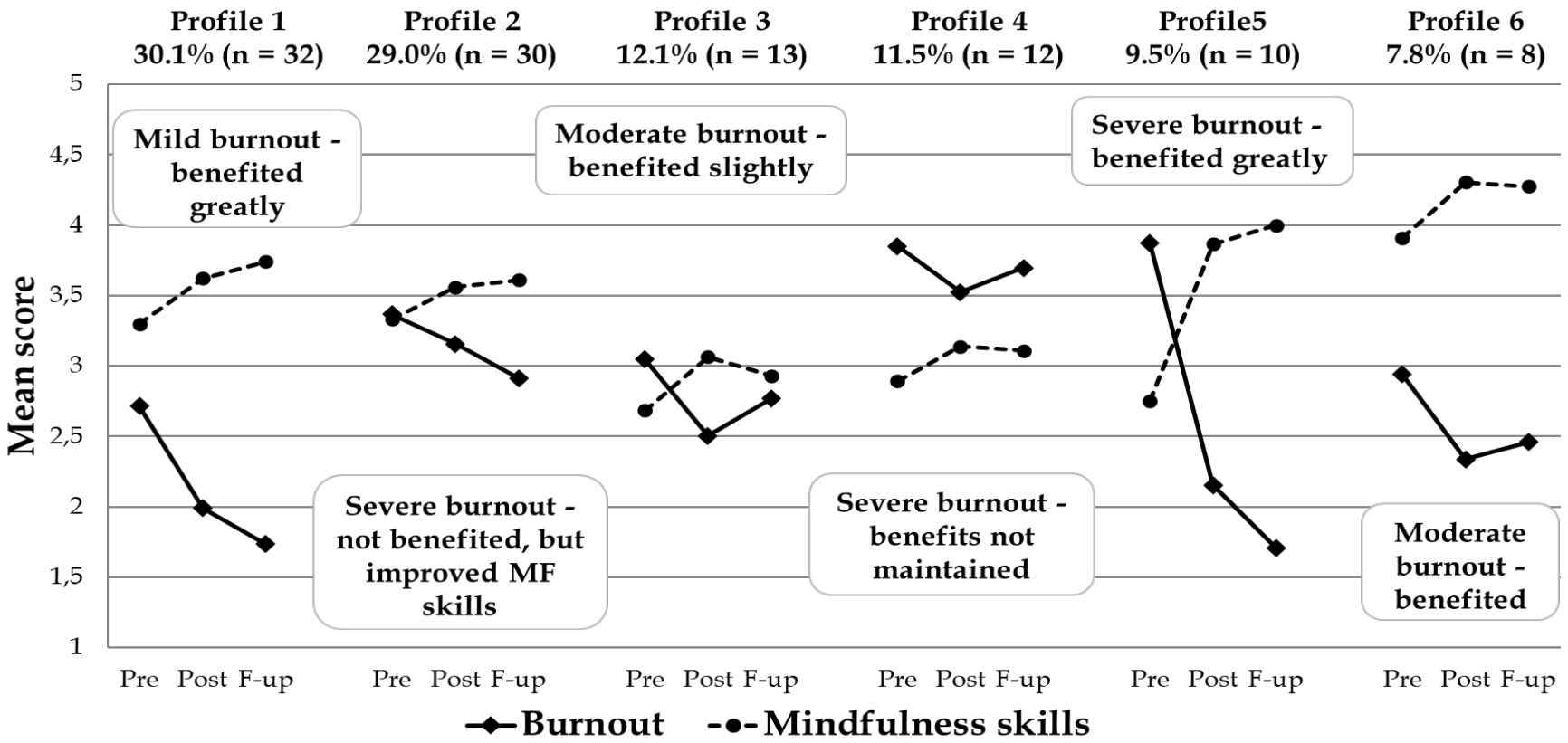

FIGURE 7 Profiles of burnout and mindfulness skills.

Note. The severity of the burnout was evaluated based on Näätänen et al. (2003). The means of the age group-based estimates were the following: mild burnout (original scale [OS]: 2.96-3.30, transformed scale [TS]: 2.47-2.75), moderate burnout (OS: 3.31-3.96, TS: 2.76-3.30), and severe burnout (OS: > 3.96, TS: > 3.30).

During the intervention, overall practice quantity was approximately between 105 and 122 practices for the profiles. All participants in the profiles practiced on 5 to 6 days a week. The profiles did not differ significantly from each other in terms of practice quantity or frequency (for both, overall χ^2 = 0.99, p = .963). However, there were differences between the profiles in practice continuation after the intervention in terms of both mindfulness (overall χ^2 = 14.28, p = .014) and value practices (overall χ^2 = 23.34, p = .000). The participants in Profile 3 showed significantly less mindfulness practices than the participants in Profiles 1, 2, 5, and 6, as well as significantly less value practices than the participants in Profiles 1 and 5. In turn, the participants in Profile 6 showed significantly more mindfulness practices than the participants in Profile 1 and significantly more value practices than the participants in Profiles 1, 2, 3, and 4. In terms of learning experiences during the intervention, there were significant differences between the profiles (overall χ^2 = 45.15, p = .000). Same as with mindfulness practice continuation, the participants in Profile 3 showed lower learning experiences than the participants in Profiles 1, 2, 5, and 6. Furthermore, the participants in Profiles 5 and Profile 6 showed better learning experiences than the participants in Profiles 1, 2, and 4. There were no significant differences in the changes of learning experiences during the follow-up between the profiles (overall χ^2 = 5.50, p = .358).

Key findings. The intervention effects on burnout and mindfulness skills were not the same for all participants. Six profiles were found: 1) "Mild burnout – benefited greatly", 2) "Severe burnout – not benefited, but improved MF skills", 3) "Moderate burnout – benefited slightly", 4) "Severe burnout – benefits not maintained", 5) "Severe burnout – benefited greatly", 6) "Moderate burnout – benefited". During the intervention, five of the profiles (Profiles 1, 3, 4, 5, and 6) showed decrease in burnout and five (Profiles 1, 2, 3, 5, and 6) increase in mindfulness skills. Hence, all the participants in the profiles initially benefited from the intervention, either in terms of burnout reduction, mindfulness skills improvement, or both. The benefits were maintained or improved at follow-up in terms of mindfulness skills for all five profiles. However, the burnout score of the participants in Profile 4 reverted during the follow-up and the participants in this profile showed no lasting benefits. Overall, most of the profiles showed lasting reductions in burnout (Profiles 1, 3, 5, and 6; 59.5% of the participants) and improvements in mindfulness skills (Profiles 1, 2, 3, 5, and 6; 88.5%) during the study period. However, one profile did not show long-term benefits in terms of either burnout or mindfulness skills (Profile 4; 11,5%). Practice quantity and frequency did not differentiate the profiles, but experienced learning of the practiced skills did. The participants in the profiles with higher learning experiences tended to have better intervention outcomes. Furthermore, practice continuation differentiated the profiles. The participants in the profiles in which the increases in mindfulness skills were continued or maintained during the follow-up did more both mindfulness and value practices than the participants in the profiles with less beneficial changes.

3.3 Study III

Aim. The objective of this study was to investigate whether the profiles of burnout and mindfulness skills differed on subjective well-being changes. The profiles identified in Study II were compared on the changes in evaluative (life satisfaction), eudaimonic (psychological and social well-being), and experiential (perceived stress) well-being during the 12-month study period (8-week intervention and 10-month follow-up). This study hypothesized that the participants in the profiles with the largest beneficial changes in mindfulness skills and burnout during the 6-month period also showed the largest positive changes in all levels of subjective well-being during the 12-month period.

Results. The effect sizes of the changes in different indicators of well-being are shown in Figure 8. The participants in Profiles 1, 2, 3, and 5 had significant increases in life satisfaction, showing small to large effect sizes. The participants in Profiles 1, 2, and 5 had significant increases in psychological and social well-being, and effect sizes varied from small to large. In terms of social well-being, also the participants in Profile 6 had significant increase with medium effect size. The participants in all profiles, except the participants in Profile 4, had significant beneficial change in perceived stress, showing medium to large effect sizes.

The profiles differed on the changes in life satisfaction (overall $\chi^2 = 16.13$, $p = .01$). The participants in Profiles 1 and 5 showed larger increases in life satisfaction than the participants in Profiles 4 and 6. Furthermore, the participants in Profile 2 had larger increases in life satisfaction compared to the participants in Profile 6. There were also differences in psychological (overall $\chi^2 = 36.50$, $p = .00$) and social well-being (overall $\chi^2 = 18.35$, $p = .00$). The participants in Profile 5 showed higher increases than the participants in any other profile in both psychological and social well-being. In addition, the participants in Profiles 1 and 6 had higher increases in social well-being compared to the participants in Profile 4. Changes in perceived stress differed also between the profiles (overall $\chi^2 = 50.36$, $p = .00$). Same as with psychological and social well-being, the participants in Profile 5 had more beneficial change in perceived stress than the participants in any other profile. Furthermore, the participants in Profiles 1 and 2 had more beneficial change than the participants in Profile 4. In addition, the participants in Profile 1 had more beneficial change in perceived stress than the participants in Profile 3.

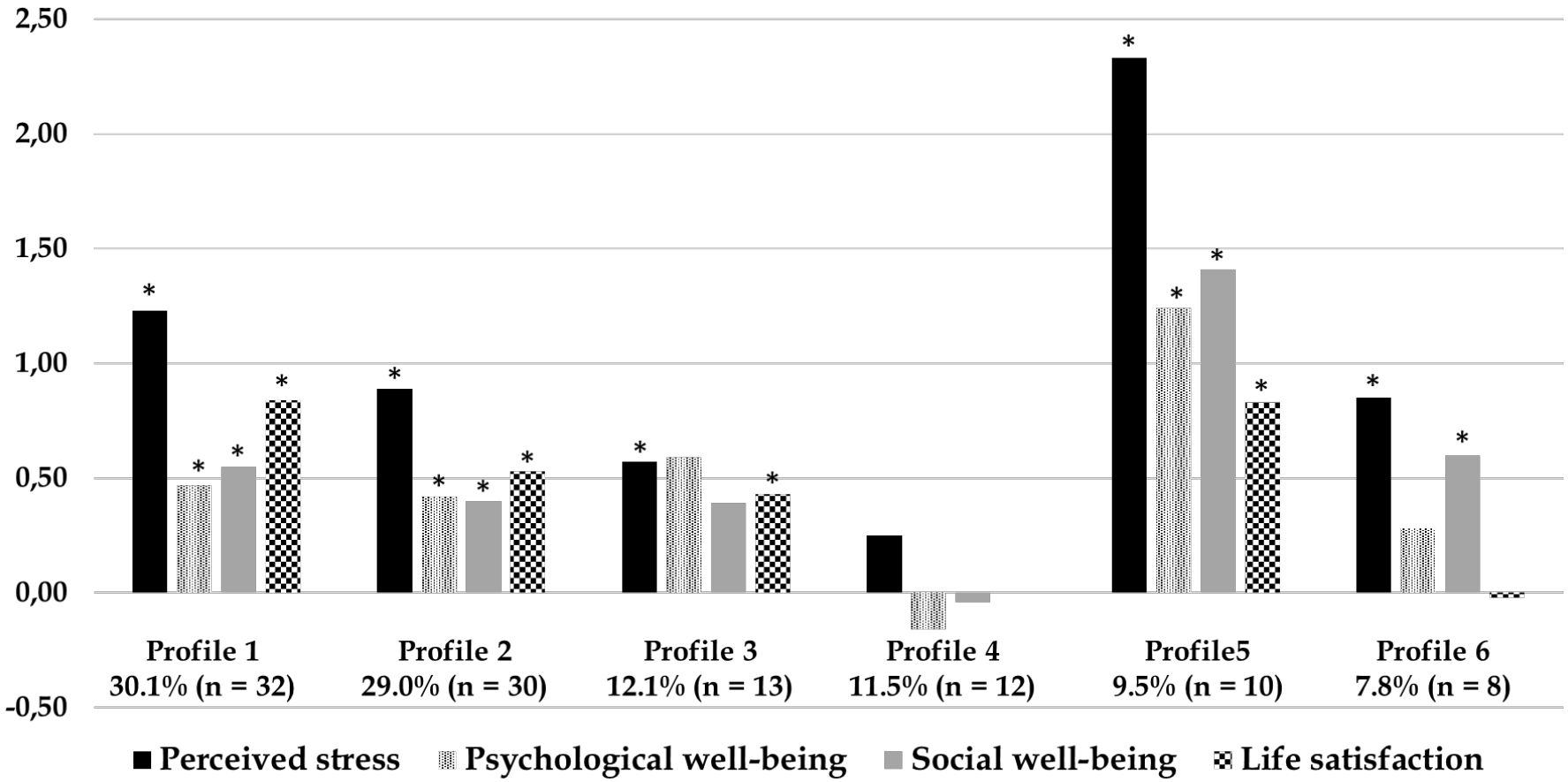

FIGURE 8 Within-group effect sizes for the changes in different levels of well-being.

Note. * d is significant based on the t-distribution. Magnitude of effects: d > .20 small effect. d > .50 medium effect. d > .80 large effect.

Key findings. Experiential level of well-being was the most susceptible to change during the 12-month study period, while the changes in eudaimonic and evaluative levels of well-being were smaller. There were differences between the six profiles in the changes of all levels of subjective well-being during the study period. The participants in Profile 5, "Severe burnout – benefited greatly", showed systematically the highest increases in different levels of well-being with large effect sizes. In turn, the participants in Profile 4, "Severe burnout – benefits not maintained" did not have beneficial changes in any level of subjective well-being. In general, those who initially benefited the most from the intervention, that is, showed increase in mindfulness skills and decrease in burnout during the 6-month study period, also had the most beneficial development in all three levels of subjective well-being during the 12-month study period. Hence, the hypothesis was supported.

4 DISCUSSION

Burnout is a growing risk for the work well-being (Eurofound, 2018; Sutela et al., 2019), with devastating consequences for both individuals and organizations (e.g., Morse et al., 2012; Salvagioni et al., 2017). Burnout has been reluctant to change without intervention (Mäkikangas & Kinnunen, 2016; Schaufeli & Enzmann, 1998), and unfortunately, different intervention approaches have usually had only small effects on it (e.g., Ahola et al., 2017; Dreison et al., 2018; Iancu et al., 2018; Khoury et al., 2015). Better understanding is needed of how to treat burnout effectively, and one way to answer to this need is process-based intervention research (Hayes & Hofmann, 2017; Hofmann & Hayes, 2019). It focuses on finding out why, in which conditions, and for whom the interventions are effective. The present three studies utilized process-based approach to investigate the effectiveness of an eight-week mindfulness-, acceptance-, and value-based (MAV) intervention on burnout alleviation during the intervention and 10-month follow-up. Variable- and person-centered methods were combined to gain deeper understanding of the change processes and individual variation in them. In general, the studies showed that by adding an eight-week MAV intervention to treatment-as-usual (TAU), long-lasting changes even on severe burnout could be achieved. The model of combining group meetings and web program appeared to be working in burnout treatment since the adherence to the program was high and the outcomes promising. However, the intervention effects were not the same for everyone.

The results of the present studies were positive for the use of person-oriented treatments of burnout (Hätinen, 2008; Schaufeli & Enzmann, 1998). Generally, person-oriented treatments have not been as effective as organization-directed interventions or combined approaches in the treatment of burnout, especially when long-term effects have been studied (e.g., Awa et al., 2010; Westermann et al., 2014). In the present MAV intervention, the positive effects were mostly maintained or increased at 10-month follow-up. However, since the intervention participants were also able to use TAU services (including organizational practices) it is possible that for some participants, combination of person- and organization-oriented procedures were utilized. However, the

effects of adding the present MAV intervention to TAU services were superior to just TAU, indicating the importance of this intervention in alleviating burnout. Furthermore, the present intervention appeared to be effective for all burnout dimensions, although some of the previous studies have found MAV interventions to have effects only on certain dimensions (Iancu et al., 2018).

The results were also promising for the use of ACT-based MAV interventions in burnout treatment, although previously there has been discrepancy of the effectiveness of ACT-based interventions for burnout (Reeve et al., 2018; Habibian et al., 2018; Lloyd et al., 2013). Furthermore, the present results supported the theoretical expectations of mechanisms of change in ACT (Hayes, 2004; Hayes et al., 2006b, 2012), by showing the improvement of mindfulness to be closely associated to the alleviation of burnout both at variable- and person-centered level of analysis. Furthermore, the findings supported the notion that ACT-based interventions could have wide-ranging well-being benefits (Dindo et al., 2017; Hayes et al., 2012), since the positive intervention effects in terms of mindfulness skills improvement and burnout alleviation were associated to better development of subjective well-being during the study year.

Based on the present results, ACT-based MAV interventions are a viable option for burnout treatment. The results of the present studies were in line with the results of previous effectiveness studies of more traditional mindfulness-based interventions for burnout (e.g., Luken & Sammons, 2016). The present ACT-based MAV intervention emphasized mindfulness, as is done in traditional mindfulness-based interventions (Crane et al., 2017). It is possible that in the burnout treatment, mindfulness is more essential for positive outcomes than the other ACT processes or that it needs to improve before commitment and behavior change processes can be enhanced. In theoretical considerations of ACT, improvement in mindfulness and acceptance skills is seen essential for a person to achieve meaningful behavioral change and to commit to actions leading to valued living (Fletcher & Hayes, 2005; Hayes et al., 2012). However, more empirical research is needed to determine the relative importance of separate ACT processes for burnout change. In the present three studies, the focus was on understanding the associations between mindfulness and burnout in more detail.

4.1 Improvements in mindfulness mediated burnout alleviation

Study I used variable-centered mediation analysis to evaluate the relevance of mindfulness skills improvement for burnout recovery. The results showed that improvements in all five mindfulness facets during the intervention mediated the decreases in three burnout dimensions both during the intervention and 10-month follow-up. These results indicated that learning mindfulness skills during the brief MAV intervention could have both short- and long-term effects on burnout. During the intervention, burnout alleviation was mediated by a wide variety of improvements in mindfulness facets. In the case of cynicism, all mindfulness facets acted as mediators of change, while for exhaustion all but

describing, and for reduced professional efficacy all but observing were significant mediators. During the 10-month follow-up, the improvement in non-judging during the intervention appeared to be the most essential, given that it mediated decreases in all burnout dimensions. When cynicism was concerned, describing was a significant mediator in addition to non-judging, while for reduced professional efficacy, both describing and observing were additional significant mediators. Based on these results, mindfulness is an essential process to improve in burnout treatment. The mindfulness mechanisms of change were relatively similar for all burnout dimensions when the short-term changes were concerned. However, the results of follow-up effects indicated that some mindfulness facets could be more important than others for long-term burnout change.

The results of the importance of several mindfulness facets for short-term burnout change can be understood in the contexts of burnout literature and ACT principles. Burnout is a persistent, job-related state of ill-being (Leiter et al., 2014; Maslach et al., 1996; Näätänen et al., 2003) that has all-encompassing effects for the functioning and well-being of the individual (e.g., Ahola & Hakanen, 2014; Salvagioni et al., 2017). Furthermore, Warr (2012) described burnout as a cognitive-affective disorder that involves thoughts, memories, and feelings, encompassing a wide range of experiences in daily living. Because of the wide-ranging effects of burnout, it is probable that a fundamental change in a way a person observes their situation is needed for significant improvement in burnout. In the context of MAV interventions based on ACT (Hayes et al., 2006b, 2012), this could entitle the need for simultaneous improvement of several core processes to profoundly affect the way a person experiences one's work life. This was also what was observed in the present study when mindfulness facets were concerned. The simultaneous improvement of different facets could help to better notice the factors associated with burnout symptoms and then act in a way that is likely to mitigate their effects on one's well-being. Especially at the beginning of burnout recovery, a comprehensive change in several mindfulness facets could be needed to fundamentally affect the way a person observes one's circumstances and possibilities for recovery.

When long-term burnout change is considered, a special relevance of some mindfulness skills over the others could be more visible since basic level of all skills is probably achieved. Although the simultaneous development of several skills fits the expectations of ACT (Hayes et al., 2006b, 2012), there exists cross-sectional ACT research that has identified certain skills to be more strongly associated with burnout-related ill-being than others. In the study by Puolakanaho et al. (2018), defusion skills were uniquely associated with less burnout-related ill-being after other MAV skills, job conditions, and general well-being in life were considered. Defusion is one component of the functional mindfulness definition by Fletcher and Hayes (2005). Defusion skills help the person to question the literal truth of their private experiences and to relate differently to them. These skills are closely related to non-judging, and this could explain why an improvement in non-judging was especially relevant in long-

term reduction in all the burnout dimensions in the present study. For exhaustion, non-judging was the only significant mediator during the follow-up. Exhaustion can be considered as a more affective component of burnout (cognitive-affective description by Warr, 2012). Since affects are usually fluctuating as a reaction to different interpretations of the situations one is in, this burnout dimension could be more susceptible to change when non-judgmental way to interpret the situations increases. However, for cynicism and professional efficacy, additional skills of observing and describing were needed. Of the burnout dimensions, cynicism and professional efficacy could be described as more cognitive (Warr, 2012), given that they involve interpretations of oneself, others, and situations. It is possible that to be able to continuously develop non-judging stance towards conceptualizations of self and others, a new way to observe and describe external and internal stimuli is needed. For this reason, these facets could have risen as important in addition to non-judging during the follow-up.

The importance of observing and describing in addition to non-judging can be further understood in the context of a new Monitor and Acceptance Theory (MAT) formulated by Lindsay and Creswell (2017). MAT suggests that if the purpose is to develop positive change in well-being, both attention monitoring skills (resembling observing and describing) and acceptance skills (resembling non-judging) are needed. Without acceptance, observing disturbing stimuli could even lead to detrimental effects for well-being since emotional reactivity is likely to increase when monitoring skills increase. This way, in the cases of cynicism and reduced professional efficacy, non-judging stance towards the experiences could be essential to benefit from better observing and describing skills. The beneficial role of observing and describing when accompanied with non-judging have also been noticed with other well-being indicators, since these skills have been positively associated to well-being when either non-judging or non-reacting skills have also been high (Barnes & Lynn, 2010; Heeren et al., 2015; Kohtala et al., 2018, Querstret et al., 2018; Waters et al., 2018).

Based on the present results, there appeared to be little need to differentiate MAV treatment strategies according to specific burnout symptoms, at least when short-term change was considered. During the intervention, change processes induced by mindfulness skills improvement were relatively similar for all burnout dimensions; hence, burnout could be treated as a unified condition. However, when long-term burnout change is considered, emphasis on certain skills could be made, depending on the symptom profile the person was having. For all burnout dimensions and for both short- and long-term change, learning of non-judging skills (e.g., not criticizing emotions and feelings, refraining from evaluating thoughts and feelings as good or bad) appeared to be essential. Non-judging was the only facet that systematically mediated the changes in all three burnout dimensions during the intervention and 10-month follow-up. People with burnout symptoms have often a contradiction between their personal standards and perceived performance (Ozbilir, Day, & Catano, 2015), and it could be that the improvement in non-judging helps to develop a less guilt-inducing attitude towards themselves. Better non-judging skills could also

prevent a person from automatically interpreting job conditions negatively and thereby reinforcing cynicism. Furthermore, low self-rated professional efficacy could lead to pushing oneself to work longer hours and refusing to rest to compensate for one's perceived shortcomings. When non-judging skills are improved, it could be easier to recognize these overdemanding expectations and change one's behavior accordingly. When self-acceptance skills are high, one's resources could be focused on recovery.

The special role of non-judging could also be linked to its associations to other mindfulness facets, as inferred in MAT (Lindsay & Cresswell, 2016) and previous intervention research (Kohtala et al., 2018; Querstret et al., 2018). When observing and describing skills are developing, non-judging stance towards one´s own thoughts and emotional reactions could help to prevent the exhausted person being overwhelmed by the new observations. When the facet results were compared to previous studies, the special role of non-judging was not surprising. Non-judging has been linked especially with exhaustion and cynicism in previous cross-sectional research on burnout (Taylor & Millear, 2016). The importance of non-judging has also been noticed in relation to other well-being indicators, supporting its role as a transdiagnostic therapeutic process. It has had special role in the interventions for depression (Kohtala et al., 2018), anxiety (Mizera et al., 2016; Querstret et al., 2018), and stress (Bergman et al., 2016; Querstret et al., 2018).

Interestingly, the role of acting with awareness was not as noticeable here as in the previous burnout studies. Acting with awareness has been the strongest predictor of different burnout dimensions in several cross-sectional studies (Kriakous et al., 2019; Testa & Sangganjanavanich, 2016; Yang et al., 2017). Furthermore, in the intervention context, acting with awareness had the strongest correlation with decreases in exhaustion (Flook et al., 2005). In the current study, acting with awareness mediated the changes in all burnout dimensions during the intervention, but it was not a mediator with any burnout dimension during the follow-up. Since most of the previous research on the importance of acting with awareness has been cross-sectional, it is possible that acting with awareness is an important skill in daily living and may even help prevent the development of burnout. However, to induce positive long-term change when burnout symptoms are severe, its role could be less essential than the roles of non-judging, observing, and describing.

In the present study, the role of non-reacting was rather similar as the role of acting with awareness, namely it did mediate the changes during the intervention but not during the follow-up. In previous studies, non-reacting has been the facet altering the functions of observing and describing when non-judging has not been in this role (Barnes & Lynn, 2010; Heeren et al., 2015). It is possible that non-judging and non-reacting depict to some extent similar skills and only one is needed at a time to benefit from better observing and describing skills. Furthermore, based on the differing results between well-being indicators (Bergman et al., 2016; Heeren et al., 2015; Querstret et al., 2016, 2018; Waters et al., 2018), it is possible that mindfulness in general is a transdiagnostic

therapeutic process, but its facets could have differing roles in the change processes of different conditions. Further research is needed to replicate the findings of the present study of important facets for burnout alleviation.

4.2 Intervention outcomes were not the same for everyone

Study II utilized person-centered approach to study the dynamic associations between mindfulness and burnout during and after the MAV intervention. In this study, total scores of both mindfulness skills and burnout were used instead of separate facets and dimensions. The focus was on individual variation in the developmental interplay between the process (mindfulness skills) and the outcome (burnout). Six profiles emerged: 1) "Mild burnout – benefited greatly", 2) "Severe burnout – not benefited, but improved MF skills", 3) "Moderate burnout – benefited slightly", 4) "Severe burnout – benefits not maintained", 5) "Severe burnout – benefited greatly", and 6) "Moderate burnout – benefited". The present results were encouraging for the use of brief process-based MAV interventions since they showed that even with an eight-week intervention, the trajectory of 59.5% of participants could be turned towards lasting reduction of burnout (Profiles 1, 3, 5, and 6). Furthermore, 39.6% of the participants could be considered to have benefited substantially from the brief MAV intervention (Profiles 1 and 5) since their burnout score dropped below the cut-off for even mild burnout, according to the BBI manual (Näätänen et al., 2003). The results also revealed that even severe initial burnout could be treated effectively with this intervention (Profile 5 with 9.5% of the participants), although the results were generally more promising for milder symptoms (Profile 1 with 30.1% of the participants). Although for most of the participants the results were promising, the participants in Profiles 2 and 4 (40.5% of the participants) did not show significant decrease in burnout, although the trend was downwards. However, in none of the profiles, did burnout increase above the pre-measurement level during the 6-month study period, so detrimental effects of the intervention were not observed.

When these results were compared to other person-centered intervention studies of burnout, they showed rather similar trajectories of burnout development. In the study by Hätinen et al. (2009), three profiles were discovered of which two had initially high burnout: one of the profiles showed the participants who benefited from the intervention (34% of the participants) and the other one the participants who did not (20%). In this study, most participants had stable low burnout (46%). The percentage of participants that benefited from the intervention in terms of burnout alleviation was rather similar to that in the present study, but the present intervention lasted only for eight weeks, while the rehabilitation used in the study by Hätinen et al. (2009) lasted for one year. In addition to shorter length, the present burnout intervention with the combination of group and web formats would likely be easier and more cost-effective to implement to occupational health care practices than the rehabilitation used in

Hätinen et al. (2009). The rehabilitation utilized comprehensive evaluation, included several professionals, and tailored the intervention separately for everyone. Based on the present results, comparable benefits in terms of burnout could be achieved with shorter and lighter MAV intervention.

Hätinen et al. (2013) did closer analysis of the intervention effects by separating the burnout dimensions. In these analyses, they noticed that only exhaustion was significantly decreased during the one-year intervention and six-month follow-up. In terms of cynicism and reduced professional efficacy, those who initially experienced them (half of the participants) had stable levels throughout the study period. In the present study, the profiles were created based on total score of burnout, of which reason the source of reduction could not be as precisely estimated as in the Hätinen et al. (2013). However, the results of Study I showed that the present MAV intervention had effects on all three burnout dimensions, indicating reductions in all burnout symptoms. An interesting avenue for future research would be to study the change profiles of separate burnout dimensions in MAV interventions. This kind of research could further illuminate whether burnout should be treated as a unified condition or whether the interventions should be tailored according to the burnout symptoms the individual is experiencing.

Overall, the profiles of burnout and mindfulness skills showed that the skills acquisition and burnout alleviation tended to be simultaneous, indicating that the change processes of mindfulness and burnout were intertwined. The simultaneous development of burnout and mindfulness skills was even observable in Profiles 3 and 4 where the reversion of benefits was evident in the cases of both burnout and mindfulness skills. Majority of the participants (88.5%) showed significant and lasting increases in mindfulness skills; thus, the intervention appeared to be effective in increasing the taught skills and was even more effective in this than in reducing burnout. In profiles with the most impressive decreases in burnout (Profiles 1 and 5), mindfulness skills also increased the most substantially. Since Study I showed mindfulness skills improvement to mediate the reduction in burnout, it is likely that the great reductions in burnout were at least partly due to this considerable skills improvement. In Profile 6, the level of mindfulness skills was at the pre-measurement already at the same level as in Profile 5 at the follow-up. However, the participants in Profile 6 did not show more benefits in turns of burnout reduction. Rather it seemed that in this and other profiles the benefits in terms of burnout reduction were in line with the development of mindfulness skills, regardless of the baseline level of these skills. This way, the more the mindfulness skills increased during the intervention, the more burnout was likely to decrease.

The results of Study II were comparable to previous person-centered intervention study of mindfulness skills, showing that the participants in the developmental profiles with increasing mindfulness skills had better outcomes than the participants in the profiles with less impressive skills acquisition (Kiken et al., 2015). Furthermore, in cross-sectional studies comparing different mindfulness profiles, the participants in those profiles showing the highest skills

tended to have the best well-being (Bravo et al., 2016, 2018; Gu et al., 2020; Kimmes et al., 2017; Lam et al., 2018; Pearson et al., 2015). In previous studies, profiles were created based on levels of separate mindfulness facets, and it was noticed that the participants in the profile titled "Non-judgmentally aware" (high on non-judging and acting with awareness, but low on observing) had generally well-being benefits close to the profile with overall high mindfulness skills (Bravo et al., 2016; Pearson et al., 2015). In turn, the participants in the profile titled "Judgmentally observing" (high on observing, but low on non-judging and acting with awareness) had larger amount of well-being problems than the participants in many other profiles (e.g., Lam et al., 2018; Pearson et al., 2015). In the present study, it was not possible to differentiate between different mindfulness facets, but an interesting avenue for future research would be to study the developmental patterns of separate facets to see if the profiles found in cross-sectional research could be identified in longitudinal context.

Furthermore, it would be interesting to study how the changes in the mindfulness facets are associated to each other and well-being outcomes in intra-individual level. Study I indicated that at least when long-term burnout change is considered, the skills of non-judging, observing, and describing could be more essential than the other skills. Possibly the interplay between these skills could be better understood with person-centered analysis. In sum of the findings of the associations between burnout and mindfulness skills, both variable- and person-centered methods indicated that mindfulness and its facets were important mechanisms of change to consider in MAV interventions for burnout.

4.3 Burnout intervention also affected other areas of well-being

Study III expanded the process-based approach towards transdiagnostic consideration. The study used person-centered methods to investigate whether the MAV intervention effects on burnout and mindfulness skills would spread to other areas of well-being. The six profiles found in Study II were compared on their subjective well-being changes during an extended 12-month study period to see whether the differences in intervention effects on burnout and mindfulness skills would also be visible in other well-being indicators. The results showed that subjective well-being was increased during the study period in most profiles. The results supported the notion that ACT-based MAV interventions can offer tools to improve several areas of well-being at once (Dindo et al., 2017; Hayes et al., 2012). This finding was also in line with the assumptions of transdiagnostic treatment literature stating that when essential processes are affected, well-being changes can be expected, regardless of the exact symptoms treated (Mansell et al., 2009). In here, the target of the intervention was burnout, but the other levels of well-being improved as well. These results were also in line with the previous findings showing that work well-being and general well-being in life were intricately connected (Reichl et al., 2014). When work well-being (burnout) was

improved, general well-being in life (levels of subjective well-being) was likely improved too.

The most susceptible to change was the experiential level of well-being, measured via perceived stress. The participants in all profiles, except the participants in Profile 4 "Severe burnout – benefits not maintained", (88.5% of the participants) showed significant improvements in it. Increases in eudaimonic well-being were significant with the participants in three to four profiles, depending on whether psychological (Profiles 1, 2, and 5, 68.6%) or social (Profiles 1, 2, 5, and 6, 76.4%) well-being was concerned. Evaluative level, measured via life satisfaction, was improved with the participants in four profiles (Profiles 1, 2, 3, and 5, 80.7%). Experiential level of well-being depicts the most fluctuating level of well-being, as it describes daily experiences (Deaton & Stone, 2016). This level is likely to react to many kinds of changes in daily living, and for this reason, the large changes in it due to the intervention with the participants in almost all profiles could be expected. Eudaimonic and evaluative levels describe longer term experiences of well-being and meaningfulness of life and were thus less likely to change suddenly. However, during and after a brief MAV intervention, both these increased with the participants in most of the profiles. Based on the present results, to have significant increases in evaluative or eudaimonic levels of well-being, there generally needed to be increases in experiential level. It is possible that the daily life needs to be in some sort of balance to have time and resources to ponder the meaning of life and make larger changes affecting the overall life satisfaction.

Furthermore, there were differences in the well-being changes between the profiles. The participants in the profiles with the largest benefits in terms of burnout and mindfulness skills during the 6-month study period were the ones with the largest benefits in different levels of well-being during the extended 12-month study period. The participants in Profile 5, "Severe burnout – benefited greatly", had more substantial well-being changes in terms of experiential and eudaimonic well-being than the participants in any other profile. The participants in Profile 5 also surpassed the participants in Profiles 4 and 6 in terms of evaluative well-being. In addition, the participants in Profile 1, "Mild burnout – benefited greatly", had also better results than the participants in some other profiles. In contrast, the participants in Profile 4, "Severe burnout – benefits not maintained", with no significant change in any level of well-being, did the worst in profile comparisons in all levels of well-being.

Surprisingly, the participants in Profile 2, "Severe burnout – not benefited, but improved MF skills", that did not experience significant decrease in burnout, differed from the participants in Profile 4 in terms of experiential well-being and from the participants in Profile 6 in terms of evaluative level of well-being. Possibly steadily increasing mindfulness skills could explain the superior well-being benefits experienced by the participants in this profile. Thus, the development of mindfulness skills could be more essential to spreading effects than the changes in burnout symptoms. This is in line with the theoretical expectation of mindfulness skills improvement as a general mechanism of

change in MAV interventions (Fletcher & Hayes, 2005; Hayes et al., 2012). However, more research is needed to determine whether the changes in mindfulness skills are more essential for spreading intervention effects than the changes in burnout.

The present results indicated that the well-being differences between intervention participants with differing levels of benefits were likely to increase over time. Those that initially benefited from the intervention were likely to experience wide-ranging positive changes in their lives, and they could be expected to thrive on their own. In turn, those with less impressive results were likely to have even poorer well-being later. It is thus essential to recognize the intervention participants that do not benefit from the intervention to offer them further support immediately after the intervention. This way the well-being gap between the different outcome profiles could be diminished.

4.4 Learning experiences and practice continuation were associated to better intervention outcomes

Since the differences in the intervention effects were noticeable in several areas of well-being and appeared to increase over time, it was essential to understand better what differentiated the profiles. The profiles of the present study were compared on MAV practices to investigate whether these could explain the differences in intervention outcomes. In previous MAV intervention study by Duarte and Pinto-Gouveia (2016), more mindfulness practices during the intervention were associated to less burnout experiences. The profiles of the present study did not differ of each other in either quantity or frequency of mindfulness, acceptance, and value practices during the intervention, contradicting the finding of Duarte and Pinto-Gouveia (2016). Generally, the role of mindfulness practice quantity as an indicator of intervention outcomes has been questioned (Lloyd et al., 2018; Vettese et al., 2009), and because of this, the present results were not that surprising.

In previous frequency studies, the most beneficial intervention outcomes have been linked to practicing on at least three days a week (Crane et al., 2014; Perich et al., 2013). The participants in all profiles in the present study showed practice frequencies of 5 to 6 days a week, so their practice amounts surpassed the amounts that have previously discriminated better outcomes from poorer ones. This could partially explain why the mere practice quantity or frequency did not differentiate the profiles of burnout and mindfulness skills. In previous studies, mindfulness practices have sometimes been divided to formal and informal practices, and the results of the importance of the two have been mixed (see e.g., Carmody & Baer, 2008; Crane et al., 2014; Morgan et al., 2014). Furthermore, in ACT-based interventions value practices have been considered separately as a mechanism of change (e.g., Lundgren et al., 2008; Vowles et al., 2011). In the present study, formal and informal mindfulness practices and value

practices were combined during the intervention. Possible avenue for future research is to see if the types of practices would differentiate the developmental profiles of burnout and mindfulness skills.

Recently, practice quality has been studied as a promising mechanism explaining the ambiguous findings of the associations between mindfulness practices and intervention outcomes. Practice quality considers the way person practices, i.e., whether practices are just mechanically completed or whether the person is deeply engaged in the practices and learning new skills. For example, Goldberg et al. (2019) noticed that practice quality mediated the effect of practice quantity on improved mindfulness skills and decreased psychological symptoms. In the present study, learning experiences related to the skills taught in differing practices was evaluated to assess practice quality. It was thought that high learning experiences indicated that instead of merely completing practices, the participants had also experienced insights related to the practices and improved their skills. Differences between the profiles were found in learning experiences. The participants in Profile 3, "Moderate burnout – benefited slightly", experienced less learning than the participants in Profiles 1, 2, 5, and 6, and comparably showed the least impressive increase in mindfulness skills of the participants in these profiles. Furthermore, the participants in Profiles 1, 2, and 4 showed less learning than the participants in Profiles 5 and 6 which had the highest mindfulness skills after the intervention. Generally, the participants in Profiles 3 and 4 had lower mindfulness skills than the participants in other profiles at the 4-month follow-up. Learning experiences appeared to be well accompanied with the better intervention results when mindfulness skills development was concerned. The association to burnout development was not as clear, although the participants in those profiles with better outcomes tended to experience more learning than the participants in the profiles with less impressive burnout alleviation. Since the used learning experiences measure largely evaluated the learning to apply mindfulness and value practices to daily living, the stronger connection to mindfulness skills improvement than to burnout alleviation could be expected.

The participants in Profile 3 experienced less learning than the participants in almost any other profile. During the follow-up, the promising development of mindfulness skills and burnout of the participants in this profile started to revert closer to baseline scores, although the improvement in both was still significant at the follow-up. One way to interpret the result is that the participants in this profile had not acquired sufficient skills to practice independently at the end of the intervention. That was also supported by the finding that the participants in this profile continued mindfulness practices less frequently than the participants in Profiles 1, 2, 5, and 6. It is possible that more guided practice or further support could have helped the participants in this profile to learn better and obtain larger benefits from the intervention. In general, the findings of the present study appeared to support the importance of practice quality and learning of relevant skills also noticed in other studies (Del Re et al., 2013; Goldberg et al., 2014, 2019). Learning experiences could be a way to assess progress in skills acquisition

during the intervention. If problems with learning would be noticed, more support could be offered to these participants to improve their intervention outcomes.

The continuation of practices during the follow-up was also evaluated, and differences between the profiles of burnout and mindfulness skills were found. The continuation of mindfulness and value practices were investigated separately. The participants in Profile 3 completed less mindfulness practices than all other profiles, except the participants in Profile 4, as was mentioned earlier. In addition, the participants in Profile 3 also continued value practices less often than the participants in Profiles 1, 5, and 6. The participants in Profile 6 with high mindfulness skills did more value practices during the follow-up than all other profiles, except the participants in Profile 5. The participants in Profile 6 also continued mindfulness practices more often than the participants in Profile 1. Possibly the constantly high level of mindfulness skills with the participants in this profile supported the continuation of practices. The participants in the profiles that showed more beneficial outcomes appeared to continue both mindfulness and value practices more often than the participants in the profiles with less impressive results. Hence, the continuation of both forms of practices appeared to be important for lasting changes in burnout and mindfulness skills. This was in line with some previous findings of the relevance of practice continuation (Bazarko et al., 2013; McCilntock et al., 2019), but not with others (Perich et al., 2013). Continued practice probably helps to stay engaged with skills improvement and to make choices that lead to better well-being in daily living. This way, the intervention could be in a way continued in the independent practice. The importance of continued practice was also indicated by the finding of Bergomi et al. (2015), showing that constant practice in the present was more essential for mindfulness skills improvement than accumulated practice over time. Possibly follow-up sessions could be added to MAV intervention programs to boost the independent practice from time to time. This kind of procedure is supported by previous intervention research, showing that the interventions offering booster sessions produced better outcomes than the interventions without additional sessions (Karyotaki et al., 2016).

Interestingly, the participants in Profile 4 that did not gain lasting benefits either in terms of burnout, mindfulness skills, or subjective well-being, did not differ more noticeably from the participants in the other profiles in MAV practices. Thus, although practice continuation and learning appeared to differentiate profiles to some extent, they were not enough to explain the differences in intervention outcomes. For example, the participants in Profiles 4 and 5 had relatively similar pre-measurement score in burnout but completely different developmental trajectory. The only practice-related factor differentiating the participants in these two profiles was experienced learning of the taught skills. Possibly genuine learning is more essential than actual practices completed, as is indicated by the literature on practice quality (Del Re et al., 2013; Goldberg et al., 2014, 2019). However, other possible factors should also be explored. Previous research has noticed that intervention outcomes of burnout

were mediated by the combination of the core processes of ACT, namely psychological flexibility (Lloyd et al., 2013; Puolakanaho et al., 2020; Roeser et al., 2013). The other processes of ACT in addition to mindfulness, such as commitment and behavior change processes, could also be studied as differentiators of the profiles. Furthermore, it has been noticed that the expectations of the MAV intervention benefits were associated to outcomes (Snippe et al., 2015). In Profile 4, the reduction of burnout was significant during the intervention, but was reverted until the follow-up. Possibly these participants had high expectations for the intervention and where then disappointed for one reason or other, and this could have changed their trajectory.

Possible mechanisms of change for burnout could also include factors not related to the MAV intervention and its practices, such as peer support, job conditions, or life situation. The present intervention was delivered in a group format and one possible mechanism of change is thus peer support. Peer support has been associated with positive intervention outcomes with various well-being indicators, including work-related stress and burnout (Linnan, Fisher, & Hood, 2013; Peterson, Bergström, Samuelsson, Åsberg, & Nygren, 2008). In person-centered burnout intervention studies by Hätinen et al. (2009, 2013), it was noticed that decreases in job demands and increases in job resources, as well as better coping strategies were associated with burnout recovery. In other studies, self-compassion (Roeser et al., 2013), improvements in sleep quality and increased feelings of competence (Santoft et al., 2019), as well as improvement in workplace civility (Leiter, Laschinger, Day, & Oore, 2011) have also been associated to burnout alleviation during the intervention. It is possible that the job circumstances or coping skills of the participants in Profile 4 were less favorable than those of the participants in Profile 5. Furthermore, the level of experienced peer support could have differed between these profiles affecting the outcomes. Future intervention research should include factors not specific for certain intervention procedures to evaluations of mechanisms of change, to better understand the role of the context in which the interventions are delivered for the outcomes.

The present intervention was offered in addition to TAU, so the possible role of TAU services for profile differences could be explored as well. Of the TAU services, organization-directed procedures could be especially relevant since problems in job conditions are strongly associated with the development of burnout (Leiter et al., 2014; Näätänen et al., 2003). In addition, organization-directed burnout interventions have tended to have better long-term outcomes than person-directed interventions (Awa et al., 2010; Westermann et al., 2014). Possibly if the job conditions are very problematic, the person-directed MAV intervention is not enough, but rather more substantial changes are needed at the organizational level. Furthermore, different people could benefit from different forms of treatment. The participants in Profile 5 could have been especially inclined to benefit from MAV interventions. If factors that predict the probability to benefit from certain interventions could be identified, MAV interventions could be offered mainly to those that are the most likely to benefit from them.

4.5 Limitations

The present studies had limitations that need to be considered when evaluating the results. Self-reports were used which could increase the risk of common method bias. If common method bias is high, it is possible that the associations between the intervention outcomes could reflect this bias instead of showing ecologically valid associations between the studied constructs. However, the subjective experiences of burnout, well-being, and mindfulness are best evaluated using self-reports. Furthermore, the longitudinal design and differences between the measures in item characteristics (e.g., different scales) were likely to diminish the risk of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In future research, burnout, well-being, and mindfulness could be evaluated with ratings of other observers or utilizing physiological measures to see whether the self-report-based results match the ones gathered with more objective measures.

The sample size of the present studies was relatively small for both latent change score modeling and latent profile analysis (LPA). In relation to change score modeling, including all the mindfulness facets simultaneously to explain burnout change was not possible. This kind of analysis strategy could have shown more clearly the relative importance of each facet for burnout change. In the present study, differences in the importance of significant mediators was evaluated by confidence interval calculations, and no differences were found between the significant mediators. However, with larger sample size, it is possible that some differences could have emerged in this type of calculation. Non-judging was evaluated to be potentially more essential for burnout change than the other facets due to its most systematic associations to burnout alleviation. Future research is needed on determining if some facet improvements are more essential than others for burnout change. Furthermore, other MAV processes (such as values, Hayes et al., 2012) should be explored as possible mechanisms of change in addition to mindfulness.

In relation to LPA, the sample size was evaluated to be enough for the exploratory nature of the study, and the chosen solution was distinctive based on the statistical metrics used. However, small number of observations in each of the profiles should be considered when interpreting the effect sizes for the changes. It has been noticed that effects tend to be larger in smaller samples (Bakker et al., 2019), and it is possible that the within-group effects of the present studies would be smaller with larger sample size. Here, confidence intervals or *t*-distribution were used to determine whether the effects for each of the profiles were significant to help with the assessment of effects. The present results of the associations between burnout and mindfulness skills need to be replicated with person-centered research methods to further support the findings.

The choice of mindfulness skills measure, namely FFMQ (Baer et al., 2006), shaped the results since the measure influenced the assessment of mindfulness. This was true especially in the case of Study I, given that mindfulness facets were

described based on the operationalization of FFMQ. However, this measure was deemed valid for the purposes of the present studies, and it was also widely used in previous mindfulness research, making the comparisons to other findings easier. In future research on the associations between burnout and mindfulness, other mindfulness measures could be tested to see if the results are similar with different measures.

Other point to consider in relation to FFMQ (Baer et al., 2006) is that it has previously obtained differing results for the associations between well-being and different facets of mindfulness. Observing has been even negatively associated with well-being (Brown, Bravo, Roos, & Pearson, 2015; Consedine & Butler, 2014), compared to other facets. If the development of different facets would be different, this could affect the results of LPA. However, in meditator samples, observing has often been associated with better well-being (Lilja et al., 2013; Neale-Lorello & Haaga, 2015), and the present sample could be considered close to meditators since they practiced mindfulness on 5 to 6 days a week. Furthermore, in Study I all facets were positively associated with burnout alleviation. In future research, the associations between the facets of mindfulness and burnout could be studied separately with person-centered approach. Possibly, different developmental trajectories of mindfulness facets could explain the differences between the profiles in the outcomes of burnout and well-being.

In relation to used burnout measure, namely BBI (Näätänen et al., 2003), it should be noticed that the cutoff values have not been clinically validated. Of this reason, the severity evaluations of burnout for the profiles were estimates and should be treated with caution. Clinical validation of cutoff scores is needed to make definitive conclusions of the changes in the severity of burnout due to the intervention and to determine when person can be considered recovered from burnout. The validation of clinical cutoffs is possibly hindered by the fact that burnout is not independently diagnosable condition in Finland, and thus not the formal cause of treatment in occupational health care services.

The generalizability of the present findings had some limitations. The sample mainly comprised of highly educated women that voluntarily enrolled to the study. They could have been especially motivated to participate in an intervention entitling a substantial amount of homework and self-reflection, and thus benefit from it. However, since the risk of burnout is especially high among predominantly female industries and among highly educated specialists (Sutela et al., 2019), it could be argued that finding effective burnout treatments for these employee groups is highly relevant. In previous cross-sectional research, male populations have been less inclined to practice mindfulness than women (Olano et al., 2015). More research is needed whether similar intervention as used here would be viable, for example, for less educated, male, or not self-referred worker populations. Furthermore, future research could investigate for which populations brief MAV interventions are the most suitable option.

The results of the present studies could be affected by drop-out. Those who dropped out before the intervention began experienced more exhaustion and cynicism than those that continued with the study. It could be asked if the present

intervention was too demanding for those with more severe burnout symptoms. However, it is noticeable that all participants were among the quartile of the Finnish population with the highest burnout symptoms, according to BBI (Näätänen et al., 2003). Furthermore, drop-out was more frequent in control group and after the intervention started the drop-out rate was low, indicating that the participants were highly motivated to complete the intervention. In addition, the amount of practice required in the present intervention was rather like the amount in other MAV interventions for burnout (e.g., Luken & Sammons, 2016). There were also no differences between the stayed and dropped out at later phases of the study. The present results should be replicated to evaluate the suitability of the present intervention for burnout treatment in different populations.

4.6 Future research

The present studies open interesting questions for future research in addition to replicating the current findings. The factors leading to and maintaining burnout symptoms are often complex and can vary between individuals. In future research, it is essential to evaluate the effects of different treatment approaches on burnout simultaneously (e.g., MAV interventions, occupational health care services, changing job conditions, and increasing personal resources). This strategy could help to find the most useful combination of means to treat burnout. Furthermore, it is essential to recognize the groups of employees that benefit from different forms of services to offer appropriate help according to the needs of the employee in question. Thus, the combination of variable- and person-centered methods is needed in future research on burnout treatment.

In the present studies, MAV intervention was added to TAU. The participants utilized a wide variety of means to decrease burnout, ranging from attempts to change job conditions (e.g., discussions with the employer, actual changes in job conditions) to using different forms of health care services (e.g., support conversations with nurse or psychologist, rehabilitation, sick-leaves). Different TAU services could have differing effects on burnout symptoms. Furthermore, the interplay between MAV and TAU could be different depending on the TAU service in question. For example, increased mindfulness skills due to MAV intervention participation could help the person to be better able to recognize the job conditions needing change and to be able to articulate these wishes in discussions with the employer. Concerning sick-leaves, better mindfulness skills could help the employee to notice earlier the risk for developing burnout symptoms and make changes in the way they work to avoid the need for sick-leave altogether. In addition to studying the interplay between MAV and TAU in reducing burnout, future intervention research should evaluate the role of factors not specific for certain intervention procedures, such as peer support (Linnan et al., 2013) or personal resources (Santoft et al., 2019).

In previous intervention studies, organization-directed intervention strategies or combinations of person- and organization-directed strategies have usually led to better results than person-directed strategies (Awa et al. 2010; Panagioti et al., 2017; Westermann et al., 2014). Interesting avenue for future person-centered research is to investigate if groups of employees with burnout symptoms could be differentiated in terms of their need for person- or organization-directed interventions or the combination of the two. For example, for employees with milder burnout symptoms, lighter person-directed intervention could be enough, while for employees with severe symptoms more comprehensive approach combining person- and organization-directed procedures could be needed.

Another avenue for person-centered research is to study whether those who benefit from the intervention could be recognized or differentiated from those who do not benefit at earlier stages or even before the intervention starts. Baseline differences between differing intervention outcomes could be studied to find indicators of treatment success. Other possibility would be to include frequent measurements during the intervention, for example, the progress of the participants could be measured at each session. This way, it could be evaluated at which point during the intervention the developmental trajectories of participants start to differentiate. If factors related to that differentiation could be identified, the negative trajectory of certain participants could be turned to positive direction already during the intervention. Detailed knowledge of the intervention processes could help to alleviate the burnout of all participants more effectively.

Regarding the MAV intervention practices, quality measure for mindfulness practice should be added to measures, given that the learning of the skills appeared to be more important than the mere practice. Furthermore, the role of different practices (e.g., formal, and informal mindfulness practices, as well as value practices) could be considered separately as possible mechanisms of change during the intervention. Furthermore, the roles of web program and group meetings could be evaluated separately to assess whether the form of delivery affects the results. The role of practices and delivery format should be studied with both variable- and person-centered methods to identify the most relevant procedures for different client groups.

In relation to measures, future research could test other burnout measures than those based on the definition of Maslach and her colleagues (Maslach et al., 1996). For example, Burnout Assessment Tool (BAT) by Schaufeli, De Witte, and Desart (2019) was developed to address the problems of previous measures and to address the symptoms associated to burnout in recent clinical practice. BAT includes new items for cognitive impairment (e.g., problems with attention and memory), not included, for example, in the BBI (Näätänen et al., 2003). It would be interesting to study the effects of the improvements in mindfulness skills on these kinds of cognitive symptoms, since in previous studies mindfulness has been linked, for example, to better attention (Lin, Fisher, & Moser, 2019) and memory (Lueke & Lueke, 2019). Furthermore, different mindfulness measures,

such as Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), could also be used when studying the associations between burnout and mindfulness.

4.7 Clinical implications

Over 50% of the Finnish workforce experience burnout as a risk at work, and this amount has increased over the recent years (Sutela et al., 2019). Thus, burnout is a serious problem for work well-being, and effective treatment approaches are urgently needed. Together these three studies showed that adding a brief MAV intervention to TAU could be effective in treating even severe burnout. The intervention also alleviated all burnout dimensions, indicating that MAV interventions are a viable option for treating all burnout symptoms. Furthermore, the effects were likely maintained or improved during the rather long 10-month follow-up. The results showed that the present MAV intervention was effective for especially mild symptoms of burnout and could lead to low levels of burnout in a relatively short time. Furthermore, the intervention was delivered in group format accompanied by independently used web program, so it could be offered to large numbers of clients with relatively little resources. Hence, this kind of intervention is likely cost-effective. Possibly, if brief MAV interventions would be available when the first burnout symptoms appear, the development of severe burnout could be prevented. In addition, by offering this kind of intervention with minor resource requirements as a first step of treatment, the specialized resources could be saved for those that do not benefit from brief interventions and need more substantial support. For example, in Finland burnout is often treated with relatively long and comprehensively tailored rehabilitation courses (e.g., Hätinen et al., 2009, 2013). Especially with milder burnout symptoms, these kinds of heavy interventions could be unnecessary, and comparable results could be achieved with shorter and lighter interventions. In sum, brief MAV interventions could be more systematically offered in occupational health care to mitigate the adverse effects of burnout for individuals and organizations.

In previous burnout intervention studies, better outcomes have been obtained when organization-directed interventions have been used in addition to person-directed ones (Awa et al. 2010; Panagioti et al., 2017; Westermann et al., 2014). The present intervention was person-directed but the intervention participants were able to use TAU services which included organization-directed approaches. For example, 25% of the intervention participants reported changes in job conditions and approximately 20% had discussions with employer representatives during the intervention, indicating the use of organizational procedures. In the learning experiences questionnaire of Study II, the participants also reported finding new ways to relate to their job conditions and develop these conditions to support their work well-being. The participants with better learning experiences tended to have more favorable intervention outcomes. Possibly, MAV intervention as a person-directed practice could help an employee to better benefit from organization-directed procedures, such as

changes in job conditions. For example, when the employee gets better in observing which job-related factors affect their work well-being, they could request changes to these factors from the employer. Furthermore, MAV interventions like the present one could be offered inside the organizations for teams to improve the work well-being. When the skills of each employee to support well-being increase, the team could together be better equipped to perform organizational changes that would further improve the well-being. This way a positive cycle could be created, and the effects of a person-directed intervention could broaden to organizational level.

In the present studies, good intervention outcomes in terms of burnout and mindfulness skills were also likely to spread to other areas of well-being. RCT results by Puolakanaho et al. (2020) also showed that the intervention used in the present studies alleviated several other distress symptoms in addition to burnout. By treating one condition, several others could be affected simultaneously. Thus, this kind of MAV intervention could be useful in improving employee well-being in general, regardless of the exact symptoms that the employees are experiencing. MAV interventions could teach the participants skills that are useful in many areas of life to improve and maintain well-being, as is assumed in theory behind ACT (Hayes et al., 2012) and process-based and transdiagnostic approaches (Hayes & Hofmann, 2017; Mansell et al., 2009). These results of spreading positive effects further support the use of brief MAV interventions more widely in improving work well-being.

Although the present results were generally promising for burnout treatment and well-being improvement with the brief MAV intervention, they also showed that the intervention did not have the same effects for everyone. There was one group that did not show benefits in any of the used measures, namely burnout, mindfulness skills, or three levels of subjective well-being. Furthermore, the results indicated that the differences in outcomes were likely maintained or increased between the profiles when the follow-up time was prolonged. Recovery after the intervention ended was not likely if the intervention was not initially effective. These results indicated that it is important to evaluate the intervention benefits and that this evaluation should be completed separately for each participant to recognize those with good results from those with poorer ones. Based on the present results, those that initially benefited from the intervention were likely to thrive on their own and did not necessarily need further assistance. However, those with less impressive results should be offered further support immediately after the intervention to improve their well-being.

The present results also indicated that the used MAV intervention worked through the expected mechanisms of change. Mindfulness improvement was closely related to burnout alleviation, evaluated both with variable-centered mediation analysis and person-centered latent profile analysis. All the mindfulness facets mediated burnout alleviation, but of the individual mindfulness facets, non-judging was possibly the most essential skill to improve since it was the most systematically associated to reductions in all burnout

dimensions both short- and long-termly. Those that develop burnout symptoms often have discrepancy between their personal standards and observed performance (Ozbilir et al., 2015), and can be overly critical towards themselves. When job demands increase and time and energy start depleting, these individuals have often hard time in adapting their expectations to the demands of the situation. They do not give up the high demands and work extensively to fulfill the impossible expectations. Non-judging could be especially important since it helps to be less judgmental towards oneself and to recognize when it is time to let go of the excessive demands and focus on essential. Letting go of excessive demands could be especially relevant in the modern work life where hurry is the constant companion of many workers (Sutela et al., 2019) and time and energy need to be allocated between competing demands. Learning of non-judging attitude towards oneself (e.g., by including loving-kindness exercises) could be emphasized in intervention programs for burnout to better equip employees to respond to competing demands created by both themselves and others.

The exact amount of practices did not appear to be essential for mindfulness skills improvement and burnout alleviation. Rather than focusing on the practice amount, the learning of the relevant skills could be emphasized in MAV interventions since the high learning experiences of the intervention participants indicated better outcomes. It is possible that if the high personal standards are also applied to the completion of the intervention program, the participant with severe burnout could add the intervention practices to the already excessive demands they try to fulfill. In this situation, the participant could execute the intervention program perfectly without actually learning the skills the practices are intended to improve. Thus, learning experiences related to the taught skills could be a better way to assess how well the intervention has affected the psychological skills of the participant than the amount of completed practices. If the person has learned satisfactorily the essential psychological skills, it is probable that the person will continue to benefit from their improved skills in the future.

However, if this has not happened, the participant could be offered further assistance and training to increase the skills. In these cases, the learning of relevant skills could be advanced with other intervention procedures than those emphasizing formal MAV practices. For example, in ACT interventions using matrix work, mindfulness skills are trained without the explicit presentation of mindfulness or engagement in its formal practice (Polk, Schoendorff, Webster, & Olaz, 2016). In these interventions, the participants are encouraged to choose to do what is important to them even when inner obstacles (e.g., difficult thoughts and feelings) are present. The participants are guided to notice what is important to them and what kind of inner obstacles come in the way of moving toward the important things. Furthermore, the participants are instructed to non-judgingly notice in their daily living what they do to move away from inner obstacles and what they do to move toward what is important to them and how effective these moves are. Noticing is aided by a visual four-quadrant diagram (the matrix),

which includes the experience line and the behavior line. The experience line separates inner experiences (e.g., thoughts, feelings, and memories) from the experiences observed by the five senses, and the behavior line separates toward and away moves. This kind of skills training could help especially those that do not benefit from formal MAV practices or who find it difficult to engage in them.

In addition to supporting the learning process during the intervention, the continuation of practices in daily living could be emphasized in MAV interventions for burnout since practice continuation was associated to better intervention outcomes. Continued practice could further improve the skills of the participants and better equip them to face future obstacles for well-being. Furthermore, if the practices are regularly used, they are more readily accessible in times of need, for example, when encountering difficult situations. In some intervention studies (Karyotaki et al., 2016), booster sessions have been added to the intervention programs with good results. The present brief MAV intervention could be enhanced by adding a few booster sessions to the months following the intervention. This kind of procedure could also help to keep the participants in those profiles with reverting improvements on track to lasting benefits.

4.8 Conclusions

A brief mindfulness-, acceptance-, and value-based intervention can be a valuable addition to treatment-as-usual for burnout since this approach could effectively and long-lastingly alleviate even severe burnout. Furthermore, the positive intervention effects were likely to spread to other areas of well-being. However, the intervention outcomes were not the same for everyone, and a minority of participants did not show visible benefits. It is important to recognize these participants early, given that the well-being gap between those who initially benefited and those who did not was likely to increase over time. Improvements in mindfulness skills was a mechanism of change. All mindfulness facets mediated the decreases in burnout dimensions, but improvement in non-judging was possibly the most essential for burnout change. Learning of non-judging skills could be emphasized in burnout interventions. Furthermore, practice quantity and frequency during the intervention did not differentiate good intervention outcomes from poorer ones. Rather learning experiences of the skills taught during the intervention and practice continuation after the intervention were associated to better intervention outcomes. These could be emphasized to obtain long-lasting benefits in MAV interventions for burnout.

The present studies showed that process-based research approach could offer valuable insights to burnout treatment by identifying the mechanisms responsible for positive changes. The present studies also highlighted the benefits of combining variable- and person-centered methods, since this allows to simultaneously study both the general manifestation and individual variation of the phenomena under interest. When these methods are combined in process-

based intervention research, the variable-centered methods can identify the common processes for the beneficial change, while the person-centered methods can detect how those common processes operate in different subpopulations. When the risk of burnout is increasing in the work life and treatment resources are limited, it is more and more essential to understand why, in which conditions, and for whom the interventions work to create cost-effective treatment approaches. The present studies took steps towards process-based burnout treatment and offered ideas for future development in this field.

YHTEENVETO (FINNISH SUMMARY)

Mindfulness-, hyväksyntä- ja arvopohjainen interventio työuupumukseen: Muutosmekanismit ja yksilöllinen vaihtelu vaikutuksissa

Työuupumus on usein hyvin pysyvä tila ilman interventiota (Mäkikangas & Kinnunen, 2016; Schaufeli & Enzmann, 1998). Valitettavasti myös erilaiset interventiot ovat tyypillisesti auttaneet sen helpottamisessa vain vähän (Ahola et al., 2017; Dreison et al., 2018; Iancu et al., 2018). Jotta pystytään luomaan tehokkaampia interventioita työuupumuksen hoitoon, on tärkeää ymmärtää, minkä mekanismien kautta myönteiset muutokset tapahtuvat ja kuinka tehokkaasti vaikuttaa näihin mekanismeihin. Lisäksi on tärkeää tietää, ovatko vaikutusmekanismit samat kaikille työntekijöille vai pitäisikö interventioita räätälöidä erilaisille ryhmille ja yksilöille. Prosessipohjainen interventiotutkimus (Hayes & Hofmann, 2017; Hofmann & Hayes, 2019) on keino vastata näihin kysymyksiin. Muutosmekanismeina toimivien terapeuttisten prosessien uskotaan myös voivan vaikuttaa henkilön toimintaan useilla eri elämänalueilla, jolloin näiden prosessien kehittäminen voisi parantaa hyvinvointia yleisesti sen sijaan, että helpottaisi vain tiettyjä oireita. Näin prosessipohjainen interventiotutkimus voi hyödyttää myös transdiagnostisten eli diagnostiset rajat ylittävien hoitojen kehittämistä (Mansell et al., 2009; Nolen-Hoeksema & Watkins, 2011).

Tämän tutkimuksen tavoitteena oli hyödyntää prosessipohjaista lähestymistapaa työuupumusintervention tutkimuksessa. Tutkimus selvitti, kuinka lyhyt mindfulness-, hyväksyntä- ja arvopohjainen (MIHA) interventio vaikutti työuupumukseen sekä 8 viikon intervention että 10 kuukauden seurannan aikana. Käytetty MIHA-interventio pohjasi hyväksymis- ja omistautumisterapiaan (HOT) ja sen taustateoriaan (Hayes et al., 2006b, 2012). HOT-pohjaisissa MIHA-interventioissa tietoisuustaidot nähdään keskeisenä muutosmekanismina. HOT:n taustateoriaan nojaten Fletcher ja Hayes (2005) määrittelevät tietoisuustaidot hyväksyvänä ja avoimena läsnäolona tässä hetkessä, minkä vallitessa henkilö ei anna sisäisten kokemuksiensa (esim. ajatukset ja tunteet) ohjailla toimintaansa, vaan pystyy tietoisesti valitsemaan toimintatapansa. Tässä tutkimuksessa selvitettiin tietoisuustaitojen roolia työuupumuksen muutosmekanismina käyttäen sekä muuttujakeskeisiä että henkilösuuntautuneita menetelmiä. Lisäksi tutkimus selvitti, miten erilaiset harjoitteet ja oppimiskokemukset vaikuttivat tietoisuustaitojen ja työuupumuksen kehittymiseen. Tutkimus tarkasteli myös, laajenevatko työuupumusintervention vaikutukset muille hyvinvoinnin osa-alueille.

Tutkimukseen osallistujat olivat eri alojen työntekijöitä, jotka kokivat tutkimukseen ilmoittautuessaan suhteellisen paljon työuupumusoireita. Tutkimukseen valikoitiin henkilöt, joiden työuupumuspisteet vastasivat ikäryhmän uupuneimman 25 %:n pisteitä BBI-mittarilla arvioituna (Näätänen et al., 2003). Tutkimuksen 202 osallistujaa jaettiin interventioryhmään (n = 106), jolle tarjottiin MIHA-interventio tavanomaisen hoidon lisäksi, ja kontrolliryhmään (n = 96),

jolla oli käytettävissään vain tavanomainen hoito. Osallistujat vastasivat kyselyihin neljä kertaa: ennen interventiota, sen jälkeen sekä neljä ja 10 kuukautta intervention päättymisen jälkeen. Kaikki osallistujat vastasivat alku- ja loppukyselyyn, ja suurin osa pysyi mukana tutkimuksen loppuun asti, sillä seuranta-aikana vain 23 osallistujaa jäi pois. Osallistujista 80 % oli naisia ja keski-ikä oli 47.5 vuotta. Osatutkimuksessa I käytettiin kaikkien osallistujien vastauksia, kun taas osatutkimukset II ja III keskittyivät interventioryhmään.

Tutkimuksessa käytetty kahdeksan viikon MIHA-interventio yhdisti viikoittaiset ryhmätapaamiset verkon kautta toteutettavaan itsehoito-ohjelmaan. Interventio perustui HOT:iin ja sen taustateoriaan (Hayes et al., 2012), mutta sen perusrakenne ja suuri osa harjoituksista pohjasi Williamsin ja Penmanin (2011) tietoisuustaito-ohjelmaan. Tavoitteena ohjelmassa oli lisätä osallistujien tietoisuus- ja hyväksyntätaitoja sekä auttaa heitä selkiyttämään arvojaan ja toimimaan niiden mukaisesti sekä työssä että vapaalla. Osallistujia ohjattiin tekemään viikoittain vaihtuva pidempi tietoisuustaitoharjoitus (10-15 min) kahdesti päivässä kuutena päivänä viikossa ja lyhyempi harjoitus (3 min) kerran päivässä. Osallistujia pyydettiin myös suorittamaan tietoisuustaito-, hyväksyntä- ja arvoharjoituksia päivittäisessä arjessaan. Lisäksi heillä oli käytettävissä verkko-ohjelman kautta vapaaehtoisia harjoitteita tukemaan taitojen syventämistä. Osallistujat noudattivat ohjelmaa pääosin hyvin sekä ryhmätapaamisiin osallistumisen että itsenäisen harjoittelun osalta. Tavanomainen hoito puolestaan sisälsi keskusteluja työterveyshuollon ja työnantajan edustajien kanssa, työolosuhteiden muutoksia, tukikeskusteluja hoitajan tai psykologin kanssa, sairaslomaa sekä kuntoutusta. Intervention aikana 63 % interventioryhmäläisistä ja 62 % kontrolliryhmäläisistä käytti tavanomaisen hoidon palveluita.

Osatutkimus I tutki, välittivätkö viiden tietoisuustaidon (havainnointi, kuvailu, tietoinen toiminta, hyväksyvä suhtautuminen, välittömän reagoinnin välttäminen) parannukset intervention aikana muutoksia työuupumuksen osa-alueissa (uupumusasteinen väsymys, kyynistyminen, ammatillisen itsetunnon heikkeneminen) sekä intervention että 10 kuukauden seurannan aikana. Työuupumuksen osa-alueita myös vertailtiin sen suhteen, mitkä tietoisuustaidot olivat keskeisimpiä muutosmekanismeja kullekin. Tulokset osoittivat, että useiden tietoisuustaitojen kehittyminen oli olennaista työuupumuksen muutokselle intervention aikana. Intervention aikana kaikki tietoisuustaidot välittivät kyynistymisen lievittymistä, kun taas uupumusasteisen väsymyksen helpottamiselle olivat keskeisiä kaikki muut taidot paitsi kuvaileminen. Ammatillisen itsetunnon kohenemiselle keskeisiä olivat muut taidot paitsi havainnointi.

Seurannan aikana hyväksyvän suhtautumisen taito välitti muutosta kaikissa työuupumuksen osa-alueissa. Uupumusasteisen väsymyksen kohdalla se oli ainoa tarvittu tietoisuustaito, kun taas kyynistymisen ja ammatillisen itsetunnon osalta myös havainnointi oli keskeinen. Lisäksi ammatillisen itsetunnon kohenemisessa roolinsa oli myös kuvailemisella. Mikään merkitsevistä tietoisuustaidoista ei selittänyt toisia enemmän työuupumuksen osa-alueiden lievittymistä. Tulosten perusteella tietoisuustaidoista hyväksyvän ja tuomitsemattoman

havainnoinnin kehittäminen on kuitenkin mahdollisesti keskeisintä työuupumuksen MIHA-interventioissa, sillä se välitti systemaattisesti muutoksia kaikissa työuupumuksen osa-alueissa sekä intervention aikana että seurannassa. Tietoisuustaitojen kautta välittyvän vaikutuksen lisäksi interventiolla oli myös suora vaikutus uupumusasteisen väsymyksen lievittymiseen.

Osatutkimus II tarkasteli yksilöllisiä eroja intervention vaikutuksissa tunnistamalla erilaisia tietoisuustaitojen ja työuupumuksen kehitysprofiileja intervention ja neljän kuukauden seurannan aikana. Profiileita myös vertailtiin harjoitusmäärien, harjoitustiheyden, harjoittelun jatkamisen ja oppimiskokemusten osalta sen selvittämiseksi, vaikuttavatko interventioon kuuluvat harjoitteet intervention tuloksiin. Tutkimuksessa löytyi kuusi erilaista työuupumuksen ja tietoisuustaitojen profiilia: 1) ”Vakava työuupumus – Hyötynyt huomattavasti”, 2) ”Vakava työuupumus – Ei hyötynyt, mutta parantuneet tietoisuustaidot”, 3) ”Kohtalainen työuupumus – Hyötynyt hieman”, 4) ”Vakava työuupumus – Hyödyt eivät säilyneet”, 5) ”Vakava työuupumus – Hyötynyt huomattavasti” ja 6) ”Kohtalainen työuupumus – Hyötynyt”. Intervention aikana viiteen profiiliin (1, 3, 4, 5 ja 6) kuuluvilla oli havaittavissa työuupumuksen laskua ja viiteen (1, 2, 3, 5 ja 6) kuuluvilla tietoisuustaitojen paranemista. Kaikki osallistujat siis hyötyivät lyhyellä aikavälillä interventiosta joko työuupumuksella, tietoisuustaidoilla tai molemmilla arvioituna. Hyödylliset vaikutukset säilyivät tai paranivat kaikissa profiileissa, joissa tietoisuustaidot lisääntyivät, kun taas työuupumuksen osalta hyvät vaikutukset säilyivät kaikissa muissa profiileissa paitsi profiilissa 4. Kokonaisuudessaan suurin osa intervention osallistujista koki pysyvän laskun työuupumuksessa (Profiilit 1, 3, 5 ja 6; 59.5 % osallistujista) ja pysyvän lisäyksen tietoisuustaidoissa (Profiilit 1, 2, 3, 5 ja 6; 88.5 % osallistujista). 11.5 % osallistujista (Profiili 4) ei kuitenkaan vaikuttanut hyötyvän pitkäkestoisesti interventiosta työuupumuksen lievittymisen tai tietoisuustaitojen kehittymisen osalta.

Kun profiileita verrattiin harjoittelun osalta, eroja ei löytynyt intervention aikaisen harjoittelun määrässä tai tiheydessä. Sen sijaan niissä profiileissa, joissa oppimiskokemukset liittyen intervention aikana harjoiteltuihin taitoihin olivat voimakkaammat, intervention vaikutukset varsinkin tietoisuustaitojen kehittymiseen olivat huomattavimmat. Niihin profiileihin kuuluvat, joissa myönteinen kehitys tietoisuustaidoissa jatkui vielä intervention jälkeenkin, myös jatkoivat tietoisuustaito- ja arvoharjoituksia useammin kuin niihin profiileihin kuuluvat, joissa taitojen kehitys ei ollut niin huomattavaa. Yleisesti ottaen vaikuttaa siltä, että parempien hoitotulosten saavuttamiseksi olisi hyödyllistä painottaa oppimisen merkitystä sekä harjoittelun jatkamista myös intervention jälkeen osana jokapäiväistä elämää.

Osatutkimus III laajensi vaikuttavuustutkimusta työuupumuksesta ja tietoisuustaidoista ja selvitti, kuinka henkilökohtaisen hyvinvoinnin kokemukset kehittyvät työuupumusintervention aikana. Siinä vertailtiin osatutkimuksessa II löydettyjä profiileja arvioivan (elämäntyytyväisyys), eudaimonisen (psykologinen ja sosiaalinen hyvinvointi) ja kokemuksellisen (koettu stressi) hyvinvoinnin osalta sen selvittämiseksi, laajenevatko työuupumusintervention vaikutukset

myös muille hyvinvoinnin osa-alueille. Kuuden kuukauden kehityksen perusteella muodostettuja työuupumus-tietoisuustaitoprofiileja verrattiin 12 kuukauden aikaisen hyvinvoinnin kehittymisen osalta. Tulokset osoittivat, että kokemuksellinen hyvinvoinnin taso oli alttein myönteisille muutoksille, sillä kaikissa muissa profiileissa paitsi profiilissa 4 (88.5 % osallistujista) näkyi selkeä stressin lasku. Eudaimonisessa ja arvioivassa hyvinvoinnissa muutokset olivat yleisesti pienempiä ja näkyivät harvemmissa profiileissa. Psykologinen hyvinvointi lisääntyi profiileihin 1, 2 ja 5 kuuluvilla (68.6 % osallistujista), kun taas sosiaalinen hyvinvointi lisääntyi profiileihin 1, 2, 5 ja 6 kuuluvilla (76.4 % osallistujista). Elämäntyytyväisyys taas lisääntyi profiileihin 1, 2, 3 ja 5 kuuluvilla (80.7 % osallistujista). Pääosin niihin profiileihin kuuluvat, joiden tulokset työuupumuksella ja tietoisuustaidoilla arvioituina olivat parhaat kuuden kuukauden tutkimusjakson aikana, kokivat myös suurimmat parannukset eri henkilökohtaisen hyvinvoinnin tasoilla vuoden tutkimusjakson aikana. Profiiliin 5, ”Vakava työuupumus – Hyötynyt huomattavasti”, kuuluvilla (9.5 % osallistujista) tulokset olivat parhaat kaikilla hyvinvoinnin tasoilla, kun taas profiiliin 4, ”Vakava työuupumus – Hyödyt eivät säilyneet”, kuuluvilla (11.5 % osallistujista) merkittäviä muutoksia ei tapahtunut millään hyvinvoinnin tasolla.

Kokonaisuudessaan osatutkimukset osoittivat, että lyhyt MIHA-interventio voi olla arvokas lisä tavanomaiseen työuupumuksen hoitoon, sillä tämä lähestymistapa lievitti tehokkaasti ja pitkäkestoisesti jopa vakavia työuupumusoireita. Lisäksi myönteiset interventiovaikutukset laajenivat muille hyvinvoinnin osa-alueille. Vähemmistö osallistujista ei kuitenkaan hyötynyt interventiosta. On tärkeää tunnistaa nämä osallistujat varhain, koska hyvinvointierot niiden välillä, jotka hyötyivät ja jotka eivät hyötyneet interventiosta, todennäköisesti kasvoivat seuranta-ajan lisääntyessä. Tietoisuustaitojen kehittyminen oli muutosmekanismi. Kaikki viisi tietoisuustaitoa välittivät muutoksia työuupumuksen osa-alueissa, mutta hyväksyvä suhtautuminen oli mahdollisesti keskeisin työuupumuksen lievittymiselle. Hyväksyvän suhtautumisen harjoittelua voisikin korostaa työuupumusinterventioissa. Harjoittelun määrä tai tiheys eivät erotelleet erilaisten interventiovaikutusten profiileja toisistaan. Pitkäkestoisten hyötyjen saavuttamiseksi kannattaa todennäköisesti panostaa intervention aikana harjoiteltavien taitojen oppimiseen ja harjoittelun jatkamiseen intervention jälkeen, sillä nämä erottelivat erilaisten tulosten profiileja toisistaan. Osatutkimukset osoittivat, että prosessipohjainen interventiotutkimus sekä muuttuja- ja henkilösuuntautuneiden menetelmien yhdistäminen voivat tarjota arvokkaita ideoita työuupumuksen hoidon kehittämiseen

REFERENCES

Ahola, K. & Hakanen, J. (2014). Burnout and health. In M. P. Leiter, A. B. Bakker & C. Maslach (Eds.), *Burnout at work – A psychological perspective* (pp. 10–31). New York: Psychology Press.

Ahola, K., Toppinen-Tanner, S., & Seppänen, J. (2017). Interventions to alleviate burnout symptoms and to support return to work among employees with burnout: Systematic review and meta-analysis. *Burnout Research, 4*, 1–11.

Alarcon, G. M. (2011). A meta-analysis of burnout with job demands, resources, and attitudes. *Journal of Vocational Behavior, 79*(2), 549–562.

Allen, T. D., Henderson, T. G., Mancini, V. S., & French, K. A. (2017). Mindfulness and meditation practice as moderators of the relationship between age and subjective wellbeing among working adults. *Mindfulness, 8*(4), 1055–1063.

Awa, W. L., Plaumann, M., & Walter, U. (2010). Burnout prevention: A review of intervention programs. *Patient Education and Counseling, 78*(2), 184–190.

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27–45.

Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., ... & Williams, J. M. G. (2008). Construct validity of the five facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment, 15*(3), 329–342.

Bakker, A., Cai, J., English, L., Kaiser, G., Mesa, V., & Van Dooren, W. (2019). Beyond small, medium, or large: points of consideration when interpreting effect sizes. *Educational Studies in Mathematics, 102*(1), 1–8.

Barnes, S. M., & Lynn, S. J. (2010). Mindfulness skills and depressive symptoms: A longitudinal study. *Imagination, Cognition and Personality, 30*(1), 77–91.

Barnes-Holmes, P. M. D., Barnes-Holmes, Y., Stewart, I., & Parling, T. (2019). Introduction to the special issue on conceptual developments in relational frame theory: Background, content, and the challenge going forward. *Journal of Contextual Behavioral Science, 12*, 355–357.

Bauernhofer, K., Bassa, D., Canazei, M., Jiménez, P., Paechter, M., Papousek, I., ... & Weiss, E. M. (2018). Subtypes in clinical burnout patients enrolled in an employee rehabilitation program: differences in burnout profiles, depression, and recovery/resources-stress balance. *BMC Psychiatry, 18*(1), 10.

Bazarko, D., Cate, R. A., Azocar, F., & Kreitzer, M. J. (2013). The impact of an innovative mindfulness-based stress reduction program on the health and well-being of nurses employed in a corporate setting. *Journal of Workplace Behavioral Health, 28*(2), 107–133.

Berghoff, C. R., Forsyth, J. P., Ritzert, T. R., Eifert, G. H., & Anderson, D. A. (2018). Evaluation of the contribution of values clarification to a brief mindfulness meditation intervention for anxiety. *Journal of Clinical Psychology, 74*(9), 1387–1402.

Bergman, A. L., Christopher, M. S., & Bowen, S. (2016). Changes in facets of mindfulness predict stress and anger outcomes for police officers. *Mindfulness, 7*(4), 851–858.

Bergman, L.R., & Lundh, L.-G. (2015). Introduction: The person-oriented approach: Roots and roads to the future. *Journal for Person-Oriented Research, 1*(1-2), 1–6.

Bergman, L. R., & Trost, K. (2006). The person-oriented versus the variable-oriented approach: Are they complementary, opposites, or exploring different worlds?. *Merrill-Palmer Quarterly, 52* (3), 601–632.

Bergomi, C., Tschacher, W., & Kupper, Z. (2015). Meditation practice and self-reported mindfulness: a cross-sectional investigation of meditators and non-meditators using the comprehensive inventory of mindfulness experiences (CHIME). *Mindfulness, 6*(6), 1411–1421.

Berjot, S., Altintas, E., Grebot, E., & Lesage, F. X. (2017). Burnout risk profiles among French psychologists. *Burnout Research, 7*, 10–20.

Biglan, A., & Hayes, S. C. (2016). Functional contextualism and contextual behavioral science. In R. D. Zettle, S. C. Hayes, D. Barnes-Holmes , & A. Biglan (Eds.), *The Wiley handbook of contextual behavioral science* (pp. 37–61). Wiley & Sons, Ltd.

Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., ... & Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice, 11*(3), 230–241.

Blackledge, J. T. (2003). An introduction to relational frame theory: Basics and applications. *The Behavior Analyst Today, 3*(4), 421–433.

Bowen, S., & Kurz, A. S. (2012). Between-session practice and therapeutic alliance as predictors of mindfulness after Mindfulness-Based Relapse Prevention. *Journal of Clinical Psychology, 68*(3), 236–245.

Bramwell, K., & Richardson, T. (2018). Improvements in depression and mental health after acceptance and commitment therapy are related to changes in defusion and values-based action. *Journal of Contemporary Psychotherapy, 48*(1), 9–14.

Bravo, A. J., Boothe, L. G., & Pearson, M. R. (2016). Getting personal with mindfulness: A latent profile analysis of mindfulness and psychological outcomes. *Mindfulness, 7*(2), 420–432.

Bravo, A. J., Pearson, M. R., & Kelley, M. L. (2018). Mindfulness and psychological health outcomes: A latent profile analysis among military personnel and college students. *Mindfulness, 9*(1), 258–270.

Brown, D. B., Bravo, A. J., Roos, C. R., & Pearson, M. R. (2015). Five facets of mindfulness and psychological health: Evaluating a psychological model of the mechanisms of mindfulness. *Mindfulness, 6*(5), 1021–1032.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*(4), 822–848.

Burstein, S. M., Hawes, E. S., Arroyo, K. M., & Bodenlos, J. S. (2020). Facets of Mindfulness and Health Among a Predominantly Low-Income Community Sample. *Mindfulness, 11*, 1–14.

Calvete, E., Fernández-González, L., Echezarraga, A., & Orue, I. (2019). Dispositional Mindfulness Profiles in Adolescents and their Associations with Psychological Functioning and Hypothalamic–Pituitary–Adrenal Axis Hormones. *Journal of Youth and Adolescence.*

Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine, 31*(1), 23–33.

Celeux, G., & Soromenho, G. (1996). An entropy criterion for assessing the number of clusters in a mixture model. *Journal of Classification, 13*(2), 195–212.

Charoensukmongkol, P. (2016). Mindful Facebooking: The moderating role of mindfulness on the relationship between social media use intensity at work and burnout. *Journal of Health Psychology, 21*(9), 1966–1980.

Chen, J., Li, W., An, Y., Zhang, Y., Du, J., & Xu, W. (2019). Perceived social support mediates the relationships of dispositional mindfulness to job burnout and posttraumatic stress disorder among chinese firefighters. *Psychological Trauma: Theory, Research, Practice, and Policy.*

Clark, S. L., & Muthén, B. (2009). *Relating latent class analysis results to variables not included in the analysis.* Manuscript submitted for publication. Retrieved from http://statmodel2.com/download/relatinglca.pdf

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385–396.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155–159.

Costello, H., Walsh, S., Cooper, C., & Livingston, G. (2018). A systematic review and meta-analysis of the prevalence and associations of stress and burnout among staff in long-term care facilities for people with dementia. *International Psychogeriatrics, 31*(8) 1203–1216.

Crane, R. S., Brewer, J., Feldman, C., Kabat-Zinn, J., Santorelli, S., Williams, J. M. G., & Kuyken, W. (2017). What defines mindfulness-based programs? The warp and the weft. *Psychological Medicine, 47*(6), 990–999.

Crane, C., Crane, R. S., Eames, C., Fennell, M. J., Silverton, S., Williams, J. M. G., & Barnhofer, T. (2014). The effects of amount of home meditation practice in Mindfulness Based Cognitive Therapy on hazard of relapse to depression in the Staying Well after Depression Trial. *Behaviour Research and Therapy, 63*, 17–24.

Christopher, M. S., & Gilbert, B. D. (2010). Incremental validity of components of mindfulness in the prediction of satisfaction with life and depression. *Current Psychology, 29*(1), 10–23.

Consedine, N. S., & Butler, H. F. (2014). Mindfulness, health symptoms and healthcare utilization: Active facets and possible affective mediators. *Psychology, Health & Medicine, 19*(4), 392–401.

Deaton, A., & Stone, A. A. (2016). Understanding context effects for a measure of life evaluation: How responses matter. *Oxford Economic Papers, 68*, 861–870.

Deligkaris, P., Panagopoulou, E., Montgomery, A. J., & Masoura, E. (2014). Job burnout and cognitive functioning: a systematic review. *Work & Stress, 28*(2), 107–123.

Del Re, A. C., Flückiger, C., Goldberg, S. B., & Hoyt, W. T. (2013). Monitoring mindfulness practice quality: An important consideration in mindfulness practice. *Psychotherapy Research, 23*(1), 54–66.

Di Benedetto, M., & Swadling, M. (2014). Burnout in Australian psychologists: Correlations with work-setting, mindfulness and self-care behaviours. *Psychology, Health & Medicine, 19*(6), 705–715.

Dimidjian, S. D., & Linehan, M. M. (2003). Mindfulness practice. In W. O'Donohue, J. Fisher & S. Hayes (Eds.), *Cognitive behavior therapy: Applying empirically supported techniques in your practice* (pp. 229–237). New York: Wiley.

Dindo, L., Van Liew, J. R., & Arch, J. J. (2017). Acceptance and commitment therapy: a transdiagnostic behavioral intervention for mental health and medical conditions. *Neurotherapeutics, 14*(3), 546–553.

Dreison, K. C., Luther, L., Bonfils, K. A., Sliter, M. T., McGrew, J. H., & Salyers, M. P. (2018). Job burnout in mental health providers: A meta-analysis of 35 years of intervention research. *Journal of Occupational Health Psychology, 23*(1), 18–30.

Duarte, J., & Pinto-Gouveia, J. (2017). Mindfulness, self-compassion and psychological inflexibility mediate the effects of a mindfulness-based intervention in a sample of oncology nurses. *Journal of Contextual Behavioral Science, 6*(2), 125–133.

Fletcher, L., & Hayes, S. C. (2005). Relational frame theory, acceptance and commitment therapy, and a functional analytic definition of mindfulness. *Journal of Rational-Emotive and Cognitive-Behavior Therapy, 23*(4), 315–336.

Flook, L., Goldberg, S. B., Pinger, L., Bonus, K., & Davidson, R. J. (2013). Mindfulness for teachers: A pilot study to assess effects on stress, burnout, and teaching efficacy. *Mind, Brain, and Education, 7*(3), 182–195.

Fortney, L., Luchterhand, C., Zakletskaia, L., Zgierska, A., & Rakel, D. (2013). Abbreviated mindfulness intervention for job satisfaction, quality of life, and compassion in primary care clinicians: a pilot study. *The Annals of Family Medicine, 11*(5), 412–420.

Fredrickson, B. L., Boulton, A. J., Firestine, A. M., Van Cappellen, P., Algoe, S. B., Brantley, M. M., ... & Salzberg, S. (2017). Positive emotion correlates of meditation practice: A comparison of mindfulness meditation and loving-kindness meditation. *Mindfulness, 8*(6), 1623–1633.

Gilbert, P. (2009). *The Compassionate Mind*. Constable: London.

Goldberg, S. B., Del Re, A. C., Hoyt, W. T., & Davis, J. M. (2014). The secret ingredient in mindfulness interventions? A case for practice quality over quantity. *Journal of Counseling Psychology, 61*(3), 491–497.

Goldberg, S. B., Knoeppel, C., Davidson, R. J., & Flook, L. (2019). Does practice quality mediate the relationship between practice time and outcome in mindfulness-based stress reduction?. *Journal of Counseling Psychology, 67*(1), 115–122.

Goodman, M. J., & Schorling, J. B. (2012). A mindfulness course decreases burnout and improves well-being among healthcare providers. *The International Journal of Psychiatry in Medicine, 43*(2), 119–128.

Grossi, G., Perski, A., Osika, W., & Savic, I. (2015). Stress-related exhaustion disorder–clinical manifestation of burnout? A review of assessment methods, sleep impairments, cognitive disturbances, and neuro-biological and physiological changes in clinical burnout. *Scandinavian Journal of Psychology, 56*(6), 626–636.

Gu, J., Karl, A., Baer, R., Strauss, C., Barnhofer, T., & Crane, C. (2020). Latent profile analysis of the five facet mindfulness questionnaire in a sample with a history of recurrent depression. *Assessment, 27*(1), 149–163.

Gu, J., Strauss, C., Bond, R., & Cavanagh, K. (2015). How do mindfulness-based cognitive therapy and mindfulness-based stress reduction improve mental health and wellbeing? A systematic review and meta-analysis of mediation studies. *Clinical Psychology Review, 37*, 1–12.

Guidetti, G., Viotti, S., Badagliacca, R., Colombo, L., & Converso, D. (2019). Can mindfulness mitigate the energy-depleting process and increase job resources to prevent burnout? A study on the mindfulness trait in the school context. *PloS ONE, 14*(4), e0214935.

Eurofound (2018). *Burnout in the workplace: A review of data and policy responses in the EU.* Luxembourg: Publications Office of the European Union.

Habibian, Z., Sadri, Z., & Nazmiyeh, H. (2018). Effects of Group Acceptance and Commitment Therapy-Based Training on Job Stress and Burnout among Pediatric Oncology and Special Diseases Nurses. *Iranian Journal of Pediatric Hematology and Oncology, 8*(2), 118–125.

Hakanen, J. J., & Schaufeli, W. B. (2012). Do burnout and work engagement predict depressive symptoms and life satisfaction? A three-wave seven-year prospective study. *Journal of Affective Disorders, 141*(2-3), 415–424.

Hall, L. H., Johnson, J., Watt, I., Tsipa, A., & O'Connor, D. B. (2016). Healthcare staff wellbeing, burnout, and patient safety: a systematic review. *PloS ONE, 11*(7), e0159015.

Hamilton-West, K., Pellatt-Higgins, T., & Pillai, N. (2018). Does a modified mindfulness-based cognitive therapy (MBCT) course have the potential to reduce stress and burnout in NHS GPs? Feasibility study. *Primary Health Care Research & Development, 19*(6), 591–597.

Hanley, A., Warner, A., & Garland, E. L. (2015). Associations between mindfulness, psychological well-being, and subjective well-being with respect to contemplative practice. *Journal of Happiness Studies, 16*(6), 1423–1436.

Harker, R., Pidgeon, A. M., Klaassen, F., & King, S. (2016). Exploring resilience and mindfulness as preventative factors for psychological distress burnout

and secondary traumatic stress among human service professionals. *Work, 54*(3), 631–637.

Harrington, R., Loffredo, D. A., & Perz, C. A. (2016). Dispositional Mindfulness Facets and Self-insight as Predictors of Subjective Well-being: An Exploratory Analysis. *North American Journal of Psychology, 18*(3), 469–482.

Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. *Behavior Therapy, 35*, 639–665.

Hayes, S. C., Bunting, K., Herbst, S., Bond, F. W., & Barnes-Holmes, D. (2006a). Expanding the scope of organizational behavior management: Relational frame theory and the experimental analysis of complex human behavior. *Journal of Organizational Behavior Management, 26*(1-2), 1–23.

Hayes, S. C., & Hofmann, S. G. (2017). The third wave of cognitive behavioral therapy and the rise of process-based care. *World Psychiatry, 16*(3), 245–246.

Hayes, S. C., Hofmann, S. G., Stanton, C. E., Carpenter, J. K., Sanford, B. T., Curtiss, J. E., & Ciarrochi, J. (2019). The role of the individual in the coming era of process-based therapy. *Behaviour Research and Therapy, 117*, 40–53.

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006b). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy, 44*(1), 1–25.

Hayes, S. C., Pistorello, J., & Levin, M. E. (2012). Acceptance and commitment therapy as a unified model of behavior change. *The Counseling Psychologist, 40*(7), 976–1002.

Heeren, A., Deplus, S., Peschard, V., Nef, F., Kotsou, I., Dierickx, C., ... & Philippot, P. (2015). Does change in self-reported mindfulness mediate the clinical benefits of mindfulness training? A controlled study using the French translation of the Five Facet Mindfulness Questionnaire. *Mindfulness, 6*(3), 553–559.

Hofmann, S. G., & Hayes, S. C. (2019). The future of intervention science: Process-based therapy. *Clinical Psychological Science, 7*(1), 37–50.

Howard, M. C., & Hoffman, M. E. (2018). Variable-centered, person-centered, and person-specific approaches: where theory meets the method. *Organizational Research Methods, 21*(4), 846–876.

Howell, A. J., Digdon, N. L., & Buro, K. (2010). Mindfulness predicts sleep-related self-regulation and well-being. *Personality and Individual Differences, 48*(4), 419–424.

Hu, L., and Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55.

Hätinen, M. (2008). Treating job burnout in employee rehabilitation: Changes in symptoms, antecedents, and consequences. *Jyväskylä Studies in Education, Psychology, and Social Research, 348.*

Hätinen, M., Kinnunen, U., Mäkikangas, A., Kalimo, R., Tolvanen, A., & Pekkonen, M. (2009). Burnout during a long-term rehabilitation: comparing low burnout, high burnout–benefited, and high burnout–not benefited trajectories. *Anxiety, Stress & Coping, 22*(3), 341–360.

Hätinen, M., Mäkikangas, A., Kinnunen, U., & Pekkonen, M. (2013). Recovery from burnout during a one-year rehabilitation intervention with six-month follow-up: Associations with coping strategies. *International Journal of Stress Management, 20*(4), 364–390.

Iancu, A. E., Rusu, A., Măroiu, C., Păcurar, R., & Maricuţoiu, L. P. (2018). The effectiveness of interventions aimed at reducing teacher burnout: A meta-analysis. *Educational Psychology Review, 30*(2), 373–396.

Jaworska-Burzyńska, L., Kanaffa-Kilijańska, U., Przysiężna, E., & Szczepańska-Gieracha, J. (2016). The role of therapy in reducing the risk of job burnout–a systematic review of literature. *Archives of Psychiatry and Psychotherapy, 4*, 43–52.

Johnson, J., Hall, L. H., Berzins, K., Baker, J., Melling, K., & Thompson, C. (2018). Mental healthcare staff well-being and burnout: A narrative review of trends, causes, implications, and recommendations for future interventions. *International Journal of Mental Health Nursing, 27*(1), 20–32.

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry, 4*(1), 33–47.

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present and future. *Clinical Psychology: Science and Practice, 10*(2), 144–156.

Kahneman, D., Diener, E., & Schwarz, N. (Eds.). (1999). *Well-being: Foundations of hedonic psychology.* Russell Sage Foundation.

Kang, M., Selzer, R., Gibbs, H., Bourke, K., Hudaib, A. R., & Gibbs, J. (2019). Mindfulness-based intervention to reduce burnout and psychological distress, and improve wellbeing in psychiatry trainees: a pilot study. *Australasian Psychiatry, 27*(3), 219–224.

Karyotaki, E., Smit, Y., de Beurs, D. P., Henningsen, K. H., Robays, J., Huibers, M. J. H., … & Cuijpers, P. (2016). The long-term efficacy of acute-phase psychotherapy for depression: A meta-analysis on randomized trials. *Depression & Anxiety, 33*(5), 370–383.

Khoury, B., Sharma, M., Rush, S. E., & Fournier, C. (2015). Mindfulness-based stress reduction for healthy individuals: A meta-analysis. *Journal of Psychosomatic Research, 78*(6), 519–528.

Kimmes, J. G., Durtschi, J. A., & Fincham, F. D. (2017). Perception in romantic relationships: a latent profile analysis of trait mindfulness in relation to attachment and attributions. *Mindfulness, 8*(5), 1328–1338.

Keng, S. L., Lee, C. S. L., & Eisenlohr-Moul, T. A. (2019). Effects of brief daily mindfulness practice on affective outcomes and correlates in a high BPD trait sample. *Psychiatry Research, 280*, 112485.

Keune, P. M., & Perczel-Forintos, D. (2010). Mindfulness meditation: a preliminary study on meditation practice during everyday life activities and its association with well-being. *Psihologijske Teme, 19*(2), 373–386.

Keyes, C. L., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: the empirical encounter of two traditions. *Journal of Personality and Social Psychology, 82*(6), 1007–1022.

Kiken, L. G., Garland, E. L., Bluth, K., Palsson, O. S., & Gaylord, S. A. (2015). From a state to a trait: Trajectories of state mindfulness in meditation during intervention predict changes in trait mindfulness. *Personality and Individual Differences, 81*, 41–46.

Kohtala, A., Muotka, J., & Lappalainen, R. (2018). Changes in mindfulness facets and psychological flexibility associated with changes in depressive symptoms in a brief acceptance and value based intervention: An exploratory study. *International Journal of Psychology and Psychological Therapy, 18*(1), 83–98.

Krasner, M. S., Epstein, R. M., Beckman, H., Suchman, A. L., Chapman, B., Mooney, C. J., & Quill, T. E. (2009). Association of an educational program in mindful communication with burnout, empathy, and attitudes among primary care physicians. *Jama, 302*(12), 1284–1293.

Kriakous, S. A., Elliott, K. A., & Owen, R. (2019). Coping, Mindfulness, Stress, and Burnout among Forensic Health Care Professionals. *Journal of Forensic Psychology Research and Practice, 19*(2), 128–146.

Lam, K. F., Lim, H. A., Kua, E. H., Griva, K., & Mahendran, R. (2018). Mindfulness and cancer patients' emotional states: a latent profile analysis among newly diagnosed cancer patients. *Mindfulness, 9*(2), 521–533.

Lappalainen, R., Lehtonen, T., Hayes, S., Batten, S., Gifford, E., Wilson, K., … McCarry, S. (2009). *Hyväksymis- ja omistautumisterapia käytännön terapiatyössä* [Acceptance and commitment therapy in therapeutic practice]. Tampere: Suomen Käyttäytymistieteellinen Tutkimuslaitos Oy. Hoitomenetelmien julkaisuja 8.1.

Laursen, B., & Hoff, E. (2006). Person-centered and variable-centered approaches to longitudinal data. *Merrill-Palmer Quarterly, 52*(3), 377–389.

Lee, J., Lim, N., Yang, E. & Lee, S. M. (2011). Antecedents and consequences of three dimensions of burnout in psychotherapists: A meta-analysis. *Professional Psychology: Research and Practice, 42*(3), 252–258.

Leiter, M. P., Bakker, A. B., & Maslach, C. (Eds.). (2014). *Burnout at work: A psychological perspective.* London & New York: Psychology Press.

Leiter, M. P., Hakanen, J. J., Ahola, K., Toppinen-Tanner, S., Koskinen, A., & Väänänen, A. (2013). Organizational predictors and health consequences of changes in burnout: A 12-year cohort study. *Journal of Organizational Behavior, 34*(7), 959–973.

Leiter, M. P., Laschinger, H. K. S., Day, A., & Oore, D. G. (2011). The impact of civility interventions on employee social behavior, distress, and attitudes. *Journal of Applied Psychology, 96*(6), 1258–1274.

Leiter, M. P., & Maslach, C. (2016). Latent burnout profiles: A new approach to understanding the burnout experience. *Burnout Research, 3*(4), 89–100.

Leiter, M. P., & Schaufeli, W. (1996). Consistency in the burnout construct across occupations. *Anxiety, Stress, & Coping, 9*(3), 222–243.

Lilja, J. L., Lundh, L. G., Josefsson, T., & Falkenström, F. (2013). Observing as an essential facet of mindfulness: a comparison of FFMQ patterns in meditating and non-meditating individuals. *Mindfulness, 4*(3), 203–212.

Lin, Y., Fisher, M. E., & Moser, J. S. (2019). Clarifying the relationship between mindfulness and executive attention: a combined behavioral and neurophysiological study. *Social Cognitive and Affective Neuroscience, 14*(2), 205–215.

Lindsay, E.K. & Creswell D.J. (2017). Mechanisms of mindfulness training: Monitor and Acceptance Theory (MAT). *Clinical Psychology Review, 51*, 48–59.

Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder.* New York: Guilford.

Linnan, L., Fisher, E. B., & Hood, S. (2013). The power and potential of peer support in workplace interventions. *American Journal of Health Promotion, 28*(1), 2–10.

Lloyd, J., Bond, F. W., & Flaxman, P. E. (2013). The value of psychological flexibility: Examining psychological mechanisms underpinning a cognitive behavioural therapy intervention for burnout. *Work & Stress, 27*(2), 181–199.

Lloyd, A., White, R., Eames, C., & Crane, R. (2018). The utility of home-practice in mindfulness-based group interventions: A systematic review. *Mindfulness, 9*(3), 673–692.

Lomas, T., Medina, J. C., Ivtzan, I., Rupprecht, S., & Eiroa-Orosa, F. J. (2019). Mindfulness-based interventions in the workplace: An inclusive systematic review and meta-analysis of their impact upon wellbeing. *The Journal of Positive Psychology, 14*(5), 625-640.

Lueke, A., & Lueke, N. (2019). Mindfulness improves verbal learning and memory through enhanced encoding. *Memory & Cognition, 47*(8), 1531–1545.

Luken, M., & Sammons, A. (2016). Systematic review of mindfulness practice for reducing job burnout. *American Journal of Occupational Therapy, 70*(2), 7002250020p1-7002250020p10.

Lundgren, T., Dahl, J., & Hayes, S. C. (2008). Evaluation of mediators of change in the treatment of epilepsy with acceptance and commitment therapy. *Journal of Behavioral Medicine, 31*(3), 225–235.

Mansell, W., Harvey, A., Watkins, E., & Shafran, R. (2009) Conceptual foundations of the transdiagnostic approach to CBT. *Journal of Cognitive Psychotherapy, 23*(1), 6–19.

Manzano-García, G., & Ayala, J. C. (2017). Relationship between psychological capital and psychological well-being of direct support staff of specialist

autism services. The mediator role of burnout. *Frontiers in Psychology, 8*, 2277.

Maricuțoiu, L. P., Sava, F. A., & Butta, O. (2016). The effectiveness of controlled interventions on employees' burnout: A meta-analysis. *Journal of Occupational and Organizational Psychology, 89*(1), 1–27.

Maslach, C., & Jackson, S. (1981). The measurement of experienced burnout. *Journal of Occupational Behaviour, 2*(2), 99–113.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach Burnout Inventory manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

McArdle, J. J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual Review of Psychology, 60*, 577–605.

McArdle, J. J., & Hamagami, F. (2001). Latent difference score structural models for linear dynamic analyses with incomplete longitudinal data. In L. M. Collins & A. G. Sayer (Eds.), *Decade of behavior. New methods for the analysis of change* (pp. 139-175). Washington, DC, US: American Psychological Association.

McClintock, A. S., Brown, R., Coe, C. L., Zgierska, A., & Barrett, B. (2019). Mindfulness practice and stress following mindfulness-based stress reduction: examining within-person and between-person associations with latent curve modeling. *Mindfulness, 10*(9), 1905–1914.

McCracken, L. M., & Velleman, S. C. (2010). Psychological flexibility in adults with chronic pain: a study of acceptance, mindfulness, and values-based action in primary care. *Pain, 148*(1), 141–147.

McCracken, L. M., & Yang, S. Y. (2008). A contextual cognitive-behavioral analysis of rehabilitation workers' health and well-being: Influences of acceptance, mindfulness, and values-based action. *Rehabilitation Psychology, 53*(4), 479–485.

Mizera, C. M., Bolin, R. M., Nugent, W. R., & Strand, E. B. (2016). Facets of mindfulness related to a change in anxiety following a mindfulness-based intervention. *Journal of Human Behavior in the Social Environment, 26*(1), 100–109.

Morgan, L. P., Graham, J. R., Hayes-Skelton, S. A., Orsillo, S. M., & Roemer, L. (2014). Relationships between amount of post-intervention mindfulness practice and follow-up outcome variables in an acceptance-based behavior therapy for Generalized Anxiety Disorder: The importance of informal practice. *Journal of Contextual Behavioral Science, 3*(3), 173–178.

Morin, L., Grégoire, S., & Lachance, L. (2020). Processes of change within acceptance and commitment therapy for university students: Preliminary evidence from a randomized controlled trial. *Journal of American College Health*.

Morris, S. B., & DeShon, R. P. (2002). Combining effect size estimates in meta-analysis with repeated measures and independent-groups designs. *Psychological Methods, 7*(1), 105–125.

Morse, G., Salyers, M. P., Rollins, A. L., Monroe-DeVita, M. & Pfahler, C. (2012). Burnout in mental health services: A review of the problem and its

remediation. *Administration and Policy in Mental Health and Mental Health Services Research, 39*(5), 341–352.

Mullen, P. R., Blount, A. J., Lambie, G. W., & Chae, N. (2017). School counselors' perceived stress, burnout, and job satisfaction. *Professional School Counseling, 21*(1), 2156759X18782468.

Muthén, L. K., & Muthén, B. O. (1998-2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

Muthén, L. K., and Muthén, B. O. (2017). *Mplus User's Guide* (8th ed.). Los Angeles, CA: Muthén & Muthén.

Mäkikangas, A., & Kinnunen, U. (2016). The person-oriented approach to burnout: A systematic review. *Burnout Research, 3*(1), 11–23.

Nagin, D. S. (2005). *Group-based modeling of development.* Cambridge, MA: Harvard.

Neale-Lorello, D., & Haaga, D. A. (2015). The "observing" facet of mindfulness moderates stress/symptom relations only among meditators. *Mindfulness, 6*(6), 1286–1291.

Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the mindful self‐compassion program. *Journal of Clinical Psychology, 69*(1), 28–44.

Nevill, R. E., & Havercamp, S. M. (2019). Effects of mindfulness, coping styles and resilience on job retention and burnout in caregivers supporting aggressive adults with developmental disabilities. *Journal of Intellectual Disability Research, 63*(5), 441–453.

Nguyen, M. C., Gabbe, S. G., Kemper, K. J., Mahan, J. D., Cheavens, J. S., & Moffatt-Bruce, S. D. (2020). Training on mind-body skills: Feasibility and effects on physician mindfulness, compassion, and associated effects on stress, burnout, and clinical outcomes. *The Journal of Positive Psychology, 15*(2), 194–207.

Nolen-Hoeksema, S., & Watkins, E. R. (2011). A heuristic for developing transdiagnostic models of psychopathology: Explaining multifinality and divergent trajectories. *Perspectives on Psychological Science, 6*(6), 589–609.

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling, 14*(4), 535–569.

Näätänen P., Aro, A., Matthiesen, S., & Salmela-Aro, K. (2003). *Bergen burnout indicator 15.* Helsinki: Edita.

Olano, H. A., Kachan, D., Tannenbaum, S. L., Mehta, A., Annane, D., & Lee, D. J. (2015). Engagement in mindfulness practices by US adults: Sociodemographic barriers. *The Journal of Alternative and Complementary Medicine, 21*(2), 100–102.

Ozbilir, T., Day, A., & Catano, V. M. (2015). Perfectionism at work: An investigation of adaptive and maladaptive perfectionism in the workplace among Canadian and Turkish employees. *Applied Psychology, 64*(1), 252–280.

Pacewicz, C. E., Mellano, K. T., & Smith, A. L. (2019). A meta-analytic review of the relationship between social constructs and athlete burnout. *Psychology of Sport and Exercise, 43*, 155–164.

Panagioti, M., Panagopoulou, E., Bower, P., Lewith, G., Kontopantelis, E., Chew-Graham, C., ... & Esmail, A. (2017). Controlled interventions to reduce burnout in physicians: a systematic review and meta-analysis. *JAMA Internal Medicine, 177*(2), 195–205.

Paul, G. L. (1967). Strategy of outcome research in psychotherapy. *Journal of Consulting Psychology, 31*(2), 109–118.

Pearson, M. R., Lawless, A. K., Brown, D. B., & Bravo, A. J. (2015). Mindfulness and emotional outcomes: Identifying subgroups of college students using latent profile analysis. *Personality and Individual Differences, 76*, 33–38.

Perich, T., Manicavasagar, V., Mitchell, P. B., & Ball, J. R. (2013). The association between meditation practice and treatment outcome in Mindfulness-based Cognitive Therapy for bipolar disorder. *Behaviour Research and Therapy, 51*(7), 338–343.

Perski, O., Grossi, G., Perski, A., & Niemi, M. (2017). A systematic review and meta-analysis of tertiary interventions in clinical burnout. *Scandinavian Journal of Psychology, 58*(6), 551–561.

Peterson, U., Bergström, G., Samuelsson, M., Åsberg, M., & Nygren, Å. (2008). Reflecting peer‐support groups in the prevention of stress and burnout: Randomized controlled trial. *Journal of Advanced Nursing, 63*(5), 506–516.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903.

Polk, K. L., Schoendorff, B., Webster, M., & Olaz, F. O. (2016). *The essential guide to the ACT matrix: A step-by-step approach to Using the ACT matrix model in clinical practice.* Oakland, CA: New Harbinger Publications.

Pulkkinen, L., Feldt, T., & Kokko, K. (2005). Personality in young adulthood and functioning in middle age. In S. Willis & M. Martin (Eds.), *Middle adulthood: A lifespan perspective* (pp. 99–141). Thousand Oaks, CA: Sage Publications.

Puolakanaho, A., Tolvanen, A., Kinnunen, S. M., & Lappalainen, R. (2018). Burnout-related ill-being at work: Associations between mindfulness and acceptance skills, worksite factors, and experienced well-being in life. *Journal of Contextual Behavioral Science, 10*, 92–102.

Puolakanaho, A., Tolvanen, A., Kinnunen, S. M., & Lappalainen, R. (2020). A psychological flexibility -based intervention for burnout:A randomized controlled trial. *Journal of Contextual Behavioral Science, 15*, 52–67.

Pyhältö, K., Pietarinen, J., Haverinen, K., Tikkanen, L., & Soini, T. (2020). Teacher burnout profiles and proactive strategies. *European Journal of Psychology of Education*.

Querstret, D., Cropley, M., & Fife-Schaw, C. (2016). Internet-based instructor-led mindfulness for work-related rumination, fatigue, and sleep:

Assessing facets of mindfulness as mechanisms of change. A randomized waitlist control trial. *Journal of Occupational Health Psychology, 22*(2), 153–169.

Querstret, D., Cropley, M., & Fife-Schaw, C. (2018). The effects of an online mindfulness intervention on perceived stress, depression and anxiety in a non-clinical sample: A randomised waitlist control trial. *Mindfulness, 9*(6), 1825–1836.

Reeve, A., Tickle, A., & Moghaddam, N. (2018). Are acceptance and commitment therapy-based interventions effective for reducing burnout in direct-care staff? A systematic review and meta-analysis. *Mental Health Review Journal, 23*(3), 131–155.

Reichl, C., Leiter, M. P. & Spinath, F. M. (2014). Work–nonwork conflict and burnout: A meta-analysis. *Human Relations, 67*(8), 979–1005.

Ríos-Risquez, M. I., Garíca-Izquierdo, M., Sabuco-Tebar, E. D. L. Á., Carrillo-Garcia, C., & Solano-Ruiz, C. (2018). Connections between academic burnout, resilience, and psychological well‐being in nursing students: A longitudinal study. *Journal of Advanced Nursing, 74*(12), 2777–2784.

Roeser, R. W., Schonert-Reichl, K. A., Jha, A., Cullen, M., Wallace, L., Wilensky, R., ... & Harrison, J. (2013). Mindfulness training and reductions in teacher stress and burnout: Results from two randomized, waitlist-control field trials. *Journal of Educational Psychology, 105*(3), 787–804.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*(6), 1069–1081.

Sahdra, B. K., Ciarrochi, J., Parker, P. D., Basarkod, G., Bradshaw, E. L., & Baer, R. (2017). Are people mindful in different ways? Disentangling the quantity and quality of mindfulness in latent profiles and exploring their links to mental health and life effectiveness. *European Journal of Personality, 31*(4), 347–365.

Salvagioni, D. A. J., Melanda, F. N., Mesas, A. E., González, A. D., Gabani, F. L., & de Andrade, S. M. (2017). Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. *PloS ONE, 12*(10), e0185781.

Samios, C. (2018). Burnout and psychological adjustment in mental health workers in rural Australia: the roles of mindfulness and compassion satisfaction. *Mindfulness, 9*(4), 1088–1099.

Santoft, F., Salomonsson, S., Hesser, H., Lindsäter, E., Ljótsson, B., Lekander, M., ... & Hedman-Lagerlöf, E. (2019). Mediators of Change in Cognitive Behavior Therapy for Clinical Burnout. *Behavior Therapy, 50*(3), 475–488.

Schaufeli, W.B., De Witte, H. & Desart, S. (2019). *Manual Burnout Assessment Tool (BAT).* KU Leuven, Belgium: Unpublished internal report.

Schaufeli, W. B., & Enzmann, D. (1998). *The burnout companion to study and research: A critical analysis.* London, UK: Taylor & Francis.

Schaufeli, W. B., Taris, T. W., & Van Rhenen, W. (2008). Workaholism, burnout, and work engagement: Three of a kind or three different kinds of employee well-being?. *Applied Psychology, 57*(2), 173–203.

Schonfeld, I. S., & Bianchi, R. (2016). Burnout and depression: two entities or one? *Journal of Clinical Psychology, 72*(1), 22–37.

Schult, T. M., Mohr, D. C., & Osatuke, K. (2018). Examining burnout profiles in relation to health and well‐being in the Veterans Health Administration employee population. *Stress and Health, 34*(4), 490–499.

Segal, Z. V., Williams, J. M. G. & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to prevent relapse.* New York: Guildford.

Silver, J., Caleshu, C., Casson-Parkin, S., & Ormond, K. (2018). Mindfulness among genetic counselors is associated with increased empathy and work engagement and decreased burnout and compassion fatigue. *Journal of Genetic Counseling, 27*(5), 1175–1186.

Smith, M. P., & Gore, N. J. (2012). Outcomes of a'Train the Trainers' approach to an acceptance based stress intervention in a specialist challenging behaviour service. *International Journal of Positive Behavioural Support, 2*(1), 39–48.

Snippe, E., Schroevers, M. J., Tovote, K. A., Sanderman, R., Emmelkamp, P. M. & Fleer, J. (2015). Patients' outcome expectations matter in psychological interventions for patients with diabetes and comorbid depressive symptoms. *Cognitive Therapy and Research, 39*(3), 307–317.

Soler, J., Cebolla, A., Feliu-Soler, A., Demarzo, M. M., Pascual, J. C., Baños, R., & García-Campayo, J. (2014). Relationship between meditative practice and self-reported mindfulness: the MINDSENS composite index. *PloS ONE, 9*(1), e86622.

Sterba, S. K. (2013). Understanding linkages among mixture models. *Multivariate Behavioral Research, 48*(6), 775–815.

Sun, J., Wang, Y., Wan, Q., & Huang, Z. (2019). Mindfulness and special education teachers' burnout: The serial multiple mediation effects of self-acceptance and perceived stress. *Social Behavior and Personality: An International Journal, 47*(11), 1–8.

Sutela, H., Pärnänen, A., & Keyriläinen, M. (2019). *Digiajan työelämä – Työolotutkimuksen tuloksia 1977-2018.* [Work life of digital aje – Results from working conditions studies 1977-2018.] Helsinki: Tilastokeskus.

Suvisaari, J., Ahola, K., Kiviruusu, O., Korkeila, J., Lindfors, O., Mattila, A., ... & Pirkola, S. (2012). Psyykkiset oireet ja mielenterveyden häiriöt. In S. Koskinen, A. Lundqvist & N. Ristiluoma (Eds.), *Terveys, toimintakyky ja hyvinvointi Suomessa 2011* [Health, workability, and well-being in Finland 2011] (pp. 96–107). Raportti 68/2012. Helsinki: Terveyden ja hyvinvoinnin laitos.

Tamagawa, R., Speca, M., Stephen, J., Pickering, B., Lawlor-Savage, L., & Carlson, L. E. (2015). Predictors and effects of class attendance and home practice of yoga and meditation among breast cancer survivors in a

Mindfulness-Based Cancer Recovery (MBCR) program. *Mindfulness, 6*(5), 1201–1210.

Taris, T. W. (2006). Is there a relationship between burnout and objective performance? A critical review of 16 studies. *Work & Stress, 20*(4), 316–334.

Taylor, N. Z., & Millear, P. M. R. (2016). The contribution of mindfulness to predicting burnout in the workplace. *Personality and Individual Differences, 89*, 123–128.

Testa, D., & Sangganjanavanich, V. F. (2016). Contribution of mindfulness and emotional intelligence to burnout among counseling interns. *Counselor Education and Supervision, 55*(2), 95–108.

Thuynsma, C., & de Beer, L. T. (2017). Burnout, depressive symptoms, job demands and satisfaction with life: discriminant validity and explained variance. *South African Journal of Psychology, 47*(1), 46–59.

Tikkanen, L., Pyhältö, K., Pietarinen, J., & Soini, T. (2017). Interrelations between principals' risk of burnout profiles and proactive self-regulation strategies. *Social Psychology of Education, 20*(2), 259–274.

Tolvanen, A. (2007). *Latent growth mixture modeling: A simulation study.* Finland: University of Jyväskylä.

Toppinen-Tanner, S., Kalimo, R., & Mutanen, P. (2002). The process of burnout in white-collar and blue- colla r jobs: eight-year prospective study of exhaustion. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior, 23*(5), 555–570.

Vermunt, J. K., & Magidson, J. (2002). Latent class cluster analysis. In J. Hagenaars & A McCutcheon (Eds.), *Applied Latent Class Analysis* (pp. 89–106). New York, NY: Cambridge University Press.

Vettese, L. C., Toneatto, T., Stea, J. N., Nguyen, L., & Wang, J. J. (2009). Do mindfulness meditation participants do their homework? And does it make a difference? A review of the empirical evidence. *Journal of Cognitive Psychotherapy, 23*(3), 198–225.

Vilardaga, R., Luoma, J. B., Hayes, S. C., Pistorello, J., Levin, M. E., Hildebrandt, M. J., ... & Bond, F. (2011). Burnout among the addiction counseling workforce: The differential roles of mindfulness and values-based processes and work-site factors. *Journal of Substance Abuse Treatment, 40*(4), 323–335.

Voci, A., Veneziani, C. A., & Metta, M. (2016). Affective organizational commitment and dispositional mindfulness as correlates of burnout in health care professionals. *Journal of Workplace Behavioral Health, 31*(2), 63–70.

Vowles, K. E., & McCracken, L. M. (2008). Acceptance and values-based action in chronic pain: a study of treatment effectiveness and process. *Journal of Consulting and Clinical Psychology, 76*(3), 397–407.

Vowles, K. E., McCracken, L. M., & O'Brien, J. Z. (2011). Acceptance and values-based action in chronic pain: a three-year follow-up analysis of treatment effectiveness and process. *Behaviour Research and Therapy, 49*(11), 748–755.

Walsh, A. L., Lehmann, S., Zabinski, J., Truskey, M., Purvis, T., Gould, N. F., ... & Chisolm, M. S. (2019). Interventions to Prevent and Reduce Burnout Among Undergraduate and Graduate Medical Education Trainees: a Systematic Review. *Academic Psychiatry, 43*(4), 386–395.

Warr, P. (2012). How to think about and measure psychological well-being. In M. Wang, R. R. Sinclair, & L. E. Tetrick (Eds.), *Research Methods in Occupational Health Psychology.* New York: Psychology Press/Routledge.

Waters, C. S., Frude, N., Flaxman, P. E., & Boyd, J. (2018). Acceptance and commitment therapy (ACT) for clinically distressed health care workers: Waitlist - controlled evaluation of an ACT workshop in a routine practice setting. *British Journal of Clinical Psychology, 57*(1), 82–98.

West, C. P., Dyrbye, L. N., Erwin, P. J. & Shanafelt, T. D. (2016). Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. *The Lancet, 388*(10057), 2272–2281.

Westermann, C., Kozak, A., Harling, M., & Nienhaus, A. (2014). Burnout intervention studies for inpatient elderly care nursing staff: systematic literature review. *International Journal of Nursing Studies, 51*(1), 63–71.

Williams, M., & Penman, D. (2011). *Mindfulness: A practical guide to finding peace in a frantic world.* London, England: Piatkus.

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement, 73*(6), 913–934.

World Health Organization (2019). *Burn-out an "occupational phenomenon": International Classification of Diseases.* Retrieved from https://www.who.int/mental_health/evidence/burn-out/en/

Yang, S., Meredith, P., & Khan, A. (2017). Is mindfulness associated with stress and burnout among mental health professionals in Singapore?. *Psychology, Health & Medicine, 22*(6), 673–679.

Ybema, J. F., Smulders, P. G., & Bongers, P. M. (2010). Antecedents and consequences of employee absenteeism: A longitudinal perspective on the role of job satisfaction and burnout. *European Journal of Work and Organizational Psychology, 19*(1), 102–124.

Zhang, J., Deng, X., Huang, L., Zeng, H., Wang, L., & Wen, P. (2019). Profile of trait mindfulness and its association with emotional regulation for early adolescents. *Personality and Individual Differences, 147*, 12–17.

APPENDIX

TABLE A1 Items of the Five Facet Mindfulness Questionnaire (Baer et al., 2006)

Facet	Items
Observing	1. "When I'm walking, I deliberately notice the sensations of my body moving."
	2. "When I take a shower or a bath, I stay alert to the sensations of water on my body."
	3. "I notice how foods and drinks affect my thoughts, bodily sensations, and emotions."
	4. "I pay attention to sensations, such as the wind in my hair or sun on my face."
	5. "I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing."
	6. "I notice the smells and aromas of things."
	7. "I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow."
	8. "I pay attention to how my emotions affect my thoughts and behavior."
Describing	1. "I'm good at finding the words to describe my feelings."
	2. "I can easily put my beliefs, opinions, and expectations into words."
	3. "It's hard for me to find the words to describe what I'm thinking." (R)
	4. "I have trouble thinking of the right words to express how I feel about things." (R)
	5. "When I have a sensation in my body, it's hard for me to describe it because I can't find the right words." (R)
	6. "Even when I'm feeling terribly upset, I can find a way to put it into words."
	7. "My natural tendency is to put my experiences into words."
	8. "I can usually describe how I feel at the moment in considerable detail."
Acting with awareness	1. "I find it difficult to stay focused on what's happening in the present." (R)
	2. "It seems I am "running on automatic" without much awareness of what I'm doing." (R)
	3. "I rush through activities without being really attentive to them." (R)

	4. “I do jobs or tasks automatically, without being aware of what I’m doing.” (R)
	5. “I find myself doing things without paying attention.” (R)
	6. “When I do things, my mind wanders off and I’m easily distracted.” (R)
	7. “I don’t pay attention to what I’m doing because I’m daydreaming, worrying, or otherwise distracted.” (R)
	8. “I am easily distracted.” (R)
Non-judging	1. “I criticize myself for having irrational or inappropriate emotions.” (R)
	2. “I tell myself that I shouldn’t be feeling the way I’m feeling.” (R)
	3. “I believe some of my thoughts are abnormal or bad and I shouldn’t think that way.” (R)
	4. “I make judgments about whether my thoughts are good or bad.” (R)
	5. “I tell myself I shouldn’t be thinking the way I’m thinking.” (R)
	6. “I think some of my emotions are bad or inappropriate and I shouldn’t feel them.” (R)
	7. “I disapprove of myself when I have irrational ideas.” (R)
	8. “Usually when I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.” (R)
Non-reacting	1. “I perceive my feelings and emotions without having to react to them.”
	2. “I watch my feelings without getting lost in them.”
	3. “In difficult situations, I can pause without immediately reacting.”
	4. “Usually when I have distressing thoughts or images, I am able just to notice them without reacting.”
	5. “Usually when I have distressing thoughts or images, I feel calm soon after.”
	6. “Usually when I have distressing thoughts or images, I “step back” and am aware of the thought or image without getting taken over by it.”
	7. “Usually when I have distressing thoughts or images, I just notice them and let them go.”

Note. R = reverse-scored.

ORIGINAL PAPERS

I

IMPROVEMENTS IN MINDFULNESS FACETS MEDIATE THE ALLEVIATION OF BURNOUT DIMENSIONS

by

Sanna Kinnunen, Anne Puolakanaho, Asko Tolvanen, Anne Mäkikangas, & Raimo Lappalainen, 2020.

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ORIGINAL PAPER

Improvements in Mindfulness Facets Mediate the Alleviation of Burnout Dimensions

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Abstract

Objectives While interventions using mindfulness have been effective in treating burnout, the mechanisms of change need more research. This study investigated which of five mindfulness facets (observing, describing, acting with awareness, non-judging, and non-reacting) mediated the intervention effects on three burnout dimensions (exhaustion, cynicism, and reduced professional efficacy) during an 8-week mindfulness-, acceptance-, and value-based (MAV) intervention and a 10-month follow-up.

Methods The participants were a heterogeneous sample of employees suffering from burnout ($n = 202$, 80% women, mean age = 47.5 years). Latent change score modeling was conducted for each combination of the mindfulness facets and the burnout dimensions. Confidence intervals were calculated for the coefficients in the models.

Results The modeling results showed that mindfulness improvement during the intervention mediated burnout alleviation during both the intervention and the 10-month follow-up. A large spread of mindfulness facets mediated changes in all the burnout dimensions during the intervention (all for cynicism, all except describing for exhaustion, and all except observing for reduced professional efficacy). The improvement in non-judging skills mediated the reductions in all burnout dimensions during the follow-up. For exhaustion, it was the only significant mediator during the follow-up, whereas for cynicism and reduced professional efficacy, describing and observing were additional mediators.

Conclusions Improving mindfulness facets using a MAV intervention had significant long-term effects on burnout in this study. Non-judging is possibly the most important mindfulness facet to improve in burnout interventions, given that it mediated the changes in all burnout dimensions during both the intervention and 10-month follow-up.

Keywords Mindfulness · Burnout · Mediation · Intervention · Acceptance and commitment therapy

Burnout has been associated with increased mental and physical health problems, and negative organizational outcomes, such as increased employee turnover, sickness absences, and impaired job performance (Ahola et al. 2017; Morse et al. 2012). Burnout is a persistent, job-related state of ill-being that is characterized by exhaustion, cynicism, and reduced professional efficacy (Leiter et al. 2014; Näätänen et al. 2003). Exhaustion refers to feelings of physical and emotional fatigue, cynicism to distancing oneself from work and questioning the meaningfulness of one's job, and reduced professional efficacy to perceiving one's capabilities as inadequate for satisfactory job performance. Burnout has been reluctant to change without intervention (Mäkikangas and Kinnunen 2016). Therefore, it is essential to develop effective treatments to mitigate its adverse effects. It is also important to understand by which processes these interventions work. By emphasizing the intervention processes that are the most likely to alleviate burnout, intervention effectiveness could likely be improved, and resources used cost-effectively. Process-based intervention research is a way to increase process knowledge since it focuses on studying theory-based and empirically supported processes responsible for positive intervention outcomes (Hofmann and Hayes 2019). Process-based research is interested in whether the manipulation of a certain process

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is efficacious in reducing the targeted symptoms and whether the used intervention can manipulate the process intendedly (Hayes and Hofmann 2017; Hofmann and Hayes 2019). Hofmann and Hayes (2019) suggested that different procedures could influence the same process. Hence, diverse interventions could lead to similar outcomes.

In interventions using mindfulness, it is a central, theoretically expected mechanism of change (Crane et al. 2017; Hayes et al. 2012). Fletcher and Hayes (2005) offered a functional definition of mindfulness that includes elements from several conceptualizations of mindfulness and integrates diverse mindfulness processes. The functional mindfulness definition comprises processes of staying in the present moment, taking an open and non-judgmental stance towards one's experiences, detaching from the guidance of one's thoughts and feelings, and transcending the conceptual description of oneself. In empirical research, a measure that is well-suited for studying different mindfulness processes is the Five Facet Mindfulness Questionnaire (FFMQ, Baer et al. 2006). It evaluates five mindfulness facets, namely observing, describing, acting with awareness, non-judging, and non-reacting. Observing refers to noticing inner and outer stimuli, such as sensations, thoughts, and feelings; describing is the ability to describe observed stimuli with words; acting with awareness refers to being aware of one's situation and acting with conscious intention rather than reacting automatically; non-judging means refraining from evaluating one's thoughts, feelings, and sensations; and non-reactivity is the ability to let thoughts and feelings come and go without becoming attached or impulsively reacting to them. Concerning the functional definition of mindfulness by Fletcher and Hayes (2005), observing and describing depict the skills to be in contact with the present moment, while non-judging reflects the ability to take an accepting stance towards the experiences at the moment. Non-reacting and acting with awareness depict the skills to defuse from the behavioral guidance of thoughts and feelings and instead act according to one's personal goals.

Recently, interventions using mindfulness have shown promise in burnout treatment (Luken and Sammons 2016; Lloyd et al. 2013). Mindfulness has also been the mediator of burnout change in these interventions (Roeser et al. 2013). However, recent cross-sectional studies have indicated that certain mindfulness processes could be more relevant to positive intervention outcomes than others. Yang et al. (2017) found that, while all five mindfulness facets of the FFMQ had a negative association with exhaustion and disengagement (comparable with cynicism), the strongest association was found for acting with awareness. Kriakous et al. (2019) also observed that higher levels of acting with awareness were associated to lower levels of emotional exhaustion and depersonalization. Taylor and Millear (2016) separated between the burnout dimensions and found that non-judging and non-reacting were associated with emotional exhaustion, acting with awareness, and non-judging with cynicism, and observing with reduced professional efficacy. For each facet, higher mindfulness was associated with lower burnout. These results indicate that, instead of studying mindfulness as a unified mediator, researchers should study its processes as separate mechanisms of change in the alleviation of burnout.

Although the research on the associations between mindfulness facets and burnout is mostly cross-sectional, there is evidence of the differential role of mindfulness facets in the changes of other well-being indicators during the intervention. Either non-judging or acting with awareness predicted positive intervention outcomes in terms of stress, anxiety, work-related rumination, and fatigue (Bergman et al. 2016; Querstret et al. 2016, 2018). However, with some well-being indicators, simultaneous improvements in observation-related (observing or describing) and reaction-related (non-judging or non-reacting) facets were needed to induce positive change. This need was noticed for psychological distress, psychological symptoms, and depression (Heeren et al. 2015; Querstret et al. 2018; Waters et al. 2018). More process research is needed to understand better which combination of mindfulness facets would show the most beneficial results in burnout treatment. Furthermore, the findings of Taylor and Millear (2016) suggest that different mindfulness facets could be important for the alleviation of separate burnout dimensions, indicating that it is warranted to study the associations between mindfulness processes and burnout separately for each dimension.

The current study aimed to understand better how interventions using mindfulness achieve their positive effects. This study explored whether the five facets of mindfulness, according to the FFMQ (observing, describing, acting with awareness, non-judging, and non-reacting), were mediators of burnout change during an 8-week intervention and a 10-month follow-up. Furthermore, this study investigated the differences between the burnout dimensions (exhaustion, cynicism, and reduced professional efficacy) regarding how the mindfulness facets mediated their changes. Mindfulness facets were expected to mediate the intervention effects on the burnout dimensions, but no specific hypotheses were made about the associations between the separate mindfulness facets and burnout dimensions.

Method

Participants

The current study was conducted as a part of a randomized controlled trial (RCT) titled *The Effectiveness of Mindfulness Practices in the Recovery of Burnout*, funded by the Finnish Social Insurance Institution and registered under ClinicalTrials.gov (NCT number: NCT01920230). The research protocol was approved by the Research Ethics Committee of the Central

Finland Health Care District. As part of the ethical evaluation, a report on the data processing and storage was approved. Data were stored anonymously in the university data storage. The results of the RCT are presented in Puolakanaho et al. (2020). Participants were recruited using web page announcements and newspaper advertisements and via occupational health care units. Enrollment took place via a web questionnaire and was open to anyone interested in participating in the study. The selection was based on information provided by the applicants via the enrollment questionnaires and subsequent interviews. The inclusion criteria were the age of 25–60 years, ongoing work, daily available Internet connection, and high burnout according to the cut-off score of the Bergen Burnout Indicator (BBI). The BBI cutoff was the 75th percentile (39–47 points) of the age group, according to the manual by Näätänen et al. (2003). Candidates were excluded if they had serious psychological or somatic disorders, were in regular psychotherapy, or were susceptible to major pharmaceutically induced mood swings. The participants gave their informed consent and received the intervention free of charge. They were emailed web questionnaires before the intervention (pre), after the intervention (post), and 10 months after the post-measurement (fup10). The pre-measurement was completed within 2 weeks before the intervention started. Reminders were sent via email and telephone.

The participants were paired based on sex, age, and education. Then, either participant in each pair was assigned to an intervention group receiving an intervention in addition to treatment-as-usual (TAU; $n = 133$; 12 separate groups), and the other was assigned to a control group receiving only TAU ($n = 133$). Most of the participants (82%; $n = 109$ for both groups) were blindly randomized to the groups. The remaining participants (18%, $n = 24$ for both groups) were matched without randomization using the same criteria (sex, age, and education). This was done to allow for a sophisticated statistical analysis of the associations between the mindfulness facets and the burnout dimensions, given that a larger sample size was required to fit the criteria for structural equation modeling (Wolf et al. 2013).

The same inclusion criteria and matching procedure were applied for both the randomized and non-randomized participants to mitigate the risk of confounding variables affecting the results of the study. A pilot study with 24 intervention participants was conducted before the RCT, and a matching procedure was completed separately to obtain corresponding control participants for the pilots. These controls were collected from the participants who initially enrolled in the study and fulfilled the inclusion criteria but were not able to participate in the face-to-face meetings and were thus not randomized. The non-randomized intervention participants underwent the same intervention procedure as the randomized intervention participants, and the non-randomized control participants underwent the same procedure as the randomized control participants.

No significant differences were found between the randomized and non-randomized controls in terms of sex, age, education, and the main study variables (five mindfulness facets and three burnout dimensions) at the enrollment, pre-, post-, or fup10 measurements, as shown by an independent samples t test. The same was observed for differences between the randomized and non-randomized intervention participants, except that the latter experienced less exhaustion at the enrollment and had lower reduced professional efficacy at the pre-measurement than the former. The exact results of all the t tests in the methods, with the means and standard deviations for the compared groups, are reported in the supplementary material (Appendix A).

Sample Attrition Initially, there were 266 participants (133 each in the intervention and control groups). Before completing the post-measurement questionnaire, 63 participants withdrew from the study. A total of 41% of these dropouts ($n = 26$) came from the intervention group, and 59% ($n = 37$) were from the control group. In addition, one participant from the intervention group was excluded from the analyses because their BBI score dropped significantly between enrollment and pre-measurement (randomization was completed in the enrollment phase, when the BBI score matched the inclusion criteria). An independent samples t test revealed no significant differences between those who dropped out and those who remained in terms of sex, age, education, or initial level of reduced professional efficacy. However, those who dropped out experienced more exhaustion and cynicism at the enrollment phase than those who stayed.

The sample that was used in the analyses consisted of 106 intervention group participants and 96 control group participants, yielding a total sample of 202 participants. All of them completed both the pre- and post-measurements. By the 10th month after the post-measurement, 23 participants had dropped out of the study. There were no significant differences between those who remained in the study and those who dropped out in any of the demographic or main study variables, according to an independent samples t test. A diagram of the participant flow is presented in the supplementary material (Appendix A).

The participants of the final sample were all Caucasian, and 80% of them were women. The mean age of the participants was 47.5 years (SD = 8.05, a range of 27–60 years), and 67% of them had a polytechnic or university degree. Of the participants, 30% had vocational education, and 3% had participated in other forms of education (e.g., short employment courses). They worked approximately 40 h per week (SD = 9.55). Of the participants, 75% were married or cohabiting, 13% were divorced or widowed, and 11% were single. Ten percent evaluated their economic situation as very good, 57%

rated it as rather good, 29% described it as rather tight, and 4% considered it very tight.

Procedures

Intervention The 8-week intervention combined weekly group meetings with the use of a web program. The main structure and most homework assignments were based on the mindfulness intervention by Williams and Penman (2011). Theoretically, the intervention was founded on the principles of ACT (Hayes et al. 2012). In line with this, the informatory content was formed based on ACT. Thus, the present intervention combined elements of traditional mindfulness-based intervention and ACT to increase the mindfulness and acceptance skills and promote the value-based actions of the participants. Therefore, the program was described as mindfulness-, acceptance-, and value-based (MAV) intervention. The intervention included weekly themes related to identifying the factors contributing to one's burnout, changing routines to support one's well-being, and learning new ways to relate to one's situation. The participants practiced self-compassion and a non-judging stance towards their experiences. They also practiced letting go of attempts to control their thoughts and feelings. The participants were instructed to perform formal mindfulness-acceptance practices (e.g., 10–15 min body scan or loving-kindness meditation) twice a day for 6 days a week. The formal practices also included a short breathing space that was to be done once a day. In addition, the participants were instructed to mindfully carry out informal activities, such as daily tasks, and change their routines. They were further advised to perform value-based actions in their daily lives. Homework assignments and voluntary material were available through the web program. The intervention was standardized and delivered by two psychologists with experience and training related to the practices used. Adherence to the protocol was relatively high in terms of participation in group meetings and completion of homework. A detailed description of the contents and adherence is presented in the supplementary material (Appendixes B and C).

TAU In the research project to which this study belongs, the purpose was to investigate whether adding a MAV intervention to TAU would have superior effects compared with those of only TAU in burnout alleviation. Therefore, both the intervention and control group participants could use TAU services. Furthermore, for ethical and practical reasons, the researchers did not advise the intervention participants not to use the services. The control group participants were especially encouraged to use the available services, but they were not directed to any service by the research group. Furthermore, the control group did not receive any intervention from the research group, but they were promised access to the web program after the 12-month study period was over. In Finland, several approaches are used to alleviate burnout symptoms, such as therapeutic conversations in employee health care, rehabilitation, sick leaves, medication, support from employers, and changes in job conditions. Sixty-three percent of the intervention and 62% of the control participants utilized at least one support form during the intervention. During the follow-up, 70% of the intervention and 80% of the control participants used TAU services. Details about the used services are presented in the supplementary material (Appendix C).

Measures

Burnout was measured using the 15-item BBI (Näätänen et al. 2003). The BBI-15 has a subscale for each burnout dimension: exhaustion (five items, e.g., "I am snowed under with work"), cynicism (five items, e.g., "I feel dispirited at my work and I think of leaving my job"), and reduced professional efficacy (five items, e.g., "I frequently question the value of my work"). The 6-point response scale for this questionnaire ranges from 1 (completely disagree) to 6 (completely agree). This measure was chosen since it contains cutoff scores for Finnish samples and could thus be used to include only workers with the highest amount of burnout symptoms. The reliability and validity of this measure have been found to be relatively good by previous studies (Salmela-Aro et al. 2011; Näätänen et al. 2003).

The mindfulness facets were measured using the FFMQ (Baer et al. 2006). This questionnaire consists of 39 items measuring five mindfulness facets: observing (eight items, e.g., "When I'm walking, I deliberately notice the sensations of my body moving"), describing (eight items, e.g., "I'm good at finding words to describe my feelings"), acting with awareness (eight items, e.g., "When I do things, my mind wanders off and I'm easily distracted", reverse-scored), non-judging (eight items, e.g., "I criticize myself for having irrational or inappropriate emotions", reverse-scored), and non-reacting (seven items, e.g., "I perceive my feelings and emotions without having to react to them"). The 5-point response scale for this questionnaire ranges from 1 (never or very rarely true) to 5 (very often or always true). This measure was chosen since it has separate subscales for different facets. In previous studies, the reliability and validity of this measure have been relatively good (Baer et al. 2006, 2008). Cronbach's alphas from pre- to fup10 measurements for burnout and mindfulness are presented in Table 1.

Data Analyses

Descriptive statistics (means, standard deviations, correlations, and reliability calculations) were computed with SPSS Statistics 24, and other analyses were completed with Mplus 8

Table 1 Means, standard deviations, and correlations of the study variables ($n = 177–202$)

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1 OB1	3.15	0.67	*0.81*											
2 OB2	3.43	0.65	0.57**	*0.85*										
3 OB3	3.51	0.67	0.59**	0.71**	*0.86*									
4 DE1	3.49	0.75	0.28**	0.15*	0.21**	*0.92*								
5 DE2	3.64	0.70	0.24**	0.30**	0.32**	0.76**	*0.93*							
6 DE3	3.75	0.76	0.26**	0.27**	0.43**	0.74**	0.79**	*0.95*						
7 AC1	2.97	0.68	0.26**	0.08	0.12	0.17*	0.10	0.15	*0.89*					
8 AC2	3.15	0.60	0.19**	0.30**	0.15*	0.07	0.28**	0.21**	0.53**	*0.87*				
9 AC3	3.20	0.66	0.18*	0.22**	0.36**	0.10	0.22**	0.38**	0.54**	0.63**	*0.91*			
10 NJ1	3.54	0.71	0.08	0.06	0.05	0.10	0.03	0.11	0.26**	0.13	0.07	*0.87*		
11 NJ2	3.82	0.69	−0.00	0.03	0.07	0.15*	0.24**	0.25**	0.00	0.22**	0.18**	0.57**	*0.89*	
12 NJ3	3.84	0.71	0.05	0.13	0.20**	0.17*	0.29**	0.34**	0.05	0.19*	0.29**	0.46**	0.71**	*0.90*
13 NR1	2.94	0.62	0.33**	0.14	0.12	0.33**	0.18**	0.16*	0.34**	0.22**	0.13	0.28**	0.17*	0.14
14 NR2	3.21	0.58	0.21**	0.35**	0.20**	0.21**	0.34**	0.27**	0.14*	0.42**	0.22**	0.11	0.33**	0.28**
15 NR3	3.32	0.63	0.23**	0.29**	0.46**	0.25**	0.34**	0.46**	0.20**	0.33**	0.50**	0.13	0.32**	0.42**
16 EX1	4.20	0.93	−0.08	0.03	0.10	−0.02	0.06	0.07	−0.18*	−0.07	−0.03	−0.15*	−0.06	−0.01
17 EX2	3.65	1.06	0.12	−0.01	−0.04	−0.03	−0.06	−0.13	0.02	−0.14	−0.11	−0.06	−0.20**	−0.15*
18 EX3	3.31	1.12	−0.03	−0.16*	−0.24**	−0.08	−0.14	−0.29**	−0.06	−0.15*	−0.28**	0.06	−0.17**	−0.20**
19 CY1	3.34	0.97	−0.07	−0.03	0.05	−0.03	−0.07	0.00	−0.29**	−0.28**	−0.14	−0.25**	−0.15*	−0.20**
20 CY2	2.82	0.99	0.06	−0.02	−0.12	−0.03	−0.16*	−0.17*	−0.10	−0.32**	−0.24**	−0.15*	−0.34**	−0.35**
21 CY3	2.67	1.07	−0.01	−0.15*	−0.29**	−0.10	−0.23**	−0.28**	−0.15*	−0.30**	−0.40**	−0.03	−0.27**	−0.38**
22 RE1	3.92	0.89	−0.00	0.02	0.02	−0.07	−0.04	−0.02	−0.28**	−0.25**	−0.18*	−0.32**	−0.20**	−0.20**
23 RE2	3.38	1.13	0.11	0.03	−0.08	−0.10	−0.18*	−0.22**	−0.06	−0.30**	−0.23**	−0.23**	−0.34**	−0.28**
24 RE3	3.20	1.19	0.04	−0.17*	−0.29**	−0.13	−0.28**	−0.31**	−0.06	−0.28**	−0.32**	−0.09	−0.29**	−0.38**

Variable	13	14	15	16	17	18	19	20	21	22	23	24
1 OB1												
2 OB2												
3 OB3												
4 DE1												
5 DE2												
6 DE3												
7 AC1												
8 AC2												
9 AC3												
10 NJ1												
11 NJ2												
12 NJ3												
13 NR1	*0.83*											
14 NR2	0.56**	*0.84*										

Table 1 (continued)

15 NR3	0.47**	0.59**	*0.88*										
16 EX1	− 0.16*	− 0.05	0.01	*0.75*									
17 EX2	0.05	− 0.06	− 0.04	0.57**	*0.81*								
18 EX3	0.08	− 0.07	− 0.19*	0.47**	0.70**	*0.82*							
19 CY1	− 0.31**	− 0.20**	− 0.17*	0.28**	0.23**	0.16*	*0.79*						
20 CY2	− 0.11	− 0.23**	− 0.28**	0.17**	0.52**	0.38**	0.59**	*0.83*					
21 CY3	− 0.07	− 0.13	− 0.36**	0.14	0.45**	0.64**	0.39**	0.64**	*0.85*				
22 RE1	− 0.24**	− 0.10	− 0.10	0.30**	0.25**	0.21**	0.66**	0.46**	0.35**	*0.65*			
23 RE2	− 0.06	− 0.13	− 0.21**	0.20**	0.55**	0.38**	0.41**	0.76**	0.55**	0.58**	*0.81*		
24 RE3	− 0.08	− 0.15*	− 0.33**	0.12	0.47**	0.60**	0.31**	0.57**	0.84**	0.40**	0.63**	*0.83*	

OB observing, *DE* describing, *AC* acting with awareness, *NJ* non-judging, *NR* non-reacting, *EX* exhaustion, *CY* cynicism, *RE* reduced professional efficacy, *1* pre-measurement, *2* post-measurement, *3* fup10 measurement. Cronbach's alphas are italicized

**$p < 0.01$

*$p < 0.05$

(Muthén and Muthén 2017). Latent change score modeling (McArdle and Hamagami 2001) with a measurement model was conducted for each combination of the mindfulness facets and burnout dimensions, yielding 15 independent models. The used model was the same for each combination and is presented in Fig. 1. Reliability statistics (Cronbach's alphas) were calculated for the mindfulness and burnout scales, and these results showed good or excellent values ($\alpha = 0.81$–0.95) for all mindfulness facets at all time points and for all burnout dimensions at the post- and fup10 measurements. At the pre-measurement, the alpha values were adequate for exhaustion ($\alpha = 0.75$) and cynicism ($\alpha = 0.79$) but questionable for reduced professional efficacy ($\alpha = 0.65$). The measurement model was used to further eliminate the effect of error variance on the study constructs and to ensure the reliability of the constructs in the final model. To improve the variable-to-sample size ratio, construct-specific parcels were created according to recommendations from Little et al. (2002). Previously identified structures of the five mindfulness facets (Baer et al. 2006) and the three burnout dimensions (Näätänen et al. 2003) were utilized as bases for parcel creation. Confirmatory factor analyses (CFAs) were conducted at pre-, post-, and fup10 measurements for each construct to validate the use of these existing structural definitions for the mindfulness facets and burnout dimension. Since the CFA models fitted the data reasonably well and the factor loadings of the individual items were approximately the same size for the given factors, the parcels were created by combining the items in the order they are presented in the original questionnaire. This way, the individual items of each mindfulness facet were divided into three parcels, as were the items of each burnout dimension. In the parcels, an individual level that was stable over time and was unassociated with any other part of the model was detected. This was considered by adding a level correction to the model for the parcels. The scalar equivalence (e.g., equal factor loadings and equal intercepts of observed variables) was expected to hold across time.

Latent change score modeling combines features from cross-lagged regression modeling and latent growth curves (McArdle 2009; McArdle and Hamagami 2001). In latent change score modeling, variable Y is described at a time t, and ΔY_t is defined as the change in Y from t–1 to t (McArdle 2009). In the current study, the change scores were calculated for the factors instead of observed variables; hence, Y here referred to a factor. The coefficients relating to Y_t and $Y_{t\text{-}1}$ were constrained to 1, and there were no error terms in the equation for Y_t. Y_t was a direct sum of $Y_{t\text{-}1}$ and ΔY_t. This way, ΔY_t could be used as a latent variable that directly indicated the amount of change in the target variable between given time points. Latent change scores were created for the changes from pre- to post-measurement and from post- to fup10 measurement in the mindfulness facets and burnout dimensions (marked D in the figure). Modeling was conducted, adjusting

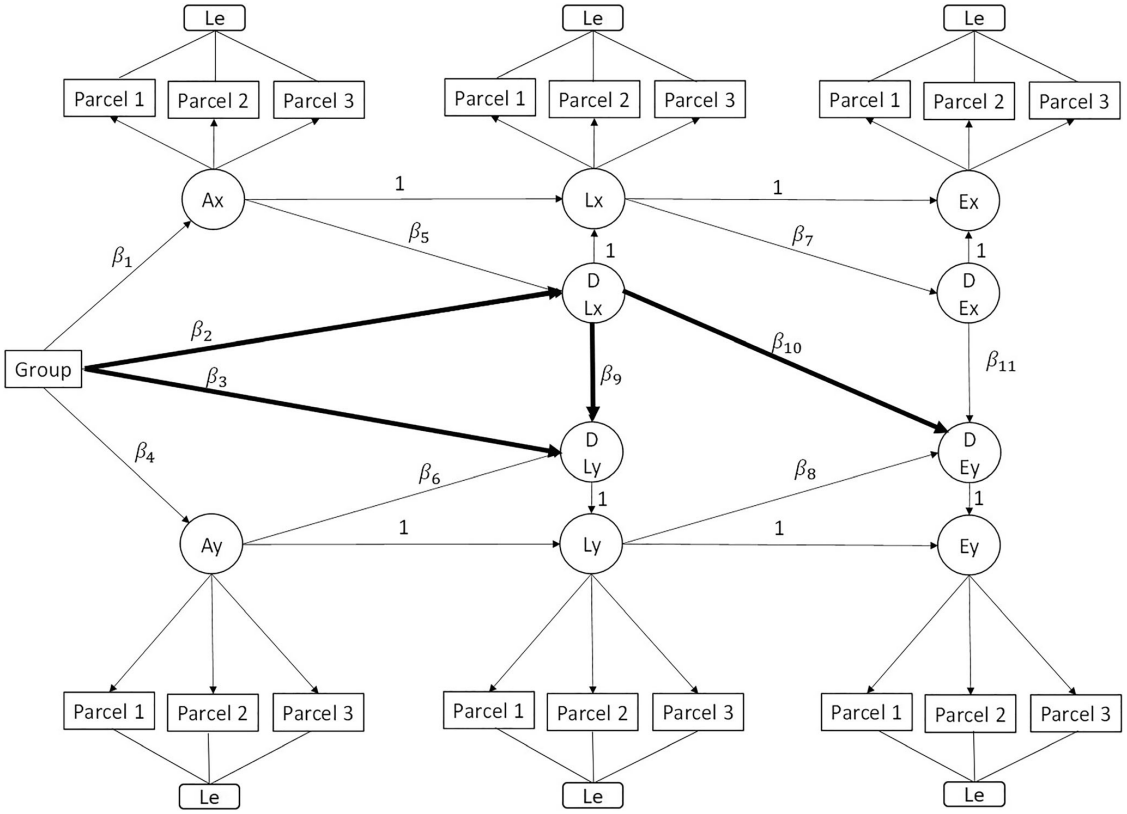

Fig. 1 Latent change score model of mindfulness (*x*) and burnout (*y*). The same model was used separately for each combination of mindfulness facets and burnout dimensions. The essential pathways are bolded. A = pre, L = post, E = fup10, D = latent difference score, Le = individual level. Previously identified structures of the five mindfulness facets (Baer et al. 2006) and three burnout dimensions (Näätänen et al. 2003) were utilized as bases for parcel creation, and the items of both measures were divided into three parcels

the effect of non-normality with a robust full information maximum likelihood estimator. A few outliers represented real observations of the participants with the different intervention effects; thus, they were included in the models. The possible effects of these outlier observations on the study results were evaluated by comparing the results after the exclusion of problematic observations. These examinations showed no significant changes to the results. Standardized model results were reported, from which the magnitudes of the effects were directly observable without further effect size calculations.

The fit of the models was evaluated using the chi-square test (χ^2), comparative fit index (CFI), Tucker-Lewis index (TLI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA). As recommended by Hu and Bentler (1999), a good model fit was assumed when the CFI and TLI were close to 0.95, the SRMR was close to 0.08, and the RMSEA was close to 0.06.

As shown in Fig. 1 (relevant pathways are bolded), β_2, β_9, and β_{10} were the most relevant coefficients to the research questions about the mediation effects. β_2 showed whether the intervention affected the change from pre- to post-measurement in each mindfulness facet. β_9 and β_{10} showed whether the change in a mindfulness facet from pre- to post-measurement predicted the change in a burnout dimension from pre- to post-measurement (β_9) and from post- to fup10 measurement (β_{10}). Furthermore, the pathways $\beta_2 \times \beta_9$ and $\beta_2 \times \beta_{10}$ showed whether the effects of the intervention on the burnout dimensions were mediated by the changes in the mindfulness facets (indirect effects). $\beta_2 \times \beta_9$ showed how the change in the mindfulness facets during the intervention was connected to the change in the burnout dimensions during the intervention. Thus, mindfulness and burnout were measured at the same time points. In addition, $\beta_2 \times \beta_{10}$ showed how the change in the mindfulness facets during the intervention was connected to the change in the burnout dimensions during the follow-up. Thus, mindfulness change was measured before burnout change. β_3 showed whether the intervention had an additional direct effect on the change from pre- to

post-measurement in the burnout dimensions after the mediated indirect effect was considered. A 95% confidence interval for the coefficients (estimate ± 2 standard errors) was calculated to evaluate the differences between the burnout dimensions with regard to the significant predictors of change. Overlapping of the confidence intervals for the equivalent coefficients ($\beta_2 \times \beta_9$, $\beta_2 \times \beta_{10}$, β_2, β_9, and β_{10}) of the mindfulness facets in the case of each burnout dimension indicated that there was no difference in the significance of the predictors of change in the group-level analysis. A lack of overlap meant that the difference was significant.

Results

The means, standard deviations, and correlations for the variables are shown in Table 1. In Table 2, the results of the fit indexes of the change score models are presented for each pair of mindfulness facets and burnout dimensions. All the models had a satisfactory fit with the data.

Mindfulness Facets Mediated Intervention Effects on Burnout Dimensions

Tables 3, 4, 5, 6, and 7 show the β values and their confidence intervals for the models. The tables were grouped based on the mindfulness facets such that each table presented values for all three burnout dimensions when one of the mindfulness facets was considered. The description of the results was based on the values and significances of the coefficients, namely, β_2, β_3, β_9, β_{10}, $\beta_2 \times \beta_9$, and $\beta_2 \times \beta_{10}$. The intervention was effective in alleviating all burnout dimensions. All mindfulness facets improved during the intervention compared with the skills acquisition in the control group (β_2 was significant with all combinations of mindfulness facets and burnout dimensions). There were both similarities and differences between the burnout dimensions in which mindfulness facets were mediators of change (based on the significances of the coefficients β_2, β_9, β_{10}, $\beta_2 \times \beta_9$, and $\beta_2 \times \beta_{10}$ and differences thereof).

Exhaustion Improvements in observing, acting with awareness, non-judging, and non-reacting during the intervention mediated the alleviation of exhaustion during the intervention (significant β_2, β_9, and $\beta_2 \times \beta_9$). None of the significant four facets was more important than the others for the alleviation of exhaustion during the intervention (the confidence intervals overlapped between the facets). Only the improvement in non-judging during the intervention mediated the additional alleviation of exhaustion during the follow-up (significant β_2, β_{10}, and $\beta_2 \times \beta_{10}$). The intervention had an additional direct effect on the alleviation of exhaustion, after controlling for the mediators (significant β_3).

Cynicism Improvements in all five mindfulness facets during the intervention mediated the alleviation of cynicism during the intervention. Improvements in describing and non-judging

Table 2 Model fits for change score models of mindfulness facets and burnout dimensions

Mindfulness	Burnout	χ^2	*p* value	RMSEA	CFI	TLI	SRMR
OB	EX	215.78	.0004	0.047	0.967	0.962	0.072
DE	EX	232.02	< .0001	0.052	0.969	0.964	0.076
AC	EX	247.60	< .0001	0.057	0.955	0.949	0.070
NJ	EX	182.47	.0365	0.033	0.985	0.983	0.055
NR	EX	183.17	.0338	0.033	0.982	0.980	0.056
OB	CY	194.58	.0084	0.038	0.978	0.975	0.065
DE	CY	237.31	< .0001	0.054	0.967	0.963	0.086
AC	CY	228.35	< .0001	0.051	0.965	0.960	0.084
NJ	CY	170.23	.1236	0.026	0.991	0.990	0.066
NR	CY	155.74	.3574	0.014	0.997	0.997	0.054
OB	RE	172.54	.1004	0.027	0.987	0.985	0.065
DE	RE	222.71	.0001	0.049	0.970	0.966	0.075
AC	RE	195.36	.0075	0.039	0.977	0.973	0.065
NJ	RE	200.56	.0037	0.041	0.975	0.972	0.066
NR	RE	142.20	.6627	0.000	10.00	10.01	0.053

OB observing, *DE* describing, *AC* acting with awareness, *NJ* non-judging, *NR* non-reacting, *EX* exhaustion, *CY* cynicism, *RE* reduced professional efficacy, χ^2 chi-square test, *RMSEA* root mean square error of approximation, *CFI* comparative fit index, *TLI* Tucker-Lewis index, *SRMR* standardized root mean square residual

A good model fit was assumed when CFI and TLI were close to 0.95, the SRMR was close to 0.08, and the RMSEA was close to 0.06

Table 3 β values for the models of observing and three burnout dimensions

	Exhaustion					Cynicism					Reduced professional efficacy				
	Estimate	SE	*p*	CI L	CI U	Estimate	SE	*p*	CI L	CI U	Estimate	SE	*p*	CI L	CI U
β_1	0.006	0.079	.938	−0.152	0.164	0.006	0.079	.935	−0.152	0.164	0.004	0.079	.956	−0.154	0.162
β_2	*0.357*	*0.062*	*< .001*	*0.233*	*0.481*	*0.358*	*0.062*	*< .001*	*0.234*	*0.482*	*0.361*	*0.063*	*< .001*	*0.235*	*0.487*
β_3	−0.205	0.073	.005	−0.351	−0.059	−0.126	0.076	.098	−0.278	0.026	−0.126	0.086	.142	−0.298	0.046
β_4	0.083	0.078	.289	−0.073	0.239	−0.066	0.077	.390	−0.220	0.088	0.021	0.085	.803	−0.149	0.191
β_5	−0.466	0.081	< .001	−0.628	−0.304	−0.457	0.080	< .001	−0.617	−0.297	−0.443	0.083	< .001	−0.609	−0.277
β_6	−0.229	0.079	.004	−0.387	−0.071	−0.406	0.069	< .001	−0.544	−0.268	−0.074	0.094	.430	−0.262	0.114
β_7	−0.237	0.092	.010	−0.421	−0.053	−0.249	0.088	.005	−0.425	−0.073	−0.252	0.088	.004	−0.428	−0.076
β_8	−0.203	0.117	.083	−0.437	0.031	−0.312	0.127	.014	−0.566	−0.058	−0.366	0.133	.006	−0.632	−0.100
β_9	*−0.324*	*0.108*	*.003*	*−0.540*	*−0.108*	*−0.225*	*0.080*	*.005*	*−0.385*	*−0.065*	*−0.176*	*0.104*	*.092*	*−0.384*	*0.032*
β_{10}	*−0.133*	*0.087*	*.128*	*−0.307*	*0.041*	*−0.147*	*0.075*	*.049*	*−0.297*	*0.003*	*−0.293*	*0.078*	*< .001*	*−0.449*	*−0.137*
β_{11}	−0.362	0.085	< .001	−0.532	−0.192	−0.304	0.082	< .001	−0.468	−0.140	−0.333	0.076	< .001	−0.485	−0.181
$\beta_2 \times \beta_9$	*−0.116*	*0.043*	*.007*	*−0.202*	*−0.030*	*−0.080*	*0.033*	*0.015*	*−0.146*	*−0.014*	*−0.064*	*0.039*	*.107*	*−0.142*	*0.014*
$\beta_2 \times \beta_{10}$	*−0.047*	*0.034*	*.162*	*−0.115*	*0.021*	*−0.053*	*0.028*	*0.061*	*−0.109*	*0.003*	*−0.106*	*0.035*	*.002*	*−0.176*	*−0.036*

The most relevant *β* values for answering the research questions are italicized

SE standard error, *CI L* 95% confidence interval lower, *CI U* 95% confidence interval upper

during the intervention mediated the additional alleviation of cynicism during the follow-up. None of the significant mindfulness facets (five during the intervention and two during the follow-up) was more important than the others for the alleviation of cynicism.

Reduced Professional Efficacy Improvements in describing, acting with awareness, non-judging, and non-reacting during the intervention mediated the alleviation of reduced professional efficacy during the intervention. Improvements in observing, describing, and non-judging during the intervention mediated the additional alleviation of reduced professional efficacy during the follow-up. None of the significant mindfulness facets (four during the intervention and three during the follow-up) was more important than the others for the alleviation of reduced professional efficacy.

Table 4 *β* values for the models of describing and three burnout dimensions

	Exhaustion					Cynicism					Reduced professional efficacy				
	Estimate	SE	*p*	CI L	CI U	Estimate	SE	*p*	CI L	CI U	Estimate	SE	*p*	CI L	CI U
β_1	0.022	0.073	.767	−0.124	0.168	0.021	0.073	.770	−0.125	0.167	0.022	0.073	.768	−0.124	0.168
β_2	*0.349*	*0.064*	*< .001*	*0.221*	*0.477*	*0.348*	*0.064*	*< .001*	*0.220*	*0.476*	*0.349*	*0.065*	*< .001*	*0.219*	*0.479*
β_3	−0.246	0.073	.001	−0.392	−0.100	−0.117	0.071	.099	−0.259	0.025	−0.115	0.086	.179	−0.287	0.057
β_4	0.083	0.078	.285	−0.073	0.239	−0.066	0.077	.388	−0.220	0.088	0.021	0.086	.809	−0.151	0.193
β_5	−0.407	0.070	< .001	−0.547	−0.267	−0.403	0.068	< .001	−0.539	−0.267	−0.396	0.071	< .001	−0.538	−0.254
β_6	−0.254	0.078	.001	−0.410	−0.098	−0.421	0.071	< .001	−0.563	−0.279	−0.056	0.097	.564	−0.250	0.138
β_7	−0.146	0.084	.084	−0.314	0.022	−0.156	0.082	.058	−0.320	0.008	−0.160	0.083	.055	−0.326	0.006
β_8	−0.255	0.117	.029	−0.489	−0.021	−0.328	0.132	.013	−0.592	−0.064	−0.342	0.132	.010	−0.606	−0.078
β_9	*−0.173*	*0.097*	*.072*	*−0.367*	*0.021*	*−0.250*	*0.094*	*.008*	*−0.438*	*−0.062*	*−0.217*	*0.101*	*.032*	*−0.419*	*−0.015*
β_{10}	*−0.185*	*0.097*	*.056*	*−0.379*	*0.009*	*−0.165*	*0.077*	*.032*	*−0.319*	*−0.011*	*−0.230*	*0.082*	*.005*	*−0.394*	*−0.066*
β_{11}	−0.311	0.074	< .001	−0.459	−0.163	−0.210	0.082	.011	−0.374	−0.046	−0.135	0.089	.127	−0.313	0.043
$\beta_2 \times \beta_9$	*−0.060*	*0.036*	*.096*	*−0.132*	*0.012*	*−0.087*	*0.037*	*.019*	*−0.161*	*−0.013*	*−0.076*	*0.037*	*.042*	*−0.150*	*−0.002*
$\beta_2 \times \beta_{10}$	*−0.064*	*0.037*	*.078*	*−0.138*	*0.010*	*−0.058*	*0.029*	*.046*	*−0.116*	*0.000*	*−0.080*	*0.033*	*.015*	*−0.146*	*−0.014*

The most relevant *β* values for answering the research questions are italicized

SE standard error, *CI L* 95% confidence interval lower, *CI U* 95% confidence interval upper

Table 5 β values for the models of acting with awareness and three burnout dimensions

	Exhaustion					Cynicism					Reduced professional efficacy				
	Estimate	SE	*p*	CI L	CI U	Estimate	SE	*p*	CI L	CI U	Estimate	SE	*p*	CI L	CI U
β_1	−0.108	0.071	.127	−0.250	0.034	−0.110	0.072	.126	−0.254	0.034	−0.110	0.071	.124	−0.252	0.032
β_2	*0.181*	*0.056*	*.001*	*0.069*	*0.293*	*0.186*	*0.057*	*.001*	*0.072*	*0.300*	*0.184*	*0.057*	*.001*	*0.070*	*0.298*
β_3	−0.238	0.070	.001	−0.378	−0.098	−0.130	0.073	.073	−0.276	0.016	−0.100	0.083	.227	−0.266	0.066
β_4	0.083	0.078	.287	−0.073	0.239	−0.069	0.077	.372	−0.223	0.085	0.025	0.086	.771	−0.147	0.197
β_5	−0.581	0.053	< .001	−0.687	−0.475	−0.569	0.056	< .001	−0.681	−0.457	−0.571	0.055	< .001	−0.681	−0.461
β_6	−0.230	0.080	.004	−0.390	−0.070	−0.380	0.071	< .001	−0.522	−0.238	−0.015	0.090	.866	−0.195	0.165
β_7	−0.265	0.094	.005	−0.453	−0.077	−0.266	0.092	.004	−0.450	−0.082	−0.268	0.089	.003	−0.446	−0.090
β_8	−0.233	0.113	.040	−0.459	−0.007	−0.221	0.130	.088	−0.481	0.039	−0.273	0.119	.022	−0.511	−0.035
β_9	*−0.293*	*0.082*	*< .001*	*−0.457*	*−0.129*	*−0.271*	*0.088*	*.002*	*−0.447*	*−0.095*	*−0.382*	*0.092*	*< .001*	*−0.566*	*−0.198*
β_{10}	*−0.114*	*0.087*	*.190*	*−0.288*	*0.060*	*−0.139*	*0.074*	*.061*	*−0.287*	*0.009*	*−0.193*	*0.077*	*.012*	*−0.347*	*−0.039*
β_{11}	−0.414	0.081	< .001	−0.576	−0.252	−0.379	0.080	< .001	−0.539	−0.219	−0.293	0.085	.001	−0.463	−0.123
$\beta_2 \times \beta_9$	*−0.053*	*0.023*	*.023*	*−0.099*	*−0.007*	*−0.050*	*0.024*	*.038*	*−0.098*	*−0.002*	*−0.070*	*0.029*	*.015*	*−0.128*	*−0.012*
$\beta_2 \times \beta_{10}$	*−0.021*	*0.017*	*.224*	*−0.055*	*0.013*	*−0.026*	*0.016*	*.099*	*−0.058*	*0.006*	*−0.036*	*0.018*	*.053*	*−0.072*	*0.000*

The most relevant β values for answering the research questions are italicized

SE standard error, *CI L* 95% confidence interval lower, *CI U* 95% confidence interval upper

Summary of the Similarities and Differences Between Burnout Dimensions The improvements in the mindfulness facets mediated the intervention effects on all burnout dimensions both during the intervention and 10-month follow-up. Hence, the general hypothesis was supported. A large spread of mindfulness facets (4–5 for each dimension) needed to improve to have significant reductions in burnout dimensions during the intervention. The differences in significant facets between the dimensions were minor when the short-term burnout change during the intervention was considered. However, there were some differences between the dimensions when the additional long-term burnout change during the 10-month follow-up was examined. Improvement in non-judging mediated the changes in all burnout dimensions during the follow-up. For exhaustion, it was the only significant mediator during the follow-up, whereas for cynicism and

Table 6 β values for the models of non-judging and three burnout dimensions

	Exhaustion					Cynicism					Reduced professional efficacy				
	Estimate	SE	*p*	CI L	CI U	Estimate	SE	*p*	CI L	CI U	Estimate	SE	*p*	CI L	CI U
β_1	−0.136	0.075	.069	−0.286	0.014	−0.137	0.076	.069	−0.289	0.015	−0.140	0.075	.062	−0.290	0.010
β_2	*0.238*	*0.069*	*.001*	*0.100*	*0.376*	*0.240*	*0.068*	*< .001*	*0.104*	*0.376*	*0.242*	*0.069*	*< .001*	*0.104*	*0.380*
β_3	−0.215	0.070	.002	−0.355	−0.075	−0.086	0.070	.221	−0.226	0.054	−0.090	0.084	.288	−0.258	0.078
β_4	0.083	0.078	.285	−0.073	0.239	−0.068	0.077	.375	−0.222	0.086	0.030	0.088	.736	−0.146	0.206
β_5	−0.382	0.062	< .001	−0.506	−0.258	−0.369	0.065	< .001	−0.499	−0.239	−0.376	0.063	< .001	−0.502	−0.250
β_6	−0.240	0.077	.002	−0.394	−0.086	−0.352	0.071	< .001	−0.494	−0.210	0.032	0.101	.754	−0.170	0.234
β_7	−0.311	0.080	< .001	−0.471	−0.151	−0.313	0.080	< .001	−0.473	−0.153	−0.307	0.081	< .001	−0.469	−0.145
β_8	−0.214	0.110	.052	−0.434	0.006	−0.309	0.114	.007	−0.537	−0.081	−0.279	0.112	.013	−0.503	−0.055
β_9	*−0.292*	*0.095*	*.002*	*−0.482*	*−0.102*	*−0.381*	*0.090*	*< .001*	*−0.561*	*−0.201*	*−0.363*	*0.100*	*< .001*	*−0.563*	*−0.163*
β_{10}	*−0.291*	*0.096*	*.002*	*−0.483*	*−0.099*	*−0.262*	*0.086*	*.002*	*−0.434*	*−0.090*	*−0.283*	*0.096*	*.003*	*−0.475*	*−0.091*
β_{11}	−0.248	0.086	.004	−0.420	−0.076	−0.290	0.082	< .001	−0.454	−0.126	−0.306	0.105	.004	−0.516	−0.096
$\beta_2 \times \beta_9$	*−0.069*	*0.031*	*.025*	*−0.131*	*−0.007*	*−0.092*	*0.034*	*.007*	*−0.160*	*−0.024*	*−0.088*	*0.035*	*.012*	*−0.158*	*−0.018*
$\beta_2 \times \beta_{10}$	*−0.069*	*0.028*	*.012*	*−0.125*	*−0.013*	*−0.063*	*0.029*	*.030*	*−0.121*	*−0.005*	*−0.068*	*0.031*	*.029*	*−0.130*	*−0.006*

The most relevant β values for answering the research questions are italicized

SE standard error, *CI L* 95% confidence interval lower, *CI U* 95% confidence interval upper

Table 7 β values for the models of non-reacting and three burnout dimensions

	Exhaustion					Cynicism					Reduced professional efficacy				
	Estimate	SE	p	CI L	CI U	Estimate	SE	p	CI L	CI U	Estimate	SE	p	CI L	CI U
β_1	−0.124	0.074	.093	−0.272	0.024	−0.125	0.074	.092	−0.273	0.023	−0.126	0.074	.088	−0.274	0.022
β_2	*0.273*	*0.069*	*< .001*	*0.135*	*0.411*	*0.274*	*0.069*	*< .001*	*0.136*	*0.412*	*0.274*	*0.069*	*< .001*	*0.136*	*0.412*
β_3	−0.198	0.076	.009	−0.350	−0.046	−0.098	0.071	.165	−0.240	0.044	−0.084	0.081	.301	−0.246	0.078
β_4	0.084	0.077	.279	−0.070	0.238	−0.068	0.077	.378	−0.222	0.086	0.023	0.086	.786	−0.149	0.195
β_5	−0.438	0.072	< .001	−0.582	−0.294	−0.428	0.070	< .001	−0.568	−0.288	−0.430	0.071	< .001	−0.572	−0.288
β_6	−0.246	0.078	.002	−0.402	−0.090	−0.368	0.071	< .001	−0.510	−0.226	−0.023	0.092	.805	−0.207	0.161
β_7	−0.283	0.087	.001	−0.457	−0.109	−0.290	0.086	.001	−0.462	−0.118	−0.287	0.086	.001	−0.459	−0.115
β_8	−0.256	0.118	.030	−0.492	−0.020	−0.318	0.122	.009	−0.562	−0.074	−0.303	0.127	.017	−0.557	−0.049
β_9	*−0.317*	*0.103*	*.002*	*−0.523*	*−0.111*	*−0.315*	*0.097*	*.001*	*−0.509*	*−0.121*	*−0.338*	*0.101*	*.001*	*−0.540*	*−0.136*
β_{10}	*−0.193*	*0.117*	*.098*	*−0.427*	*0.041*	*−0.058*	*0.081*	*.474*	*−0.220*	*0.104*	*−0.103*	*0.090*	*.252*	*−0.283*	*0.077*
β_{11}	−0.333	0.089	< .001	−0.511	−0.155	−0.344	0.073	< .001	−0.490	−0.198	−0.313	0.080	< .001	−0.473	−0.153
$\beta_2 \times \beta_9$	*−0.087*	*0.038*	*.024*	*−0.163*	*−0.011*	*−0.086*	*0.035*	*.015*	*−0.156*	*−0.016*	*−0.092*	*0.037*	*.013*	*−0.166*	*−0.018*
$\beta_2 \times \beta_{10}$	*−0.053*	*0.034*	*.125*	*−0.121*	*0.015*	*−0.016*	*0.023*	*.490*	*−0.062*	*0.030*	*−0.028*	*0.027*	*.295*	*−0.082*	*0.026*

The most relevant β values for answering the research questions are italicized

SE standard error, *CI L* 95% confidence interval lower, *CI U* 95% confidence interval upper

reduced professional efficacy, improvements in describing and observing were additionally needed. Based on confidence intervals, none of the significant facets appeared to be more important than others for the alleviation of burnout dimensions. However, improvement in non-judging systematically mediated both the short- and long-term reductions in all burnout dimensions and could thus be considered a central facet for burnout change. Exhaustion differed from the other burnout dimensions in a way that the intervention had an additional direct alleviating effect on it, after controlling for the mediators.

Discussion

This study investigated which of the mindfulness facets (observing, describing, acting with awareness, non-judging, and non-reacting) mediated the effects on different dimensions of burnout (exhaustion, cynicism, and reduced professional efficacy) during a MAV intervention and a 10-month follow-up. This study indicated that improving mindfulness skills using a MAV intervention could be effective in reducing burnout symptoms. Besides, the current MAV intervention appeared to be effective for all burnout dimensions, although, in previous studies, MAV interventions have consistently shown effects only on certain dimensions (Iancu et al. 2018). In the current study, mindfulness was an essential process behind the burnout reduction, as expected in theoretical models of interventions using mindfulness (Crane et al. 2017; Hayes et al. 2012). Furthermore, this study suggested that skills acquirement during an intervention can have long-lasting positive effects on burnout level even after the intervention, given that mindfulness improvement during the intervention mediated burnout alleviation also during the follow-up. The present findings were in line with previous mediation results of the role of mindfulness in burnout alleviation (Roeser et al. 2013). However, in this study, mediation effects were observed for an extended 10-month period compared with those of Roeser et al. (2013), which had a 3-month follow-up. This study also offered insights into the possible importance of the specific mindfulness facets for the alleviation of burnout symptoms.

Similarities and Differences Between Burnout Dimensions in Mediators of Change

The current study indicated that it could be essential to develop several mindfulness facets simultaneously to induce a significant change in burnout dimensions, although, in previous cross-sectional research, certain mindfulness facets have been more strongly associated with burnout (Kriakous et al. 2019; Taylor and Millear 2016). A large spread of the mindfulness facets mediated the change in burnout dimensions during the intervention, and the differences between the dimensions were minor. The importance of several mindfulness facets for short-term burnout change can be understood in the context of burnout literature. Burnout is a persistent, job-related state of ill-being that has wide-ranging effects for the functioning of the employee (Leiter et al. 2014; Morse et al. 2012). Besides, Warr (2012) characterized burnout as a cognitive-affective disorder that comprises thoughts, feelings, and memories and encompasses a wide range of experiences in daily living.

Because of the all-encompassing effects of burnout, likely, a profound change in a way a person views their situation is required to alleviate burnout. Hence, simultaneous improvement in several mindfulness facets could be needed to achieve such a change. Improvement in observing and describing skills could help a person identify the factors associated with burnout, whereas improvement in acting with awareness could help the person take action to affect these factors in a way that the possibility for recovery increases. Furthermore, better non-judging and non-reacting skills could help one adopt an accepting and defused stance towards even difficult experiences and focus their resources on recovery.

Some mindfulness facets even mediated the additional reduction of burnout during the 10-month follow-up. For a long-term change in burnout dimensions, the skills of non-judging (for all dimensions), describing (for cynicism and reduced professional efficacy), and observing (for reduced professional efficacy) appeared to be more relevant than the others. If several mindfulness facets are needed at the beginning of burnout recovery to induce profound change, the unique relevance of some mindfulness facets over the others could be more visible after a basic level of all skills is achieved. The significance of non-judging, describing, and observing for further alleviation of burnout can be understood in the context of the cognitive-affective description of burnout (Warr 2012). Exhaustion could be considered a more affective component of burnout since it refers to the feelings of emotional and physical strain after work (Näätänen et al. 2003). When a non-judgmental way to evaluate experiences increases, a person could experience more self-compassion and be less demanding when working. These changes could help to reduce the experienced strain and thus alleviate exhaustion. In turn, cynicism and professional efficacy could be described as more cognitive components of burnout, given that they involve interpretations of oneself, others, and situations (Näätänen et al. 2003). A new way to observe and describe experiences could be needed for one to continuously develop a non-judging stance towards their conceptualizations of themselves and others. On the other hand, non-judging skills could help one benefit from better observing and describing skills and change the interpretations of themselves and situations in a way that cynicism and reduced professional efficacy alleviate. The importance of joint development of observation-related facets (observing and describing) and reaction-related facets (non-judging and non-reacting) have also been noticed with depression (Heeren et al. 2015; Querstret et al. 2018).

Non-judging as a Central Skill in Burnout Change

Only non-judging (measured here with reverse-scored items, e.g., "I tell myself I shouldn't be feeling the way I'm feeling." and "I make judgments about whether my thoughts are good or bad.") systematically mediated the changes in all burnout dimensions during both the intervention and the 10-month follow-up. Hence, improvement in non-judging skills could be the key to a long-term change in one's way of seeing themselves and adjusting their behavior to support burnout alleviation. There is often a discrepancy between the personal standards and perceived performance of people developing burnout symptoms (Ozbilir et al. 2015). Furthermore, low self-rated professional efficacy could lead to a situation where one refuses to rest and works even longer hours to compensate for one's perceived shortcomings. The improvement of non-judging could help one process their expectations and develop a less guilt-inducing attitude towards themselves. When non-judging skills are improved, it could be easier to recognize the over-demanding expectations and change one's behavior accordingly. Better non-judging skills could also help to adopt a more self-compassionate way to act with these expectations. One could acknowledge the feelings of exhaustion and give space for recovery in daily living. Non-judging stance towards experiences could also prevent automatic negative evaluations of job conditions and thereby alleviate cynicism. In line with the present findings, high non-judging has been linked to lower levels of exhaustion and cynicism in cross-sectional research (Taylor and Millear 2016).

Interestingly, in the current study, the role of acting with awareness was not as pronounced as in cross-sectional burnout studies (Kriakous et al. 2019; Yang et al. 2017). Compared with the present sample that included only those with high initial burnout, the participants in the previous studies experienced varying levels of burnout symptoms (Kriakous et al. 2019; Yang et al. 2017). Acting with awareness could be an important skill to mitigate the risk factors for developing severe burnout. Furthermore, when burnout symptoms are mild, there could be more resources for acting with conscious intention to improve one's well-being. However, when exhaustion has depleted resources of the employee, and when the evaluations of one's capabilities to handle job demands have become more negative, taking conscious action to change the situation could be overwhelming. Thus, when severe burnout has developed, improving non-judging skills could be more beneficial in helping the person give time for rest and observe themselves and the situation with less judgment and negativity. The current findings indicated that with a MAV intervention, non-judging skills could be improved to a level that yields positive long-term effects on burnout. This result is encouraging for the further study of cost-effective ways to increase relevant skills for burnout alleviation.

Limitations and Future Research

More research is needed to generate conclusions on the associations between mindfulness facets and burnout dimensions. In this study, mindfulness and burnout were investigated with self-report measures, which raised the possibility of common

method bias. Nevertheless, these phenomena are best evaluated by using self-reports, while the use of longitudinal data diminishes the likelihood of common method bias (Doty and Glick 1998). The differences between burnout dimensions regarding essential mindfulness facets were evaluated based on confidence intervals, which showed maximums and minimums for the mediation effects on the present sample. With a larger sample size, the non-significant mediators could become significant. Before the post-measurement, people experiencing more exhaustion and cynicism were more likely to drop out, which raised the question of whether the intervention asked too much of the participants. However, all the participants had high initial burnout, as evaluated by the BBI (Näätänen et al. 2003). Most completed the intervention, and the dropout rate during the follow-up was comparable to that of Roeser et al. (2013) with shorter follow-up. The generalizability of the results is restricted because the sample mainly comprised highly educated women. This group could have been more motivated to participate in an intervention that contained a substantial amount of homework and group participation. However, the investigated intervention was not an exception in the requirement of homework and participation (Luken and Sammons 2016). More research is needed on whether interventions similar to that investigated in the current study are viable, for example, for less educated or male working populations. Further study is needed to determine whether the present mediation results could be replicated in other interventions using mindfulness. Furthermore, other processes affecting MAV intervention results should be studied besides mindfulness processes since the present intervention had an additional direct effect on exhaustion, after controlling for the mediators.

Author Contributions SMK: designed and executed the study, assisted in the data analyses, and wrote the paper. AP: led the research project and planning of the intervention and aided in the study design and paper writing. AT: analyzed the data and wrote part of the "Method" and "Results" sections. AM: collaborated in the study design and paper writing. RL: collaborated in the study design and paper writing. All authors approved the final version of the manuscript for submission.

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Data Availability All data related to this study are available from the authors upon request. The data are not yet publicly available because the project group is still processing it.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethics Statement This study was conducted in compliance with the ethical standards of APA and the institutional and national research committee, as well as following the 1964 Declaration of Helsinki, its later amendments, and comparable ethical standards. Ethical approval was provided by the Research Ethics Committee of the Central Finland Health Care District.

Informed Consent Statement All participants provided informed consent.

References

Ahola, K., Toppinen-Tanner, S., & Seppänen, J. (2017). Interventions to alleviate burnout symptoms and to support return to work among employees with burnout: systematic review and meta-analysis. *Burnout Research, 4*, 1–11. https://doi.org/10.1016/j.burn.2017.02.001.

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27–45. https://doi.org/10.1177/1073191105283504.

Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., Walsh, E., Duggan, D., & Williams, J. M. G. (2008). Construct validity of the Five Facet Mindfulness Questionnaire in meditating and nonmeditating samples. *Assessment, 15*(3), 329–342. https://doi.org/10.1177/1073191107313003.

Bergman, A. L., Christopher, M. S., & Bowen, S. (2016). Changes in facets of mindfulness predict stress and anger outcomes for police officers. *Mindfulness, 7*(4), 851–858. https://doi.org/10.1007/s12671-016-0522-z.

Crane, R. S., Brewer, J., Feldman, C., Kabat-Zinn, J., Santorelli, S., Williams, J. M. G., & Kuyken, W. (2017). What defines mindfulness-based programs? The warp and the weft. *Psychological Medicine, 47*(6), 990–999. https://doi.org/10.1017/S0033291716003317.

Doty, D. H., & Glick, W. H. (1998). Common methods bias: does common methods variance really bias results? *Organizational Research Methods, 1*(4), 374–406. https://doi.org/10.1177/109442819814002.

Fletcher, L., & Hayes, S. C. (2005). Relational frame theory, acceptance and commitment therapy, and a functional analytic definition of mindfulness. *Journal of Rational-Emotive & Cognitive-Behavior Therapy, 23*(4), 315–336. https://doi.org/10.1007/s10942-005-0017-7.

Hayes, S. C., & Hofmann, S. G. (2017). The third wave of cognitive behavioral therapy and the rise of process-based care. *World Psychiatry, 16*(3), 245–246. https://doi.org/10.1002/wps.20442.

Hayes, S. C., Pistorello, J., & Levin, M. E. (2012). Acceptance and commitment therapy as a unified model of behavior change. *The Counseling Psychologist, 40*, 976–1002. https://doi.org/10.1177/0011000012460836.

Heeren, A., Deplus, S., Peschard, V., Nef, F., Kotsou, I., Dierickx, C., Mondillon, L., Robinaugh, D. J., & Philippot, P. (2015). Does change in self-reported mindfulness mediate the clinical benefits of mindfulness training? A controlled study using the French translation of the Five Facet Mindfulness Questionnaire. *Mindfulness, 6*(3), 553–559. https://doi.org/10.1007/s12671-014-0287-1.

Hofmann, S. G., & Hayes, S. C. (2019). The future of intervention science: process-based therapy. *Clinical Psychological Science: A Journal of the Association for Psychological Science, 7*(1), 37–50. https://doi.org/10.1177/2167702618772296.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55. https://doi.org/10.1080/10705519909540118.

Iancu, A. E., Rusu, A., Măroiu, C., Păcurar, R., & Maricuţoiu, L. P. (2018). The effectiveness of interventions aimed at reducing teacher burnout: a meta-analysis. *Educational Psychology Review, 30*(2), 373–396. https://doi.org/10.1007/s10648-017-9420-8.

Kriakous, S. A., Elliott, K. A., & Owen, R. (2019). Coping, mindfulness, stress, and burnout among forensic health care professionals. *Journal of Forensic Psychology Research and Practice, 19*(2), 128–146. https://doi.org/10.1080/24732850.2018.1556545.

Leiter, M. P., Bakker, A. B., & Maslach, C. (2014). *Burnout at work: a psychological perspective*. East Sussex: Psychology Press.

Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, K. F. (2002). To parcel or not to parcel: exploring the question, weighing the merits. *Structural Equation Modeling, 9*(2), 151–173. https://doi.org/10.1207/S15328007SEM0902_1.

Lloyd, J., Bond, F. W., & Flaxman, P. E. (2013). The value of psychological flexibility: examining psychological mechanisms underpinning a cognitive behavioural therapy intervention for burnout. *Work and Stress, 27*(2), 181–199. https://doi.org/10.1080/02678373.2013.782157.

Luken, M., & Sammons, A. (2016). Systematic review of mindfulness practice for reducing job burnout. *The American Journal of Occupational Therapy, 70*, 1–13. https://doi.org/10.5014/ajot.2016.016956.

Mäkikangas, A., & Kinnunen, U. (2016). The person-oriented approach to burnout: a systematic review. *Burnout Research, 3*, 11–23. https://doi.org/10.1016/j.burn.2015.12.002.

McArdle, J. J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual Review of Psychology, 60*, 577–605. https://doi.org/10.1146/60.110707.163612.

McArdle, J. J., & Hamagami, F. (2001). Latent difference score structural models for linear dynamic analyses with incomplete longitudinal data. In L. M. Collins & A. G. Sayer (Eds.), *Decade of behavior. New methods for the analysis of change* (pp. 139–175). Washington, DC: American Psychological Association. https://doi.org/10.1037/10409-005.

Morse, G., Salyers, M. P., Rollins, A. L., Monroe-DeVita, M., & Pfahler, C. (2012). Burnout in mental health services: a review of the problem and its remediation. *Administration and Policy in Mental Health and Mental Health Services Research, 39*(5), 341–352. https://doi.org/10.1007/s10488-011-0352-1.

Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). Los Angeles: Muthén & Muthén.

Näätänen, P., Aro, A., Matthiesen, S., & Salmela-Aro, K. (2003). *Bergen burnout indicator 15*. Helsinki: Edita.

Ozbilir, T., Day, A., & Catano, V. M. (2015). Perfectionism at work: an investigation of adaptive and maladaptive perfectionism in the workplace among Canadian and Turkish employees. *Applied Psychology, 64*(1), 252–280. https://doi.org/10.1111/apps.12032.

Puolakanaho, A., Tolvanen, A., Kinnunen, S. M., & Lappalainen, R. (2020). A psychological flexibility -based intervention for burnout: a randomized controlled trial. *Journal of Contextual Behavioral Science, 15*, 52–67. https://doi.org/10.1016/j.jcbs.2019.11.007.

Querstret, D., Cropley, M., & Fife-Schaw, C. (2016). Internet-based instructor-led mindfulness for work-related rumination, fatigue, and sleep: assessing facets of mindfulness as mechanisms of change. A randomized waitlist control trial. *Journal of Occupational Health Psychology, 22*(2), 153–169. https://doi.org/10.1037/ocp0000028.

Querstret, D., Cropley, M., & Fife-Schaw, C. (2018). The effects of an online mindfulness intervention on perceived stress, depression and anxiety in a non-clinical sample: a randomised waitlist control trial. *Mindfulness, 9*(6), 1825–1836. https://doi.org/10.1007/s12671-018-0925-0.

Roeser, R. W., Schonert-Reichl, K. A., Jha, A., Cullen, M., Wallace, L., Wilensky, R., Oberle, E., Thomson, K., Taylor, C., & Harrison, J. (2013). Mindfulness training and reductions in teacher stress and burnout: results from two randomized, waitlist-control field trials. *Journal of Education & Psychology, 105*(3), 787–804. https://doi.org/10.1037/a0032093.

Salmela-Aro, K., Rantanen, J., Hyvönen, K., Tilleman, K., & Feldt, T. (2011). Bergen Burnout Inventory: reliability and validity among Finnish and Estonian managers. *International Archives of Occupational and Environmental Health, 84*(6), 635–645. https://doi.org/10.1007/s00420-010-0594-3.

Taylor, N. Z., & Millear, P. M. R. (2016). The contribution of mindfulness to predicting burnout in the workplace. *Personality and Individual Differences, 89*, 123–128. https://doi.org/10.1016/j.paid.2015.10.005.

Warr, P. (2012). How to think about and measure psychological well-being. In R. R. Sinclair, M. Wang, & L. E. Tetrick (Eds.), *Research methods in occupational health psychology: measurement, design, and data analysis* (pp. 76–90). Abingdon: Routledge.

Waters, C. S., Frude, N., Flaxman, P. E., & Boyd, J. (2018). Acceptance and commitment therapy (ACT) for clinically distressed health care workers: waitlist-controlled evaluation of an ACT workshop in a routine practice setting. *The British Journal of Clinical Psychology, 57*(1), 82–98. https://doi.org/10.1111/bjc.12155.

Williams, M., & Penman, D. (2011). *Mindfulness: a practical guide to finding peace in a frantic world*. London: Piatkus.

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: an evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement, 73*(6), 913–934. https://doi.org/10.1177/0013164413495237.

Yang, S., Meredith, P., & Khan, A. (2017). Is mindfulness associated with stress and burnout among mental health professionals in Singapore? *Psychology, Health & Medicine, 22*(6), 673–679. https://doi.org/10.1080/13548506.2016.1220595.

II

DOES MINDFULNESS-, ACCEPTANCE-, AND VALUE-BASED INTERVENTION ALLEVIATE BURNOUT? - A PERSON-CENTERED APPROACH

by

Sanna Kinnunen, Anne Puolakanaho, Asko Tolvanen, Anne Mäkikangas, & Raimo Lappalainen, 2019.

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Does Mindfulness-, Acceptance-, and Value-Based Intervention Alleviate Burnout? - A Person-Centered Approach

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Abstract

This study investigated individual differences in changes in burnout symptoms during a brief mindfulness-, acceptance-, and value-based (MAV) intervention. It also studied whether the changes in burnout were simultaneous with the changes in mindfulness skills. The role of practices and learning experiences in these changes were investigated. The participants were employees of various occupations (n = 105, 80% women, mean age = 48 years). Latent profile analysis was used to investigate the associations between burnout and mindfulness skills during the intervention and a four-month follow-up period. Six distinct profiles were found that differed in levels and changes of both burnout and mindfulness skills. Burnout was reduced and mindfulness skills increased with large effect sizes in three of the profiles (47.4% of the participants). Two profiles (31.1%) presented smaller changes in burnout but had significant increases in mindfulness skills. One profile (11.5%) did not benefit from the intervention. The obtained profiles were compared on practice quantity and frequency, practice continuation, and learning experiences. There were no differences between the profiles in the practice quantity or frequency during the intervention. However, the profiles with the most beneficial changes showed higher learning during the intervention and continued to practice more often after the intervention. These findings show that there are considerable differences in the responses to a brief MAV intervention. The investigated intervention turned out to be effective in alleviating burnout symptoms, even when the initial burnout was high. Attention should be devoted to enhancing learning and practice continuation to improve intervention outcomes.

Keywords: burnout, mindfulness, practice, learning, acceptance and commitment therapy, intervention

Does Mindfulness-, Acceptance-, and Value-Based Intervention Alleviate Burnout? - A Person-Centered Approach

Burnout is a significant problem that threatens the health and work ability of the population (Ahola & Hakanen, 2014). In the Finnish Health 2000 Study, 27.9% of working Finns reported mild burnout symptoms and 2.5% experienced serious symptoms (Ahola, Honkonen, Kalimo, Nykyri, Aromaa, & Lönnqvist, 2004). After this, burnout symptoms in the Finnish working population have decreased somewhat (Suvisaari et al., 2012), but are still considerable. Effective alleviation of burnout is important to mitigate its adverse effects. Mindfulness-, acceptance-, and value-based (MAV) interventions have been noticed to reduce employees' distress and burnout (e.g., Khoury, Sharma, Rush, & Fournier, 2015; Lloyd, Bond, & Flaxman, 2013). The present study used a person-centered approach to investigate the effectiveness and the change mechanisms of MAV intervention on burnout. This approach generated new knowledge of individual variation in burnout development during and after the intervention and offered better understanding of how these differences are related to skills practiced during the intervention. The person-centered approach helped to determine to whom the intervention is beneficial and under what circumstances. This kind of knowledge can be used both to improve intervention effectiveness and to direct interventions to those that are most likely to benefit from them.

Burnout and MAV interventions

Burnout is defined as a persistent, work-related state of ill-being that is characterized by dimensions of exhaustion, cynicism, and reduced professional efficacy (Maslach, Jackson, & Leiter, 1996; Näätänen, Aro, Matthiesen, & Salmela-Aro, 2003). Mindfulness and acceptance skills, as well as values commitment have been identified to account for a significant amount of the variance of burnout-related ill-being beyond work-related factors (e.g., job control)

(Vilardaga et al., 2011), indicating that MAV processes are important to consider in attempts to reduce burnout. Mindfulness refers to the awareness that emerges from paying full attention to the present experience non-judgmentally (Kabat-Zinn, 2003). Acceptance entitles willingness to experience external and internal events as they are, without evaluation or avoidance (Hayes, 2004; Kabat-Zinn, 2003). From a mindful and accepting stance, it is possible to confront difficult psychological content without getting entangled with it, and to overcome barriers for pursuing valued life (Hayes, Bond, Barnes-Holmes, & Austin 2006). Mindfulness and acceptance practices can help reduce the power of one's evaluative mental models (Hayes, 2004), thereby allowing people to function more flexibly in situations, and to be more accepting towards oneself and others. Values have been included into MAV interventions from acceptance and commitment therapy (ACT), expressing the importance of value-based actions in making lasting changes (Hayes, 2004; Hayes et al., 2006). Values give meaning to life and motivate one's actions.

In accordance with the findings of Vilardaga et al. (2010), MAV interventions have been effective in reducing stress and burnout (e.g. Brinkborg, Michanek, Hesser, & Berglund, 2011, Khoury et al., 2015; Lloyd et al., 2013; Regehr, Glancy, Pitts, & LeBlanc, 2014; Virgili, 2015). In general, good MAV skills are associated with better job performance and goal-related actions, as well as improved well-being (e.g., Haeys, 2004; Hayes et al., 2006; Kabat-Zinn, 2003). In addition, different MAV processes have been found to promote change (i.e., decrease in stress and burnout) (e.g., Khoury et al., 2015; Lloyd et al., 2013). However, the effect sizes in the intervention studies have been relatively small for burnout reduction (e.g., Brinkborg et al., 2011; Khoury et al., 2015; Lloyd et al., 2013; Regehr et al., 2014), questioning the clinical significance of the effects. Previous research has relied on a variable-centered approach which focuses on the

relations between variables at the average (i.e., at the whole data) level. However, inspection of intervention processes at the intra-individual level may reveal novel information regarding to whom MAV interventions are beneficial and under what circumstances. Therefore, in the present study a person-centered approach was utilized in order to gain novel information about intervention processes within individuals.

Person-Centered Approach

The person-centered approach, opposed to more commonly used variable-centered approach, is interested in individual variation in the studied phenomenon. Person- and variable-centered approaches differ both theoretically and methodologically (Bergman & Lundh, 2015). Theoretically, the person-centered approach views the individual as a whole, consisting of different components that affect together how the individual functions. In contrast, the variable-centered approach is interested in finding generalizable laws that describe the actions of the whole population. Methodologically, the person-centered approach investigates how variables manifest within individuals, whereas variable-centered approach is interested in relations between variables (Laursen & Hoff, 2006; Múthen & Múthen, 2000). In variable-centered approach, it is assumed that the population is homogenous with respect to the studied phenomena, whereas person-centered approach assumes that the population is heterogenous in respect of the levels and changes in the studied phenomena (Laursen & Hoff, 2006).

The person-centered approach is used to identify certain groups of individuals or individual trajectories (Laursen & Hoff, 2006). For example, it can be used to find profiles that resemble each other in terms of certain characteristics (e.g., burnout development) yet at the same time differ from other profiles in terms of those same characteristics (e.g., Muthén & Muthén, 2000; Sterba, 2013). The number of profiles is usually unknown and different profile

solutions are compared based on statistical and theoretical considerations. The methods of person-centered approach have developed rapidly. Sterba (2013) presents the benefits of finite mixture modeling applications, such as latent profile analysis (LPA), over the more traditional non-model-based methods, such as class and cluster analysis. In finite mixture modeling the choice of profile criteria is less arbitrary, as the approaches are model-based (Vermunt & Magidson, 2002). The construction of mixture models is based on probability laws, and various rigorous statistic method are applied to obtain the best-fitting solution for the observed data (Sterba, 2013). This way the profile solution is more reliable and can reveal relevant information of the studied phenomenon. As finite mixture models reveal typical (i.e., profiles consisting of the majority of the study participants) and atypical (i.e., profiles consisting of a minority of the study participants), the method enables producing rich information about the intervention processes at the individual level.

The Person-Centered Approach in Burnout and Mindfulness Skills Research

Both burnout and mindfulness skills have been studied by using person-centered approach. The review of Mäkikangas and Kinnunen (2016) showed that burnout had differing developmental trajectories both in general and in the intervention context. In the intervention context, Hätinen et al. (2009) found three burnout trajectories—namely “low burnout,” “high burnout–benefited,” and “high burnout–not benefited.” Furthermore, during a one-year rehabilitation intervention with a six-month follow-up, Hätinen, Mäkikangas, Kinnunen, and Pekkonen (2013) found different trajectories for different burnout symptoms (i.e., exhaustion, cynicism, and reduced professional efficacy) using a mixture modeling approach. The results showed that the benefits of the intervention were related to the initial level of burnout, as well as the individual profile of burnout (i.e., which symptom was predominant). Altogether, these

studies indicate that the majority of the study participants benefited from the interventions while a minority did not.

Furthermore, mindfulness studies have indicated the existence of intra-individual variation. For example, Kiken, Garland, Bluth, Palsson, and Gaylord (2015) noticed individual variation in the changes in state mindfulness during meditation intervention, with these differences predicting changes in psychological distress. In addition, cross-sectional studies using LPA have identified subgroups of mindfulness skills that differed from one another regarding emotional outcomes, such as symptoms of depression and anxiety (Bravo, Boothe, & Pearson, 2016; Pearson, Lawless, Brown, and Bravo, 2015). Based on these results, studying the development of burnout and mindfulness skills *simultaneously* at the intra-individual level during an intervention could reveal unique change mechanisms – which is aim of the current study.

The present study uses the person-centered approach (specifically LPA) to investigate the profiles of burnout and mindfulness skills among the sample of MAV interventions participants. This kind of an analysis strategy has the potential to reveal new information of the joint development of burnout and mindfulness outcomes and to be used to better understand how the intervention affects different groups of participants. From the clinical point of view, this kind of information is essential for the development of more accurate measures of intervention effectiveness. Furthermore, when there is clarity on the typical and atypical development profiles of mindfulness skills and burnout, people who have an atypical development profile (i.e., are unlikely to benefit from the intervention) can be recognized earlier and given additional attention during the intervention. It is also possible to determine what kinds of intervention practices differentiate the profiles and use this information, for example, to increase the amount of

practices associated with better outcomes in the intervention program. From the health care policy point of view, the knowledge of individual variation can be used to direct short MAV interventions to those groups that are likely to benefit from them. For the research community, the understanding of individual trajectories can illuminate the process of skills attainment and create basis for further research on individual trajectories among intervention participants.

Intervention Practices, Learning Experiences, and Intervention Outcomes

In addition to uncovering the profiles of burnout and mindfulness skills, it is also essential to recognize the factors that differentiate these profiles. This kind of knowledge can be used to improve intervention effectiveness for participants that react differently to the intervention. MAV practices have been identified as potential mechanisms for beneficial changes in mindfulness skills and well-being outcomes (e.g., Carmody & Baer, 2008; Hayes, 2004; Kabat-Zinn, 2003). However, the results regarding the importance of practices are inconsistent. Vettese et al. (2009) evaluated 24 studies inspecting the associations between home practice quantity and clinical functioning in MAV interventions and found that only half of these studies demonstrated support for the clinical benefits of the practice. Only a minority of reviewed papers showed an association between MAV practices and skills improvement. Since this review, a few studies have shown that practices were associated with skills improvement or beneficial intervention outcomes (e.g., Kristeller, Wolever, & Sheets, 2014; Rosenzweig, Greeson, Reibel, Green, Jasser, & Beasley, 2010).

In addition to practice quantity, the frequency of practice has been investigated. Studies have reported that those who practiced over three times a week had less anxiety and depression (Perich, Manicavasagar, Mitchell, & Ball, 2013) and were less likely to relapse into depression (Crane et al., 2014) than those who practiced less often. Regarding the long-term effects of the

practices, the results have been mixed. Goldberg, Del Re, Hoyt, and Davis (2014) found no connection between practice time and intervention outcomes at the follow-up, but Perich et al. (2013) showed that practice time during intervention had a negative correlation with the level of depression at the 12-month follow-up. However, Perich et al. (2013) reported that the continuation of practice did not have significant effects at the follow-up. Grow, Collins, Harrop, and Marlatt (2015) found that more practice was associated with less substance abuse and craving at the follow-ups after the relapse prevention program. Vowles and McCracken (2008) also reported that changes in the self-reported acceptance and values-based action from pre- to follow-up measurement accounted for a significant amount of variance in well-being outcomes.

Studies have also reported the significance of practice quality apart from practice quantity (e.g., Goldberg et al., 2014), indicating that doing the practices is not enough; rather, the practices need to be done with attention and effort to generate positive effects. Furthermore, mindfulness skills improvement or pursuing a valued life have been reported to mediate outcomes in MAV interventions (e.g., Carmody & Baer, 2008; Forman, Herbert, Moitra, Yeomans, & Geller, 2007; Vowles & McCracken, 2008). Studies have also suggested that more psychological acceptance, less dysfunctional thinking, cognitive defusion, and willingness to act regardless of difficult thoughts and emotions mediate changes in well-being (e.g., Forman et al., 2007; Forman et al., 2012). The mediation studies indicate that learning these skills is essential to obtain favorable outcomes in MAV interventions. One way to measure practice quality is to assess how participants evaluate their progress in the skills acquisition. Altogether, previous research shows considerable variation in the significance of intervention practices for intervention outcomes. It is possible that the effects of the practices are different for different participants, and this variability can be revealed by using the person-centered approach.

The Present Study

This study uses the person-centered approach to study individual differences and effects of a MAV intervention for burnout. This study investigates whether different profiles can be found based on both burnout and mindfulness skills and their changes during the eight-week MAV intervention and at the four-month follow-up. The novel contribution of this study is that it demonstrates how levels and changes of burnout and mindfulness skills are intertwined at the intra-individual level. The effectiveness of the MAV intervention used in this study has been determined in a randomized controlled trial (RCT) with treatment-as-usual (TAU) as a control condition, showing superior effects of the MAV compared to TAU ((Puolakanaho, Tolvanen, Kinnunen, & Lappalainen, 2017). That study also found that MAV skills were the mediator of well-being outcomes, creating a basis for presuming that mindfulness skills development is associated with burnout development. The burnout-mindfulness skills profiles are also compared in terms of practice quantity (how many practices are performed during the intervention), frequency (how often practices are completed during the intervention), and continuation (how often participants practice between the end of the intervention and follow-up), as well as self-reported learning experiences. This increases the understanding of how these factors are associated with different burnout-mindfulness skills profiles. Thus, the research questions are as follows:

1) Can we identify different profiles based on burnout and mindfulness skills and their change patterns both during the intervention and the four-month follow-up? How do these profiles differ from one another?
2) Are there differences in the following intervention-related factors between the profiles?
    a. Practice quantity during the intervention

b. Practice frequency during the intervention

c. Practice continuation after the intervention

d. Learning experiences

Following the well-established practice in person-centered research, no detailed expectations are proposed regarding the number, level, or direction of the burnout-mindfulness skills profiles were set.

Method

Procedure

The present study was conducted as a part of the RCT titled "The Effectiveness of Mindfulness Practices in the Recovery of Burnout" (Muupu), which was funded by the Finnish Social Insurance Institution and registered under ClinicalTrials.gov. The research protocol was approved by the ethical committee of the Central Finland Health Care District. Results of the RCT are presented in Puolakanaho et al. (2017). The present study focuses on the differences among intervention participants. The participants were recruited using newspaper and web page announcements and with the help of partner employee-health-care units. Enrollment took place via a specific web page and was open to anyone who was interested in the study. After registering for the study, candidates were interviewed. The participants were selected based on information they provided in the enrollment questionnaires and during the selection interview. The inclusion criteria were the following: The person needed to be between 25 and 60 years old, to be currently working, to have an Internet connection that was available daily, and to belong to the group of the most exhausted workers in Finland according to the cutoff score of Bergen Burnout Indicator. The cutoff was set at the 75th percentile (39–47 points) of the age group, as reported in the manual by Näätänen et al. (2003). People who had regular psychotherapy, major

pharmaceutical changes, psychological or somatic conditions, or other practical reasons that would hinder their participation were excluded.

Participants and Sample Attrition

Participants of the Muupu research were paired based on sex, age, and education. Each pair was randomly assigned to a MAV intervention group (10 separate groups, $n = 109$) or to a control group (treatment-as-usual in Finland, 10 separate groups, $n = 109$). The control group is not included in this study. A pilot study with two MAV groups was conducted before the RCT; the participants completed the same intervention program but did not go through the randomization ($n = 27$). Except for two individuals, the pilot group participants fit the inclusion criteria. In the present study, the final sample consisted of both the randomized mindfulness group ($n = 109$) and the pilot group ($n = 27$). They received the intervention free of charge and gave informed consent. The participants did not receive payment or compensation for participating in the study. The participants received web questionnaires before the intervention (pre), after the intervention (post), and four months after the post-measurement (f-up). All the pre-measurements where completed within a two-week period before the start of the intervention. Reminders to complete the questionnaires were sent via e-mail and telephone.

Initially, 136 participants were assigned to the MAV groups; however, 29 (non-respondents [NR]) withdrew before completing the post-measurement, thereby yielding a sample of 107 individuals (respondents [R]). There were no significant differences in initial burnout (R: $M = 4.15$, $SD = 0.62$; NR: $M = 4.40$, $SD = 0.63$), sex (1 = male, 2 = female; R: $M = 1.80$, $SD = 0.40$; NR: $M = 1.79$, $SD = 0.41$), or education (R: $M = 2.63$, $SD = 0.54$; NR: $M = 2.79$, $SD = 0.62$) between these groups based on an independent samples t-test. However, the nonrespondents were slightly younger (R: $M = 47.97$, $SD = 7.83$; NR: $M = 44.07$, $SD = 7.53$) and

had higher initial stress (R: $M = 2.22$, $SD = 0.48$; NR: $M = 2.43$, $SD = 0.48$) than the respondents. Of the 107 participants who completed the post-measurement, two were excluded from the analyses because their burnout scores dropped significantly between enrollment and pre-measurement (randomization was completed in the enrollment phase when the burnout score of these participants matched the inclusion criteria). Their scores were too far (> 3 *SD*) from the mean of the research sample. The final study sample ($n = 105$) consisted of the participants who were either randomized to the mindfulness group ($n = 81$) or belonged to the pilot group ($n = 24$). No significant differences were found between the randomized and pilot participants in terms of sex, age, education, and the main study variables, namely burnout and mindfulness skills at pre-, post-, and f-up measurements (*t*-tests' *p*-values > .05).

Participants from the central region of Finland were chosen because face-to-face group meetings were held in a city in central Finland. All the participants were Caucasian, and the majority (80%) were women. The average age of the participants was 47.8 ($SD = 7.78$, a range of 29–60 years), and the majority (69%) had a polytechnic or university degree. Of the respondents, 32% had vocational education and 2% had participated in short employment courses. The participants worked approximately 40.6 hours per week ($SD = 8.67$). Of the respondents, 88% were married or cohabiting, 12% were divorced, 9% were single, and 1% were widowed. Twelve percent evaluated their economic situation as very good and 51% rated it as rather good, whereas 32% and 4% considered it rather tight and very tight, respectively.

The final sample consisted of 105 participants who completed both pre- and post-measurements. At the four-month follow-up, 2% ($n = 2$) of the data were missing because a few participants did not complete the follow-up questionnaire. The data from other 98% of the participants was complete due to the web-questionnaire that required that every question was

answered before the form completion. Although the web-questionnaire data was almost complete, week-calendar data (practice quantity and frequency during the intervention) was missing from 10.5% (n = 11) of the participants.

Intervention

The program used in this study was a MAV intervention that followed the program described in Williams and Penman (2011). Value-based components and practices of ACT (Hayes, 2004; Lappalainen et al., 2009) were added to the program. The eight-week group intervention combined with a web-based program aimed at increasing mindfulness and acceptance skills and clarifying the values of the participants. The basic principles and weekly practices were presented in weekly group meetings and participants were guided to deepen their experiences through exercises and information provided via the Muupu-website. Each week of the program had its own theme, namely: (week 1) differentiating oneself from one's thoughts and emotions, and evaluating one's personal resources and the use of one's time; (week 2) practicing observing without evaluations, defining one's values, and forming individual intervention objectives; (week 3) experiencing the connection between mind and body and familiarizing oneself with the reactions that emerge in difficult situations; (week 4) recognizing the automaticity of thinking and distancing oneself from one's mind (own thoughts) and letting go of one's control efforts; (week 5) learning to face difficulties with openness, empathy, and curiosity; (week 6) practicing compassion and acceptance, clarifying one's own life and work values, and increasing value-based actions; (week 7) investigating the connection between mood and daily routines and recognizing the sources of joy and gratitude; and (week 8) recognizing coping strategies for future use, and defining reminders of being present in changing situations.

During the intervention, the participants were instructed to do formal mindfulness practices (e.g., body scan and breathing meditation, 10–15 minutes each) twice a day for six days a week. The participants were also instructed to do informal practices such as doing routine tasks mindfully. In addition, the participants had access to a wide variety of audiotapes and videos and were encouraged to use these to help them abandon their belief in the literal truth of their own thoughts and evaluations and to pursue valued lives. They were also advised to perform value-based actions in their daily lives. The intervention was standardized and delivered by two psychologists who had experience and education related to MAV interventions.

Measures of Outcomes

Reliability statistics (Cronbach's alphas) for all the measures are presented in Table 1. Burnout was measured using the Bergen Burnout Indicator (subsequently BBI) (Näätänen et al., 2003), which is composed of 15 items and has three subscales: exhaustion (five items, e.g.,"I am snowed under with work"), cynicism (five items, e.g., "I feel dispirited at my work and I think of leaving my job"), and reduced professional efficacy (five items, e.g, "I frequently question the value of my work"). The six-point response scale ranged from 1 (completely disagree) to 6 (completely agree). The scale was transformed into a five-point scale to make it easier to compare with the measure of mindfulness skills. The total mean score of the items was used. To assess the severity of pre-measurement burnout, the means of the age group-based estimates for mild (original scale [OS]: 2.96-3.30, transformed scale [TS]: 2.47-2.75) moderate (OS: 3.31-3.96, TS: 2.76-3.30), and severe burnout (OS: > 3.96, TS: > 3.30) were used as presented in Näätänen et al. (2003).

Mindfulness skills were measured using the Five-Facet Mindfulness Questionnaire (subsequently FFMQ) (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). The questionnaire

consists of 39 items measuring five facets of mindfulness: observing (eight items, e.g., "When I'm walking, I deliberately notice the sensations of my body moving"), describing (eight items, e.g., "I'm good at finding the words to describe my feelings"), acting with awareness (eight items, e.g., "When I do things, my mind wanders off and I'm easily distracted"), non-judging (eight items, e.g., "I criticize myself for having irrational or inappropriate emotions"), and non-reacting (seven items, e.g., "I perceive my feelings and emotions without having to react to them"). The five-point response scale ranged from 1 (never or very rarely true) to 5 (very often or always true). The total mean score of the items was used to acquire an overall picture of the mindfulness skills development.

Measures of Practices

Practice quantity. The participants filled in week calendars that contained all the practices presented during the intervention. They marked the number of times they had performed each practice and the time of that practice (each weekday of every week had its own column). The participants were instructed to fill in the calendar immediately after the practice. Practices consisted of different kinds of mindfulness, acceptance, and value exercises. The sum score of the practices (PRAQ) was used as an indicator of overall practice.

Practice frequency. The overall frequency of practices per week was calculated from the week calendars which showed the number of days each week the participants had done the practices. The mean score of weekly frequencies (PRAF) was used.

Practice continuation. The continuation of practice was measured with two question sets in the follow-up questionnaire. The first question set (COMF) concerned the amount of time spent on mindfulness practices. It asked, "Do you do the following: a) formal mindfulness practices, b) other mindfulness practices, c) applying mindfulness to daily living, and d)

engaging in the material related to mindfulness?" The scale was as follows: 0 (I do not do them at all), 1 (less than 1 hour a week), 2 (1–2 hours a week), 3 (2–3 hours a week), and 4 (over 3 hours a week). The total mean score was used in the analyses. The second question set (COVA) was about the frequency with which values were pondered and value-based actions were performed in life in general and in the context of work. The following questions were asked: "How often do you ponder what the meaningful things in your life/work are?" and "How often do you consciously act to promote meaningful things in your life/work?" The scale was as follows: 0 (not at all), 1 (occasionally), 2 (monthly), 3 (weekly), and 4 (almost daily). The total mean score was used in the analyses.

Learning experiences. These were measured with the Learning Experience Questionnaire (LEQ) developed for this study (see Appendix A for details) to assess the acquisition of the skills practiced during the intervention. The questionnaire had 13 items that depicted the following: learning to recognize one's thoughts, reactions, and behavior patterns; learning to apply mindfulness in one's daily life; learning to clarify one's values and to perform value-based actions; and learning to find opportunities to affect one's well-being at work. The scale ranged from 1 (not at all) to 5 (very well). The total mean score at post-measurement and the mean change score from post- to follow-up measurement were used in the analyses.

Statistical Analysis

Preliminary analyses were conducted using SPSS Statistics 22 to calculate the means, standard deviations, correlations (Spearman's correlation), and reliabilities (Cronbach's alphas) of the variables.

Latent profile analysis (LPA), which is a type of finite mixture modeling (Muthén & Muthén, 1998-2012; Sterba, 2013), was used to investigate profiles based on the levels and

changes of both burnout and mindfulness skills from pre- to post-intervention and to follow-up. LPA identifies latent classes (e.g., subpopulations) from the observed data and estimates the parameters for these latent classes (Muthén & Muthén, 1998-2012). LPA can be divided into a within-class and a between-class model: The within-class model defines how data are generated for persons in a certain class, while the between-class model defines how classes differ from each other (Sterba, 2013). In this study, the differences between the profiles were evaluated based on the mean differences in burnout and mindfulness skills. The within-class model was specified so that variances of burnout and mindfulness skills were fixed to be the same across the profiles. Burnout and mindfulness skills were not allowed to correlate with one another within the profiles. Within the latent profile, the observations are expected to follow multidimensional normal distribution. In LPA, people are not classified into certain profiles for subsequent analyses; rather, they are given the posterior probability of belonging to each profile, of which reason exact *n* values for the profiles are estimates (Vermunt & Magidson, 2002). This approach considers the uncertainty of the classification and strengthens the analyses. The parameters of the class solutions were estimated using the maximum likelihood estimation with robust standard errors (Muthén & Muthén, 1998-2012). At this stage, we also tested for differences between intervention groups (12 MAV groups that completed the intervention at different times) that could affect the LPA results. Intra-class correlations of burnout and mindfulness skills variables varied between .001 (p = .98) and .029 (p = .63), indicating that there were no significant differences between the groups.

LPA also provides statistical tests to determine the existence and number of latent classes (Muthén & Muthén, 1998). Because it is a model-based approach, the choice of group criteria is less arbitrary (Vermunt & Magidson, 2002). The following statistical criteria were used in this

study: a) the Bayesian information criterion (BIC) and b) the bootstrap likelihood ratio test (BLRT). The BIC and BLRT are the most consistent criteria for identifying the best-fitting solution based on simulation studies, and they perform well with small samples (Nylund, Asparouhov, & Muthén, 2007; Tolvanen, 2007). The solution with the lowest BIC value is considered the best-fitting model. The BLRT compares solutions with different numbers of latent profiles; a *p*-value below .05 suggests that the solution with *k* profiles fits the data better than the solution with *k*-1 profiles. The distinctiveness of the profiles was assessed using entropy and average latent class posterior probabilities (AvePP). Entropy illustrates the accuracy of the overall classification, while AvePP evaluates the certainty of placing an observation into a particular class using posterior probabilities. Using the most likely latent membership, AvePP is calculated for each of the classes, assessing the accuracy of the classifications. The values of both entropy and AvePP range from 0 to 1, and the values near 1 indicate a clear classification (Celeux & Soromenho, 1996). For the cases in the most likely latent class, an AvePP above .70 indicates that the solution that is found can be interpreted using the mean trajectories (Nagin, 2005). The theoretical interpretability of the profile solution was also considered.

The effect sizes for changes in burnout and mindfulness skills were calculated for each profile to evaluate the significance of the changes. The within-group effect size for change from pre- to post-measurement was calculated by dividing the mean change from pre- to post-measurement by the combined standard deviation of the three measurement points [$(m_{post} - m_{pre})/sqrt((v_{pre} + v_{post} + v_{f\text{-}up})/3)$] in the whole sample (Morris & DeShon, 2002). Corresponding calculations were performed for changes from post- to follow-up measurements as well as from pre- to follow-up measurements for both burnout and mindfulness skills. This effect size measure is comparable with Cohen's *d*, where .20 indicates a small effect size, .50 signifies a medium

effect size, and .80 denotes a large effect size (Cohen, 1992). Confidence intervals (95%) for the effect sizes were also calculated to evaluate the significance of the effects (Cohen, 1990); if the interval does not contain zero, this indicates a significant effect.

The identified profiles were compared in terms of practices and learning experiences. The equality of means of practices and learning experiences between profiles was tested using a chi-square test with posterior probability-based multiple imputations (Muthén & Muthén, 1998-2012). When class membership is used as an observed variable, the uncertainty of group classification can produce distorted estimates and standard errors (Clark & Muthén, 2009). By executing analyses with posterior probabilities, the uncertainty of the classification is considered. For these calculations, the chi-square test is a robust analysis method. The LPA and related analyses were performed using Mplus version 7 (Muthén & Muthén, 1998-2012).

Results

Descriptive Statistics

The means, standard deviations, Cronbach's alphas, and correlation matrix (Spearman's correlations) of the study variables are shown in Table 1.

Profiles of Burnout and Mindfulness Skills

The fit information of the mixture modeling for simultaneously estimated burnout and mindfulness skills profiles is presented in Table 2. The six-profile solution was supported by the BLRT test and the BIC value. Both the entropy value (.90) and the AvePPs (range of .91–.99) were high, illustrating the distinctiveness of the profiles in the obtained solution. This solution was also clear when considered theoretically. Therefore, a six-profile solution was chosen for the subsequent analyses. Figure 1 shows the six profiles and the estimated means for burnout and mindfulness skills at the three measurement points. Table 3 presents results of the within-group

effect size calculations for the profiles. There was variation between the profiles regarding effect sizes during the follow-up period in terms of both burnout (a range of 0.35–4.92) and mindfulness skills (a range of 0.77–4.41). The profiles are described below in more detail.

Profile 1, "Mild burnout–benefited greatly," was composed of 30.1% (n = 32) of the participants (AvePP = .93). There was a considerable decrease in burnout during the intervention, and the decrease continued until the follow-up, showing a large overall effect size. Mindfulness skills displayed also a continuing increase with a large effect size.

Profile 2, "Severe burnout–not benefited, but improved mindfulness skills," included 29% (n = 30) of the participants (AvePP = .91). This profile had a continuing but insignificant decrease in burnout during the follow-up. Burnout was still moderate at the follow-up. Mindfulness skills increased significantly, showing a large overall effect size.

Profile 3, "Moderate burnout–benefited slightly," consisted of 12.1% (n = 13) of the participants (AvePP = .92). The profile of these participants showed a decrease in burnout with a large effect size during the intervention. However, burnout increased a little after the intervention, diminishing the overall beneficial change in burnout to a slight decrease with a medium effect size. Even though the decrease was significant, burnout was still moderate at the follow-up. The similar kind of reverting change pattern was also found for mindfulness skills, but the increase during the follow-up period was still significant with a large effect size.

Profile 4, "Severe burnout–benefits not maintained," included 11.5% (n = 12) of the participants (AvePP = .95). In this profile, there was a significant decrease in burnout from pre- to post-measurement with a medium effect size, but the change reverted to an insignificant level by the follow-up. Burnout was still severe at the follow-up. There was an insignificant increase in mindfulness skills during the follow-up period.

Profile 5, “Severe burnout–benefited greatly,” was composed of 9.5% (*n* = 10) of the participants (AvePP = .94). In this profile, the initial level of burnout was as severe as in Profile 4, but burnout reduced to low during the follow-up. Both the decrease in burnout and the increase in mindfulness skills continued up to the follow-up with a large overall effect size.

Profile 6, “Moderate burnout–benefited” (AvePP = .99), consisted of 7.8% (*n* = 8) of the participants. This profile had a decrease in burnout during the intervention, which was maintained until the follow-up, with a large overall effect size. The respondents in this profile had high mindfulness skills at the beginning of the study, and there was a significant increase in these skills, with a large overall effect size. There were slight reversions in the changes of both burnout and mindfulness skills, but these did not change the significance of the overall effects.

Differences in Practices and Learning Experiences Between the Profiles

The profiles were the following: Profile 1, “Mild burnout–benefited greatly,” Profile 2, “Severe burnout–not benefited, but improved mindfulness skills”, Profile 3, “Moderate burnout–benefited slightly,” Profile 4, “Severe burnout–benefits not maintained,” Profile 5, “Severe burnout–benefited greatly,” and Profile 6, “Moderate burnout–benefited”. Regarding demographics, there were no significant differences in the age or in the education between the six profiles. However, the sex difference between the profiles was statistically significant (overall χ^2 (5) = 23.64, p = .000). The pairwise comparisons showed that Profile 3, “Moderate burnout–benefited slightly,”, had more men than the most of the other profiles and Profile 6, “Moderate burnout–benefited,” had more women than the most of the other profiles.

The differences in practices and learning experiences are shown in Table 4. There were no significant differences between the profiles regarding practice quantity (PRAQ int) or practice frequency (PRAF int) during the intervention. However, the profiles differed in the continuation

of practices. Profile 3 spent less time doing mindfulness practices (COMF) than Profiles 1, 2, 5, and 6. Profiles 2, 3, and 4 performed the value practices (COVA) less often than Profile 6, and Profile 3 performed them less often than Profiles 1 and 5. Profile 1 spent less time doing both mindfulness and value practices than Profile 6. There were also differences in the learning experiences. Profile 3 experienced less learning (LEQ post) than Profiles 1, 2, 5, and 6. In addition, Profiles 2 and 4 experienced less learning than Profiles 5 and 6. Profile 1 experienced less learning than Profiles 5 and 6. There were no significant differences between the profiles in the change score of learning experiences from post-measurement to follow-up (LEQ change).

Discussion

A recent review of the person-centered approach to burnout research (Mäkikangas & Kinnunen, 2016) suggests that there is variation in burnout development both in general and in the intervention context. The present study used the person-centered approach to investigate burnout development during the eight-week mindfulness-, acceptance-, and value-based (MAV) intervention and the four-month follow-up. Compared to previous person-centered intervention studies, burnout and intervention-related outcome, mindfulness skills, were used simultaneously to create the profiles. The study revealed six profiles that showed different baseline levels and change patterns for both burnout and mindfulness skills. When effect sizes of the changes were considered, majority of the profiles showed beneficial changes in terms of reduction in burnout (Profiles 1, 3, 5, and 6; 59.5% of the participants) and improvement of mindfulness skills (Profiles 1, 2, 3, 5, and 6; 88.5%). However, there were differences in the levels of changes between the profiles. The results offer a more detailed picture of intervention effectiveness than previous whole-sample level studies (e.g., Khoury et al., 2015; Regehr et al., 2014).

There were two profiles (Profiles 1 and 5) that benefited greatly from the intervention (39.6% of the participants). The profiles showed considerable and continuing decrease in burnout and increase in mindfulness skills, with large overall effect sizes. The level of burnout was low at the follow-up, and especially the results of Profile 5 (decrease in burnout from high to low) were promising. Consequently, people with severe initial burnout appeared to benefit greatly from this brief MAV intervention. In addition to these profiles, Profile 6 had decrease in burnout and increase in mindfulness skills that were maintained up to the follow-up, with large overall effect sizes. This profile was considered to have benefited from the intervention, with relatively low burnout at the follow-up. These three profiles account for 47.4% of the participants, indicating that approximately half of the participants had considerable reductions in burnout.

Of the last three profiles, Profile 3 was considered to have benefited slightly from the intervention, since there was significant decrease in burnout during the follow-up period, although the initial reduction during the intervention was partly reversed before the follow-up. Profile 2 had insignificant change in burnout, but the trend was towards continued burnout reduction. It would have been interesting to observe if the reduction had continued and if the changes would have been more favorable with longer follow-up period. In Profiles 2 and 3, burnout was still moderate at the follow-up, but both profiles had considerable increase in mindfulness skills. There was also a profile (11.5%) that did not benefit from the intervention in terms of either burnout or mindfulness skills.

Overall, the profiles demonstrated that burnout and mindfulness skills can have different change patterns in the intervention context. MAV skills have been identified as a mediator of intervention outcomes in the MAV intervention in question (Puolakanaho et al., 2017), and for the most part burnout and mindfulness skills appeared to have simultaneous increases and

decreases within the profiles. However, there were differences in the magnitude of the changes and significant increases in mindfulness skills did not necessarily mean significant decreases in burnout. The person-centered approach revealed a more detailed picture of the associations between burnout and mindfulness skills than variable-centered approach did. The person-centered approach enables new ways to study mechanisms of change and offers methods to understand how individual variation affects the results of effectiveness studies. This approach can also be used to study the mechanisms of intervention effects in more detail. This kind of knowledge is also useful in clinical practice, for example, when determining for whom these kinds of short MAV interventions are beneficial. Furthermore, these profiles show that the results of an intervention are not definite by the evaluation at the end of the treatment period. For some participants, the benefits can begin to manifest slowly after the intervention and for some participants the initial positive development can reverse after a few months. Adding occasional follow-up sessions to the short interventions could be good practice to evaluate if the offered treatment has been sufficient. Additional help could then be offered to those that need it.

To further understand profile differences, we examined the differences in intervention practices and learning experiences. Although previous research (e.g., Carmody & Baer, 2008; Perich et al., 2013) indicates that practice quantity and frequency are associated to intervention outcomes, in this study, neither did differentiate the profiles during the intervention. Generally, all the profiles performed less formal practices than was instructed in the program (twice a day, six days a week), but some of the profiles experienced great changes regardless of this. This calls into question how practices should be completed to obtain positive effects; for example, enhancing the practice quality could be more important than merely increasing the practice quantity (see, e.g., Goldberg et al., 2014). In the present study, some of the participants could

have merely performed the practices by playing the audiotapes, rather than focusing on the practices completely and learning the principles entailed in them.

It has been reported that more psychological acceptance, cognitive defusion, and willingness to act regardless of difficult thoughts mediated changes in well-being following MAV interventions (e.g., Forman et al., 2007; Forman et al., 2012). In accordance with earlier findings, the profiles with the most beneficial changes experienced more learning of MAV skills than most of the other profiles which offers some support to the importance of practice quality. Profile 3, "Moderate burnout–benefited slightly," experienced significantly less learning than almost all the other profiles. In this profile, the reduction of burnout was significant during the intervention but during the follow-up the positive development of both mindfulness skills and burnout was reversed. It is possible that they had not learned the new skills in a way that they were ready to practice independently. Longer intervention or more support during the intervention could have helped the participants with these kinds of learning experiences to maintain the benefits after the intervention. By following the learning, it could be possible to offer additional support to participants who struggle with learning the new skills.

Although there were no differences in practice quantity and frequency during the intervention, the profiles differed in the continuation of mindfulness and value practices after the intervention. Profiles in which the beneficial changes in mindfulness skills were continued or maintained after the intervention did both more mindfulness practices and value pondering than the profiles with less beneficial changes. In previous studies, practice continuation was not significant for the beneficial outcomes at the follow-up (Perich et al., 2013). However, the practice time during the intervention predicted better outcomes at the follow-up (Grow et al., 2015), and the present study supports the importance of continued practice.

The patterns for the continuation of mindfulness and value practices resembled each other in the profiles and those profiles with higher mindfulness practice continuation also reported more value pondering. Especially Profile 6 (“Moderate burnout–benefited”) was active with both types of practices and although the burnout reduction in this profile was not as high as in Profiles 1 and 5, it demonstrated the highest mindfulness skills throughout the follow-up period. Mindfulness and value practices can support each other and lead to better long-term effectiveness of the intervention when combined in daily life. Overall, practice continuation can indicate that the participants have incorporated mindfulness and value practices into their daily lives more permanently. In some intervention programs, follow-up meetings have been used to enhance long-term intervention effectiveness. Regular follow-up sessions that are repeated a few times a year could be added to the present program as well to improve learning and practice continuation.

Limitations and Future Research

The sample size was relatively small for latent profile analysis; however, it was suitable for the exploratory nature of this study, and the obtained solution was distinctive. One limitation in latent profile analysis is that it can produce additional spurious latent profiles in the case that correlation between main variables, mindfulness skills and burnout, exists within profiles (Lubke & Neale, 2006). In the analyses of this study, mindfulness skills and burnout were not allowed to correlate within profiles. In the present study, the mindfulness skills measure was used as a composite score, as the overall development of mindfulness skills was on the focus. There have been studies indicating that all the facets do not have similar associations with well-being outcomes, especially when inexperienced meditators are evaluated (e.g., Baer et al., 2006).

Therefore, an interesting venue for future research would be to evaluate the simultaneous development of burnout and different facets of mindfulness skills.

There was dropout before the pre-measurement, and differences were found between respondents and nonrespondents, which might have resulted in bias in the sample. It is also important to remember that the respondents participated voluntarily in the intervention and that most of them were highly educated. The follow-up period was relatively short; a longer follow-up would have allowed a more comprehensive analysis of the stability of changes. All the participants did not return the week calendar of their practices which could have affected the results regarding the importance of the practice quantity and frequency during the intervention as differentiators between the profiles. There was also relatively high variation in practice times within the profiles (high standard deviation), which could have dissipated the differences between the profiles. Moreover, all the measures were self-rated.

More research on individual outcome profiles should be done to test if the profiles of the present study are replicable in different settings. This approach could illuminate if these kinds of outcome profiles are unique for intervention participants. It would also be important to understand in more detail the associations between burnout and mindfulness skills within the different profiles. In the present study, burnout and mindfulness skills appeared to have mostly simultaneous increases and decreases within the profiles. However, the magnitude of changes differed which could indicate that there are differences in the associations of burnout and mindfulness skills between the profiles. In the future, more intensive longitudinal studies would be needed in order to investigate the intra-individual change processes in more detailed manner. It would also be interesting to study the profiles of burnout and mindfulness skills development in the control condition where no intervention was administered. Furthermore, the conclusions

regarding the importance of learning experiences and practice continuation for the development of burnout and mindfulness skills are based on correlational findings and need to be verified with experimental design.

Conclusions

This study revealed six distinctive outcome profiles among participants of a brief MAV intervention. It showed that even people with severe initial burnout can benefit from a brief MAV intervention. Short MAV interventions could be a cost-effective way to alleviate burnout. The results also indicate that higher learning of MAV skills during the intervention and practice continuation after the intervention could lead to more substantial changes in burnout and mindfulness skills. Occasional follow-up sessions could be used to enhance practice continuation and learning after the intervention, and this could increase long-term intervention effectiveness.

References

Ahola, K., & Hakanen, J. (2014). Burnout and health. Teoksessa Leiter, M. P., Bakker, A. B. & Maslach, C. (Eds.), *Burnout at work: A psychological perspective* (pp. 10–31). Hove, East Sussex: Psychology Press.

Ahola, K., Honkonen, T., Kalimo, R., Nykyri, E., Aromaa, A., & Lönnqvist, J. (2004). Työuupumus Suomessa. Terveys 2000 -tutkimuksen tuloksia [Burnout in Finland – results from the Finnish Health 2000 Study]. *Suomen Lääkärilehti, 59*, 4109–4113.

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, *13*, 27–45. doi:10.1177/1073191105283504

Bergman, L.R., & Lundh, L.-G. (2015). Introduction: The person-oriented approach: Roots and roads to the future. *Journal for Person-Oriented Research, 1*, 1–6. doi: http://dx.doi.org/10.17505/jpor.2015.01

Bravo, A. J., Boothe, L. G., & Pearson, M. R. (2016). Getting Personal with Mindfulness: a Latent Profile Analysis of Mindfulness and Psychological Outcomes. *Mindfulness*, *7*, 420–432. doi: 10.1007/s12671-015-0459-7

Brinkborg, H., Michanek, J., Hesser, H., & Berglund, G. (2011). Acceptance and commitment therapy for the treatment of stress among social workers: A randomized controlled trial. *Behaviour Research and Therapy, 49*, 389-398. doi:10.1016/j.brat.2011.03.009

Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine, 31*, 23–33. doi:10.1007/s10865-007-9130-7

Celeux, G., & Soromenho, G. (1996). An entropy criterion for assessing the number of clusters in a mixture model. *Journal of Classification, 13*, 195–212. doi:10.1007/BF01246098

Clark, S. L., & Muthén, B. (2009). *Relating latent class analysis results to variables not included in the analysis*. Manuscript submitted for publication. Retrieved from http://statmodel2.com/download/relatinglca.pdf

Cohen, J. (1990). Things I have learned (so far). *American Psychologist*, *45*, 1304–1312. doi:10.1037/0003-066X.45.12.1304.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155–159. doi:10.1037/0033-2909.112.1.155

Crane, C., Crane, R. S., Eames, C., Fennell, M. J., Silverton, S., Williams, J. M. G., & Barnhofer, T. (2014). The effects of amount of home meditation practice in Mindfulness Based Cognitive Therapy on hazard of relapse to depression in the Staying Well after Depression Trial. *Behaviour Research and Therapy, 63,* 17–24. doi:10.1016/j.brat.2014.08.015

Forman, E. M., Chapman, J. E., Herbert, J. D., Goetter, E. M., Yuen, E. K., & Moitra, E. (2012). Using session-by-session measurement to compare mechanisms of action for acceptance and commitment therapy and cognitive therapy. *Behavior Therapy, 43*, 341–354. doi:10.1016/j.beth.2011.07.004

Forman, E. M., Herbert, J. D., Moitra, E., Yeomans, P. D., & Geller, P. A. (2007). A randomized controlled effectiveness trial of acceptance and commitment therapy and cognitive therapy for anxiety and depression. *Behavior Modification, 31*, 772–799. doi:10.1177/0145445507302202

Goldberg, S. B., Del Re, A. C., Hoyt, W. T., & Davis, J. M. (2014). The secret ingredient in

mindfulness interventions? A case for practice quality over quantity. *Journal of Counseling Psychology, 61*, 491–497. doi:10.1037/cou0000032

Grow, J. C., Collins, S. E., Harrop, E. N., & Marlatt, G. A. (2015). Enactment of home practice following mindfulness-based relapse prevention and its association with substance-use outcomes. *Addictive Behaviors, 40,* 16–20. doi:10.1016/j.addbeh.2014.07.030

Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. *Behavior Therapy*, *35*, 639–665. doi:10.1016/S0005-7894(04)80013-3

Hayes, S. C., Bond, F. W., Barnes-Holmes, D., & Austin, J. (Eds.) (2006). *Acceptance and mindfulness at work: Applying acceptance and commitment therapy and relational frame theory to organizational behavior management.* New York: The Haworth Press. Also published in *Journal of Organizational Behavior Management, 26, numbers 1/2.*

Hätinen, M., Kinnunen, U., Mäkikangas, A., Kalimo, R., Tolvanen, A., & Pekkonen, M. (2009). Burnout during a long-term rehabilitation: Comparing low burnout, high burnout–benefited, and high burnout–not benefited trajectories. *Anxiety, Stress & Coping*, *22*, 341–360. doi:10.1080/10615800802567023

Hätinen, M., Mäkikangas, A., Kinnunen, U., & Pekkonen, M. (2013). Recovery from burnout during a one-year rehabilitation intervention with six-month follow-up: Associations with coping strategies. *International Journal of Stress Management, 20*, 364–390. doi:10.1037/a0034286

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present and future. *Clinical Psychology: Science and Practice, 10*, 144–156. doi:10.1093/clipsy/bpg016

Khoury, B., Sharma, M., Rush, S. E. & Fournier, C. (2015). Mindfulness-based stress

reduction for healthy individuals: A meta-analysis. *Journal of Psychosomatic Research, 78*, 519–528. doi: 10.1016/j.jpsychores.2015.03.009

Kiken, L. G., Garland, E. L., Bluth, K., Palsson, O. S., & Gaylord, S. A. (2015). From a state to a trait: Trajectories of state mindfulness in meditation during intervention predict changes in trait mindfulness. *Personality and Individual Differences, 81,* 41–46. doi:10.1016/j.paid.2014.12.044

Kristeller, J., Wolever, R. Q., & Sheets, V. (2014). Mindfulness-based eating awareness training (MB-EAT) for binge eating: A randomized clinical trial. *Mindfulness, 5*, 282-297. doi: 10.1007/s12671-012-0179-1

Lappalainen, R., Lehtonen, T., Hayes, S., Batten, S., Gifford, E., Wilson, K., … McCarry, S. (2009). *Hyväksymis- ja omistautumisterapia käytännön terapiatyössä* [Acceptance and commitment therapy in therapeutic practice]. Tampere: Suomen Käyttäytymistieteellinen Tutkimuslaitos Oy. Hoitomenetelmien julkaisuja 8.1.

Laursen, B., & Hoff, E. (2006). Person-centered and variable-centered approaches to longitudinal data. *Merrill-Palmer Quarterly, 52*, 377–389. doi: http://dx.doi.org/10.1353/mpq.2006.0029

Lloyd, J., Bond, F. W., & Flaxman, P. E. (2013). The value of psychological flexibility: Examining psychological mechanisms underpinning a cognitive behavioural therapy intervention for burnout. *Work & Stress, 27*, 181-199. doi: 10.1080/02678373.2013.782157

Lubke, G., & Neale, M. C. (2006). Distinguishing between latent classes and continuous factors: Resolution by maximum likelihood? *Multivariate Behavioral Research, 41*, 499–532. doi: 10.1207/s15327906mbr4104_4

Maslach, C., Jackson, S., & Leiter, M. P. (1996). *MBI: Maslach burnout inventory manual*

(3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

Morris, S. B., & DeShon, R. P. (2002). Combining effect size estimates in meta-analysis with repeated measures and independent-groups designs. *Psychological Methods, 7*, 105–125. doi:10.1037/1082-989X.7.1.105

Muthén, L. K., & Muthén, B. O. (1998-2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

Muthén, L. K., & Muthén, B. O. (2000). Integrating person-centered and variable-centered analyses: Growth mixture modeling with latent trajectory classes. *Alcoholism: Clinical and Experimental Research, 24*, 882–891. doi:10.1111/j.1530-0277.2000.tb02070.x

Mäkikangas, A., & Kinnunen, U. (2016). The person-oriented approach to burnout: A systematic review. *Burnout Research*, *3*, 11–23. doi: 10.1016/j.burn.2015.12.002

Nagin, D. S. (2005). *Group-based modeling of development.* Cambridge, MA: Harvard.

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling, 14*, 535–569. doi:10.1080/10705510701575396

Näätänen P., Aro, A., Matthiesen, S., & Salmela-Aro, K. (2003). *Bergen burnout indicator 15*. Helsinki: Edita.

Pearson, M. R., Lawless, A. K., Brown, D. B., & Bravo, A. J. (2015). Mindfulness and emotional outcomes: Identifying subgroups of college students using latent profile analysis. *Personality and Individual Differences*, *76*, 33–38. doi:10.1016/j.paid.2014.11.009

Perich, T., Manicavasagar, V., Mitchell, P. B., & Ball, J. R. (2013). The association between meditation practice and treatment outcome in mindfulness-based cognitive therapy for bipolar disorder. *Behaviour Research and Therapy, 51*, 338–343.

doi:10.1016/j.brat.2013.03.006

Puolakanaho, A., Tolvanen, A., Kinnunen, S. M., & Lappalainen, R. (2017). Mindfulness, Acceptance, and Value-based Skills Mediate Multiple Outcomes in Burnout Intervention: A Randomized Controlled Trial. In review.

Regehr, C., Glancy, D., Pitts, A., & LeBlanc, V. R. (2014). Interventions to reduce the consequences of stress in physicians: A review and meta-analysis. *The Journal of Nervous and Mental Disease*, *202*, 353–359. doi:10.1097/NMD.0000000000000130

Rosenzweig, S., Greeson, J. M., Reibel, D. K., Green, J. S., Jasser, S. A., & Beasley, D. (2010). Mindfulness-based stress reduction for chronic pain conditions: Variation in treatment outcomes and role of home meditation practice. *Journal of Psychosomatic Research*, *68*, 29–36. doi:10.1016/j.jpsychores.2009.03.010

Sterba, S. K. (2013). Understanding linkages among mixture models. *Multivariate Behavioral Research*, *48*, 775–815. doi:10.1080/00273171.2013.827564

Suvisaari, J., Ahola, K., Kiviruusu, O., Korkeila, J., Lindfors, O., Mattila, A., ... & Pirkola, S. (2012). Psyykkiset oireet ja mielenterveyden häiriöt. In S. Koskinen, A. Lundqvist & N. Ristiluoma (Eds.), *Terveys, toimintakyky ja hyvinvointi Suomessa 2011* [Health, workability, and well-being in Finland 2011] (pp. 96–107). Raportti 68/2012. Helsinki: Terveyden ja hyvinvoinnin laitos.

Tolvanen, A. (2007). *Latent growth mixture modeling: A simulation study*. Finland: University of Jyväskylä.

Vermunt, J. K., & Magidson, J. (2002). Latent class cluster analysis. In J. Hagenaars & A McCutcheon (Eds.), *Applied Latent Class Analysis* (pp. 89–106). New York, NY: Cambridge University Press. doi:10.1017/CBO9780511499531.004

Vettese, L. C., Toneatto, T., Stea, J. N., Nguyen, L., & Wang, J. J. (2009). Do mindfulness

meditation participants do their homework? And does it make a difference? A review of the empirical evidence. *Journal of Cognitive Psychotherapy*, *23*, 198–225. doi:10.1891/0889-8391.23.3.198

Vilardaga, R., Luoma, J. B., Hayes, S. C., Pistorello, J., Levin, M. E., Hildebrandt, M. J., … Bond, F. (2011). Burnout among the addiction counseling workforce: The differential roles of mindfulness and values-based processes and work-site factors. *Journal of Substance Abuse Treatment, 40*, 323–335. doi:10.1016/j.jsat.2010.11.015

Virgili, M. (2015). Mindfulness-based interventions reduce psychological distress in working adults: A meta-analysis of intervention studies. *Mindfulness, 6*, 326–337. doi:10.1007/s12671-013-0264-0

Vowles, K. E., & McCracken, L. M. (2008). Acceptance and values-based action in chronic pain: A study of treatment effectiveness and process. *Journal of Consulting and Clinical Psychology, 76*, 397–407. doi:10.1037/0022-006X.76.3.397

Williams, M., & Penman, D. (2011). *Mindfulness: A practical guide to finding peace in a frantic world*. London, England: Piatkus.

Table 1

Means, Standard Deviations, Reliabilities (Cronbach's Alphas), and Correlations of the Study Variables

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11
1 BBI pre	3.20	0.54	**.78**										
2 BBI post	2.61	0.75	.51**	**.90**									
3 BBI f-up	2.48	0.84	.43**	.73**	**.92**								
4 FFMQ pre	3.18	0.46	-.36**	-.01	-.07	**.91**							
5 FFMQ post	3.56	0.41	-.11	-.31**	-.33**	.37**	**.92**						
6 FFMQ f-up	3.60	0.46	-.08	-.31**	-.49**	.51**	.72**	**.93**					
7 PRAQ int	111.65	52.67	.02	.13	.02	.03	-.02	.04	**.74**				
8 PRAF int	5.58	2.63	.02	.13	.02	.03	-.02	.04	1.00**	-			
9 COMF	1.00	0.76	.12	-.05	-.12	.17	.31**	.51**	.23*	.23*	**.75**		
10 COVA	2.68	0.86	.09	-.09	-.11	.17	.35**	.42**	.04	.04	.39**	**.86**	
11 LEQ post	3.40	0.56	.03	-.22*	-.27**	.29**	.54**	.61**	.14	.14	.30**	.26**	**.91**
12 LEQ change	-0.00	0.52	.07	-.06	-.19	-.01	.12	.26**	.01	.01	.34**	.31**	-.22*

Note. BBI = Bergen Burnout Indicator, FFMQ = Five Facet Mindfulness Questionnaire, PRAQ = practice quantity, PRAF = practice frequency, COMF = continuation of mindfulness practices, COVA = continuation of value practices, LEQ = Learning Experiences Questionnaire, int = during the intervention, change = from post- to follow-up.

Responses that were more than three standard deviations from the sample mean were relocated to the tails (3 *SD*) of the distribution of the variable before the analyses. Reliability estimates (Cronbach's alphas) for scales are presented on the diagonal in bold.

$N = 94–105$.

** $p < .01$. * $p < .05$.

Table 2

The Fit Information of the Mixture Analysis of Burnout and Mindfulness Skills

Profiles	logL	BIC	BLRT	Entropy
1	-517.943	1091.733	-	-
2	-454.955	998.336	.0000	0.814
3	-434.986	990.975	.0000	0.796
4	-414.962	983.505	.0000	0.842
5	-396.047	978.252	.0000	0.881
6	**-374.806**	**968.347**	**.0000**	**0.896**
7	-367.887	987.088	.2381	0.907

Note. logL = log likelihood, BIC = Bayesian information criterion, BLRT = bootstrap likelihood ratio test, Entropy = accuracy of overall classification.

The fit information supporting the chosen solution is bolded.

Burnout has been measured using Bergen Burnout Indicator (BBI) and mindfulness skills using Five Facet Mindfulness Questionnaire (FFMQ).

Table 3

Within-Profile Effect Sizes and Confidence Intervals (CIs) for Burnout and Mindfulness Skills

			Effect size estimate	CI Lower 2.5%	CI Upper 2.5%
Profile 1	Burnout	pre vs. post	1.65***	1.18	2.12
		post vs. f-up	0.58*	0.02	1.14
		pre vs. f-up	2.23***	1.60	2.85
	Mindfulness skills	pre vs. post	1.14***	0.65	1.63
		post vs. f-up	0.42*	0.04	0.79
		pre vs. f-up	1.56***	1.08	2.04
Profile 2	Burnout	pre vs. post	0.48	-0.41	1.36
		post vs. f-up	0.56	0.00	1.11
		pre vs. f-up	1.03	-0.14	2.20
	Mindfulness skills	pre vs. post	0.81*	0.19	1.43
		post vs. f-up	0.17	-0.23	0.58
		pre vs. f-up	0.99**	0.42	1.56
Profile 3	Burnout	pre vs. post	1.23**	0.51	1.96
		post vs. f-up	-0.60	-1.45	0.25
		pre vs. f-up	0.63*	0.13	1.14
	Mindfulness skills	pre vs. post	1.35***	0.73	1.97
		post vs. f-up	-0.47	-1.34	0.40
		pre vs. f-up	0.88*	0.03	1.73
Profile 4	Burnout	pre vs. post	0.74*	0.01	1.47
		post vs. f-up	-0.39	-0.89	0.12
		pre vs. f-up	0.35	-0.40	1.11
	Mindfulness skills	pre vs. post	0.87	-0.39	2.14
		post vs. f-up	-0.11	-0.97	0.76
		pre vs. f-up	0.77	-0.06	1.60
Profile 5	Burnout	pre vs. post	3.91***	2.98	4.84
		post vs. f-up	1.01*	0.05	1.97
		pre vs. f-up	4.92***	3.68	6.16
	Mindfulness skills	pre vs. post	3.94***	2.32	5.57
		post vs. f-up	0.47	-0.45	1.39
		pre vs. f-up	4.41***	2.47	6.35
Profile 6	Burnout	pre vs. post	1.37**	0.41	2.33
		post vs. f-up	-0.28	-1.24	0.68
		pre vs. f-up	1.09**	0.27	1.91
	Mindfulness skills	pre vs. post	1.39***	0.96	1.82
		post vs. f-up	-0.10	-0.65	0.45
		pre vs. f-up	1.29**	0.52	2.06

Note. *** $p < .001$. ** $p < .01$. * $p < .05$. ES > .20 small. ES > .50 medium. ES > .80 large. Burnout has been measured using Bergen Burnout Indicator (BBI) and mindfulness skills using Five Facet Mindfulness Questionnaire (FFMQ).

Table 4

Means and Standard Errors of Practices and Learning for the Profiles and χ^2 Test Results

Profile	1 (30.1%, *n* = 32)	2 (29.0%, *n* = 30)	3 (12.1%, *n* = 13)	4 (11.5%, *n* = 12)	5 (9.5%, *n* = 10)	6 (7.8%, *n* = 8)	Test scores	
Measure	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	M (SE)	Overall $\chi^2(p)$	Pairwise comparisons
PRAQ int	107.58 (11.35)	114.93 (9.92)	111.90 (23.25)	111.73 (16.22)	105.30 (11.80)	122.42 (17.65)	0.99 (.963)	
PRAF int	5.38 (0.57)	5.75 (0.50)	5.59 (1.16)	5.59 (0.81)	5.27 (0.59)	6.12 (0.88)	0.99 (.963)	
COMF f-up	0.96 (0.14)	1.03 (0.13)	0.44 (0.17)	0.92 (0.23)	1.40 (0.24)	1.60 (0.28)	14.28 (.014)	3 < 1, 2, 5, 6 1 < 6
COVA f-up	2.70 (0.15)	2.63 (0.16)	2.07 (0.27)	2.60 (0.29)	3.11 (0.21)	3.41 (0.18)	23.34 (.000)	1, 2, 3, 4 < 6 3 < 1, 5
LEQ post	3.41 (0.11)	3.39 (0.07)	2.98 (0.11)	3.05 (0.18)	3.96 (0.16)	3.86 (0.12)	45.15 (.000)	3 < 1, 2, 5, 6 1, 2, 4 < 5, 6
LEQ change	-0.04 (0.11)	0.01 (0.08)	-0.16 (0.15)	-0.12 (0.18)	0.29 (0.15)	0.18 (0.19)	5.50 (.358)	

Note. PRAQ = practice quantity, PRAF = practice frequency, COMF = continuation of mindfulness practices, COVA = continuation of value practices, LEQ = Learning Experiences Questionnaire, int = during the intervention, f-up = 6-month follow-up, change = from post- to follow-up measurement.

Responses that were more than three standard deviations from the sample mean were relocated to the tails (3 *SD*) of the distribution of the variable before the analyses.

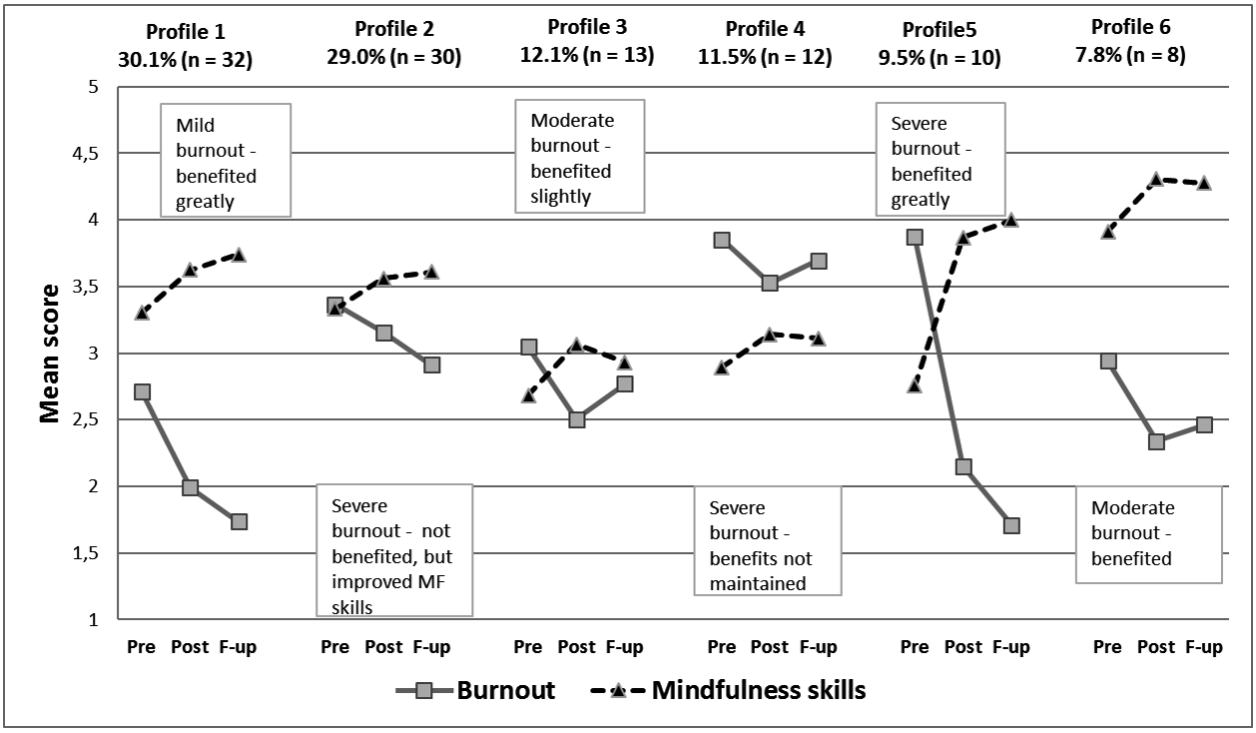

Figure 1. Estimated means for burnout and mindfulness skills for the latent profiles at three measurement points (n = 105)

Note. Cut-offs for burnout scores based on Näätänen et al. (2003). Mild burnout 2.47-2.75, moderate burnout 2.76-3.30, severe burnout > 3.30.

Burnout has been measured using Bergen Burnout Indicator (BBI) and mindfulness skills using Five Facet Mindfulness Questionnaire (FFMQ).

Appendix A.

Learning Experiences Questionnaire (LEQ)

The LEQ questionnaire has been developed for the research project titled "The Effectiveness of Mindfulness Practices in the Recovery of Burnout" (Muupu). Its author is Anne Puolakanaho. Here are the instructions, scale, and the items of the questionnaire:

Assess the following items compared to the situation before the Muupu intervention. Choose the option that best describes your experience:

1 = Not at all, 2 = Rather poorly, 3 = To some extent, 4 = Rather well, 5 = Very well

Table A1

Items of the LEQ questionnaire

1. I have learned to be mindful of my thoughts, emotions, and bodily reactions.
2. I have learned to recognize my behavior patterns, especially my pursuing and avoidance efforts.
3. I have learned to let go of harmful mental models.
4. I have learned to apply mindfulness skills into my daily life.
5. I have learned to let go of my routinized habits.
6. I have learned to renew my customary ways to function in life.
7. I have learned to clarify my values.
8. I have learned to plan value-based actions.
9. I have learned to perform value-based actions.
10. I have learned to clarify view of my work conditions.
11. I have learned to clarify if my values are fulfilled in my work.
12. I have learned to define what I can myself do to promote my well-being at work.
13. I have learned to clarify how my work conditions could be developed to support my well-being at work and to prevent burnout.

III

DOES A MINDFULNESS-, ACCEPTANCE-, AND VALUE-BASED INTERVENTION FOR BURNOUT HAVE LONG-TERM EFFECTS ON DIFFERENT LEVELS OF SUBJECTIVE WELL-BEING?

by

Sanna Kinnunen, Anne Puolakanaho, Anne Mäkikangas, Asko Tolvanen, & Raimo Lappalainen, 2020.

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Does a Mindfulness-, Acceptance-, and Value-Based Intervention for Burnout Have Long-Term Effects on Different Levels of Subjective Well-Being?

Sanna M. Kinnunen, Anne Puolakanaho, Anne Mäkikangas, Asko Tolvanen, and Raimo Lappalainen

Abstract

This study investigated whether beneficial intervention effects on burnout and mindfulness skills diffuse and facilitate the long-term development of different levels of subjective well-being: experiential (perceived stress), eudaimonic (psychological and social well-being), and evaluative (life satisfaction). Participants were Finnish employees with notable burnout (n = 105, 80 % women). The study utilized individual profiles of burnout and mindfulness skills identified in a previous study (Kinnunen, Puolakanaho, Tolvanen, Mäkikangas, & Lappalainen, 2018). The profiles were based on levels and changes in burnout and mindfulness skills during an 8-week intervention and 4-month follow-up. In the present study, the same profiles were compared using a chi-square test (χ^2-test) for changes in the different levels of subjective well-being over 12-months. While most profiles showed benefits in experiential subjective well-being, achieving a significant increase in eudaimonic or evaluative levels at the 12-month study period required a considerable decrease in burnout and increase in mindfulness skills during the preceding 6-months. Those who initially benefited the most from the intervention, i.e., showed a decrease in burnout and increase in mindfulness skills, also showed the most favorable development in all three levels of subjective well-being during the 12-month study period. The differences in well-being between those who initially benefited from the intervention and those who did not seemed unlikely to diminish over time. It is thus important to monitor intervention effects on each level of subjective well-being to identify participants who are likely to need additional support to achieve long-term changes in well-being in all levels.

Keywords: mindfulness, acceptance, burnout, subjective well-being

Does a Mindfulness-, Acceptance-, and Value-Based Intervention for Burnout Have Long-Term Effects on Different Levels of Subjective Well-Being?

Mindfulness-, acceptance-, and value-based (henceforth MAV) interventions aimed at decreasing stress and burnout and promoting well-being have shown promising results (Khoury, Sharma, Rush, & Fournier, 2015; Lloyd, Bond, & Flaxman, 2013; Reeve, Tickle, & Moghaddam, 2018). The theoretical model for the changes induced by MAV interventions and applied in this paper is the Acceptance and Commitment Therapy model (ACT; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Hayes, Pistorello, & Levin, 2012). The ACT model can be understood as a hexaflex containing six processes: (a) purposefully remaining in the present moment; (b) having a perspective-taking attitude on thoughts and feelings; (c) clarifying values in life; (d) performing actions in accordance with the identified values; (e) accepting the unpleasant feelings that arise when performing value-based actions; and (f) increasing one's defusion skills, such as seeing interfering thoughts as thoughts rather than literal truths (Hayes et al., 2012). Each of these processes represent a psychological skill that can be enhanced in any life domain. Therefore, MAV interventions can be viewed as trans-diagnostic treatments that have positive effects on multiple well-being issues and psychological symptoms (Dindo, Van Liew, & Arch, 2017; Hayes & Hofman, 2017), as is also suggested by the burnout studies of Puolakanaho, Tolvanen, Kinnunen, and Lappalainen (2018) and Vilardaga et al. (2011).

Subjective well-being can be conceptualized as a combination of three levels, i.e. evaluative, eudaimonic, and experiential, each of which can be defined and measured (Deaton & Stone, 2016). Evaluative well-being refers to the broad experience of overall life satisfaction; eudaimonic well-being to experiences of life as having meaning and purpose; and experiential well-being to everyday experiences, such as joy or pain. In this study on the effects of a MAV intervention for burnout on subjective well-being, these three levels are studied separately. Here, the evaluative level of well-being

is described by life satisfaction. The eudaimonic level of well-being is described by two constructs, namely psychological well-being (thriving in personal life) and social well-being (thriving in social life) (Keyes, Smothkin, & Ryff, 2002; Ryff, 1998). The experiential level of well-being is represented by perceived stress, as it describes short-term stress in life and hence everyday experiences of well-being. Subjective well-being has been shown to be closely intertwined with work well-being (Reichl, Leiter, & Spinath, 2014), further indicating that changes in burnout could be associated with changes in well-being. However, these associations have not previously been studied, as in this study, in the context of an intervention with a long-term follow-up.

This study thus yields novel information on whether a MAV intervention can alleviate burnout and enhance mindfulness skills, and thereby diffuse and facilitate the long-term favourable development of subjective well-being. The present study utilizes the profiles identified by Kinnunen, Puolakanaho, Tolvanen, Mäkikangas, and Lappalainen (2018) on the basis of changes in the levels of burnout and mindfulness skills during a 6-month period. The profiles are presented in the Method section and illustrated in Figure 1. This study hypothesized that the profiles with the largest positive changes in burnout and mindfulness skills during the 6-month period would also show the largest increases in experiential, eudaimonic, and evaluative well-being during the 12-month period.

Method

Participants

The participants were a subset of a sample collected for project XXX, funded by XXX and registered to ClinicalTrials.gov. The project was a randomized clinical trial designed to investigate if a mindfulness-, acceptance-, and value-based intervention can alleviate burnout and promote well-being (for details, see XXX). The research design was approved by the ethical committee of the local health care district. The participants were recruited via newspaper, web announcements, and employee health

care. Recuitment was implemented via a webpage, and all persons interested were interviewed. The inclusion criteria were: age between 25 and 60, currently employed, daily access to the Internet, memebership of the most exhausted employee group according to the cutoff score of Bergen Burnout Indicator (75th percentile; Näätänen, Aro, Matthiesen, & Salmela-Aro, 2003). Persons having regular psychotherapy or reporting major pharmaceutical changes, or psychological or somatic conditions were excluded.

Data were collected via personalized web questionnaires at four measurement points: before the intervention (pre), after the intervention (post, 8 weeks after pre), four months after the post-measurement (f-up4), and ten months after the post-measurement (f-up10). The final study sample (n = 105) comprosed the MAV group participants who answered both the pre- and post-measurement questionnaires. The majority (80%) were women. Mean participant age was 47.8 (SD = 7.78), and most participants were relatively highly educated (69% had a polytechnic or university degree). None of the participants had practiced mindfulness regularly prior to the intervention (for details of the sample, see Kinnunen et al., 2018).

Six Distinctive Profiles of Burnout and Mindfulness Skills

Kinnunen et al. (2018), using Latent Profile Analysis, identified six profiles based on levels and changes of burnout and mindfulness skills. The profiles are presented in Figure 1. Beneficial changes with medium to large effect sizes were detected for 59.5% of the participants (Profiles 1, 3, 5, and 6) in burnout and for 88.5% (Profiles 1, 2, 3, 5, and 6) in mindfulness skills. Profile 4 did not show any beneficial changes.

Intervention

The intervention is a mindfulness-based program that follows the guidelines given in Williams and Penman (2011). In addition, value-based elements of Acceptance and Commitment Therapy

(Hayes et al., 2012; Lappalainen et al., 2009) were added to this program. The 8-week intervention made joint use of both group meetings and Internet material with the aims of increasing mindfulness and acceptance skills and clarifying personal values. Participants were instructed to do formal mindfulness exercises (e.g., body scan, breathing meditation) twice a day for six days a week. Informal exercises (e.g., doing chores mindfully) and value-based actions also formed part of the weekly program (for details, see Kinnunen et al., 2018).

Measures

Burnout was measured with the Bergen Burnout Indicator (Näätänen et al., 2003) and mindfulness skills with the Five-Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Cronbach's alphas for the pre-, post- and fup4 were .78, .90, and .92 for burnout and .91, .92, and .93 for mindfulness skills (for details, see Kinnunen et al., 2018).

Changes in subjective well-being were measured as changes in scores from the pre- to f-up10 measurement. The 10-item version of the Perceived Stress Scale (Cohen, Kamarc, & Mermelstein, 1983) was used to measure perceived stress. The measure comprises ten questions on the frequency of stressful feelings and thoughts during the past month (e.g., "In the last month, how often have you been upset because of something that happened unexpectedly?"), each assessed on a 5-point scale (from 1 = never to 5 = very often). Cronbach's alphas for the pre- and fup10 measurements were .85 and .87.

Psychological well-being was assessed with an abbreviated version of the Ryff Scales of Psychological Well-Being (Ryff, 1989). Eighteen items assessed self-acceptance, autonomy and environmental mastery (e.g., "When I look at the story of my life, I am pleased with how things have turned out."). The scale ranged from 1 (= strongly disagree) to 4 (= strongly agree). Cronbach's alphas for the pre- and fup10 measurements were .64 and .74.

Social well-being was measured with the Scales of Social Well-Being (Keyes et al., 2002). Fifteen items assessed social situations and relationships (e.g., "I don't feel I belong to anything I'd call a community.") on a 4-point scale (from 1 = strongly disagree to 4 = strongly agree). Cronbach's alphas for the pre- and fup10 measurements were .72 and .81.

The Life Satisfaction Questionnaire (Pulkkinen, Feldt, & Kokko, 2005) was used to assess satisfaction in seven life domains: housing, financial situation, choice of occupation, present occupational situation, present intimate relationship or lack of it, content of leisure time, and present friendly relations. The scale ranged from 1 (= very dissatisfied) to 4 (= very satisfied). Cronbach's alphas for the pre- and fup10 measurements were .52 and .70.

Statistical Analysis

Effect sizes were calculated for the changes in subjective well-being. The within-group effect size was calculated by dividing the mean change from pre- to f-up10 by the combined standard deviation of the pre- and f-up10 values [$(m_{post} - m_{pre})/sqrt((v_{pre} + v_{f\text{-}up12})/2)$] in the whole sample (Morris & DeShon, 2002). This effect size measure is comparable to Cohen's *d*, where .20 indicates a small effect size, .50 a medium effect size, and .80 a large effect size (Cohen, 1992). The statistical significance of the effect sizes was evaluated based on the *t*-distribution.

Because class membership in the profile solution is used as an observed variable, uncertainty in the classification can produce distorted estimates and standard errors. Therefore, the six profiles were compared on changes in well-being by testing the equality of the means of changes between the profiles using a chi-square test (χ^2-test) with posterior probability-based multiple imputations (Muthén & Muthén, 1998-2012). Uncertainty was accounted for by using posterior probabilities, for which a χ^2-test is a robust method. The analyses were performed with Mplus 7 (Muthén & Muthén, 1998-2012). Preliminary analyses were performed using SPSS Statistics 22.

Results

The means, standard deviations, and correlation matrix (Spearman's correlations) of the study variables are presented in Table 1. For each profile, the amounts of change with effect sizes, and the differences between the profiles in changes in the well-being measures are presented in Table 2. Overall, it appeared that the profiles showing the largest positive changes in burnout and mindfulness skills during the 6-month period also showed the largest positive changes in all three levels of subjective well-being during the 12-month study period. Specifically, Profiles 1 and 2 showed similar positive changes in each level of subjective well-being during the 12-month study period, although Profile 1 showed a larger decrease in burnout than Profile 2 but a similar increase in mindfulness skills during the 6-month period. The changes in each level of subjective well-being in Profile 3 were similar to those in Profiles 1 and 2 although significant effect sizes were found only for the decrease in perceived stress and increase in life satisfaction. Profile 4 did not show positive changes in any of the levels of subjective well-being while Profile 5 showed notable positive changes in all the measures. In Profiles 4 and 5, the change trends in the levels of subjective well-being during the 12-month study period were comparable to those found for burnout and mindfulness skills during the 6-month period. In Profiles 5 and 6, the most pronounced changes occurred in the experiential level of well-being. The changes in eudaimonic and evaluative well-being were less prominent in Profile 6 than Profile 5. During the 6-month period, Profile 6 showed lower levels of change in burnout and mindfulness skills than Profile 5.

Discussion

This study yielded novel and detailed knowledge on the long-term development of different levels of subjective well-being (experiental, educamonic and evaluative) within and between the six earlier identified burnout-mindfulness profiles. In general, the present short MAV intervention for

burnout induced long-term improvements in subjective well-being. However, the profiles differed in the development of well-being. While most of the profiles showed benefits in experiential well-being, an increase in eudaimonic or evaluative well-being during the 12-month period was evident only in the profiles showing the largest decrease in burnout and largest increase in mindfulness skills during the 6-month period (changes with large effect sizes; see Kinnunen et al., 2018).

When the differences in subjective well-being development are considered against the ACT model (Hayes et al., 2006, 2012), it is highly plausible that to enhance subjective well-being requires that improvements in core psychological skills. The experiential level depicts everyday fluctuations in well-being (Deaton & Stone, 2016) and thus may be more prone to change. It is possible that completion of the prescribed exercises alone is enough to bring about improvement in individual's experiential well-being on a given day. A profounder understanding of the requisite psychological skills might be needed to improve the eudaimonic and evaluative levels, as these describe more stable experiences of meaningfulness and satisfaction in life. Furthermore, improvements in the experiential level could be interpreted as transitioning a person from ill-being to a neutral state, whereas improvements in the eudaimonic and evaluative levels represent positive well-being experiences that extend beyond the absence of ill-being. Changes in the experiential level could thus be essential for changes in the other levels.

The first practical implication of this study is that, when implementing MAV interventions, it is essential that the effects on well-being are evaluated broadly across the different levels. While it is plausible that the experiential level of subjective well-being, here measured as perceived stress, could be affected by superficial learning of the psychological skills represented in the ACT model, to achieve changes in psychological and social well-being (eudaimonic level), as well as in life satisfaction (evaluative level), more attention should be devoted to gaining a thorough understanding of how to lead

a value-based life and avoid entanglement with inner experiences during the process. Another practical implication concerns participants with poor initial outcomes. The results indicated that the differences in well-being between the outcome profiles seemed unlikely to diminish over time, as those who showed the most favorable results over the 6-month period also showed the most favorable development in subjective well-being over the 12-month period (Profiles 1 and 5) and vice versa (Profiles 3 and 4). Those who achieved good initial results were likely to experience benefits in all three levels of subjective well-being, while those who did not initially benefit may need further support to avoid increasing the gap in well-being between the different profiles.

One of the limitations of this study was that its results are based on self-report data and are thus vulnerable to common method bias. The correlations between burnout, mindfulness skills and levels of subjective well-being were small to medium (+/-.07-.51), indicating that the constructs represented separate dimensions of well-being, rather than measurement error compounded by social desirability bias. The sample size was relatively small, and the generalizability of the results is restricted as the sample consisted mainly of highly educated women.

Conclusion. Most of the profiles showed benefits in the experiential level of subjective well-being. However, to achieve a significant increase in the eudaimonic or evaluative levels during the 12-month study period, both the decrease in burnout and increase in mindfulness skills needed to be considerable during the 6-month period. In addition, the well-being differences between the profiles seem unlikely to diminish over time. In practice, to obtain a broad picture of the effects of a MAV intervention and to prevent an increase in the gap in well-being between the different outcome profiles, it is important to monitor intervention effects across several levels of well-being.

References

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, *13*, 27–45. doi:10.1177/1073191105283504

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*(1), 155-159. doi:10.1037/0033-2909.112.1.155

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385–396. doi: 10.2307/2136404

Deaton, A., & Stone, A. A. (2016). Understanding context effects for a measure of life evaluation: How responses matter. *Oxford Economic Papers, 68*(4), 861–870. doi: 10.1093/oep/gpw022

Dindo, L., Van Liew, J. R., & Arch, J. J. (2017). Acceptance and commitment therapy: A transdiagnostic behavioral intervention for mental health and medical conditions. *Neurotherapeutics, 14*(3), 546–553. doi:10.1007/s13311-017-0521-3

Hayes, S. C., & Hofmann, S. G. (2017). The third wave of cognitive behavioral therapy and the rise of process-based care. *World Psychiatry, 16(3)*, 245–246. doi: 10.1002/wps.20442

Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy, 44*(1), 1–25. doi: 10.1016/j.brat.2005.06.006

Hayes, S. C., Pistorello, J., & Levin, M. E. (2012). Acceptance and commitment therapy as a unified model of behavior change. *The Counseling Psychologist, 40*, 976–1002. doi: 10.1177/0011000012460836.

Keyes, C. L., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: the empirical encounter of two traditions. *Journal of Personality and Social Psychology, 82*(6), 1007–1022. doi:10.1037//0022-3514.82.6.1007

Khoury, B., Sharma, M., Rush, S. E., & Fournier, C. (2015). Mindfulness-based stress reduction for healthy individuals: A meta-analysis. *Journal of Psychosomatic Research, 78*(6), 519–528. doi:10.1016/j.jpsychores.2015.03.009

Kinnunen, S. M., Puolakanaho, A., Tolvanen, A., Mäkikangas, A., & Lappalainen, R. (2018). Does mindfulness-, acceptance-, and value-based intervention alleviate burnout? - A person-centered approach. *International Journal of Stress Management.* doi: 10.1037/str0000095

Lappalainen, R., Lehtonen, T., Hayes, S., Batten, S., Gifford, E., Wilson, K., … McCarry, S. (2009). *Hyväksymis- ja omistautumisterapia käytännön terapiatyössä* [Acceptance and commitment

therapy in therapeutic practice]. Tampere: SKT Oy.

Lloyd, J., Bond, F. W., & Flaxman, P. E. (2013). The value of psychological flexibility: Examining psychological mechanisms underpinning a cognitive behavioural therapy intervention for burnout. *Work & Stress, 27*, 181–199. doi: 10.1080/02678373.2013.782157

Morris, S. B., & DeShon, R. P. (2002). Combining effect size estimates in meta-analysis with repeated measures and independent-groups designs. *Psychological Methods, 7*(1), 105–125. doi:10.1037/1082-989X.7.1.105

Muthén, L. K., & Muthén, B. O. (1998-2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

Näätänen P., Aro, A., Matthiesen, S., & Salmela-Aro, K. (2003). Bergen burnout indicator 15. Helsinki: Edita.

Pulkkinen, L., Feldt, T., & Kokko, K. (2005). Personality in young adulthood and functioning in middle age. In S. Willis & M. Martin (Eds.), *Middle adulthood: A lifespan perspective* (pp. 99–141). Thousand Oaks, CA: Sage Publications. doi:10.4135/9781452225999.n4

Puolakanaho, A., Tolvanen, A., Kinnunen, S.M., & Lappalainen, R. (2018). Burnout-related ill-being at work: Associations between mindfulness and acceptance skills, worksite factors, and experienced well-being in life. *Journal of Contextual Behavioral Science, 10*, 92–102. doi: 10.1016/j.jcbs.2018.09.003

Reichl, C., Leiter, M. P., & Spinath, F. M. (2014). Work–nonwork conflict and burnout: A meta-analysis. *Human Relations, 67*, 979–1005. doi: 10.1177/0018726713509857

Reeve, A., Tickle, A., & Moghaddam, N. (2018). Are acceptance and commitment therapy-based interventions effective for reducing burnout in direct-care staff? A systematic review and meta-analysis. *Mental Health Review Journal, 23*, 131–155. doi: 10.1108/MHRJ-11-2017-0052

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*(6), 1069–1081. doi:10.1037/002

Vilardaga, R., Luoma, J. B., Hayes, S. C., Pistorello, J., Levin, M. E., Hildebrandt, M. J., … Bond, F. (2011). Burnout among the addiction counseling workforce: The differential roles of mindfulness and values-based processes and work-site factors. *Journal of Substance Abuse Treatment, 40*, 323–335. doi:10.1016/j.jsat.2010.11.015

Williams, M., & Penman, D. (2011). *Mindfulness: A practical guide to finding peace in a frantic world*. London, England: Piatkus.

Table 1

Means, Standard Deviations, and Correlations of the Study Variables

Variables	M	SD	1	2	3	4	5	6	7	8	9	10
1 Burnout pre	3.20	0.54										
2 Burnout post	2.61	0.75	.51**									
3 Burnout f-up4	2.48	0.84	.43**	.73**								
4 Mindfulness pre	3.18	0.46	-.36**	-.01	-.07							
5 Mindfulness post	3.56	0.41	-.11	-.31**	-.33**	.37**						
6 Mindfulness f-up4	3.60	0.46	-.08	-.31**	-.49**	.51**	.72**					
7 Perceived stress change	-0.57	0.58	-.15	.31**	.42**	.12	-.34**	-.40**				
8 Psych. well-being change	0.15	0.32	.12	-.22*	-.31**	-.24*	.23*	.20*	-.39**			
9 Social well-being change	0.19	0.34	.09	-.32**	-.35**	-.07	.22*	.28**	-.51**	.51**		
10 Life satisfaction change	0.21	0.34	-.08	-.30**	-.27**	-.16	.07	.10	-.39**	.32**	.40**	

Note. Change refers to change from pre- to f-up10 measurement (8-week intervention and 10-month follow-up).

Responses that were more than three standard deviations from the sample mean were relocated to the tail of the variable distribution.

N = 95–105.

** $p < .01$. * $p < .05$.

Table 2

Means, Standard Errors and Effect Sizes of Changes in Subjective Well-Being for the Profiles and χ^2-Test Results during the 12-Month Study Period

Profile	1 (30.1%)	2 (29.0%)	3 (12.1%)	4 (11.5%)	5 (9.5%)	6 (7.8%)	Test scores	
Measure	M (S.E.) *d*	M (S.E.) *d*	M (S.E.) *d*	M (S.E.) *d*	M (S.E.) *d*	M (S.E.) *d*	Overall $\chi^2(p)$	Pairwise comparisons
Experiential level								
Perceived stress change	0.69 (0.12) 1.23*	0.50 (0.09) 0.89*	0.32 (0.09) 0.57*	0.14 (0.15) 0.25	1.30 (0.14) 2.33*	0.48 (0.15) 0.85*	50.36 (.00)	1, 2, 3, 4, 6 < 5 3, 4 < 1 4 < 2
Eudaimonic level								
Psychological well-being change	0.16 (0.07) 0.47*	0.14 (0.06) 0.42*	0.20 (0.10) 0.59	-0.05 (0.11) - 0.16	0.42 (0.04) 1.24*	0.10 (0.09) 0.28	36.50 (.00)	1, 2, 3, 4, 6 < 5
Social well-being change	0.21 (0.07) 0.55*	0.15 (0.06) 0.40*	0.15 (0.10) 0.39	-0.02 (0.06) - 0.04	0.52 (0.12) 1.41*	0.22 (0.09) 0.60*	18.35 (.00)	1, 2, 3, 4, 6 < 5 4 < 1, 6
Evaluative level								
Life satisfaction change	0.33 (0.06) 0.84*	0.21 (0.07) 0.53*	0.17 (0.08) 0.43*	0.00 (0.10) 0.00	0.33 (0.13) 0.83*	-0.01 (0.08) -0.02	16.13 (.01)	4, 6 < 1, 5 6 < 2

Note. Change refers to change from pre- to f-up10 measurement (8-week intervention and 10-month follow-up). Change scores for perceived stress have reversed so that higher scores indicate larger positive change, as in other measures. Responses that were more than three standard deviations from the sample mean were relocated to the tail of the variable distribution.

Effect sizes (*d*): Asterisks indicate that the effect size is significant based on the *t*-distribution.

$d > .20$ small effect. $d > .50$ medium effect. $d > .80$ large effect.

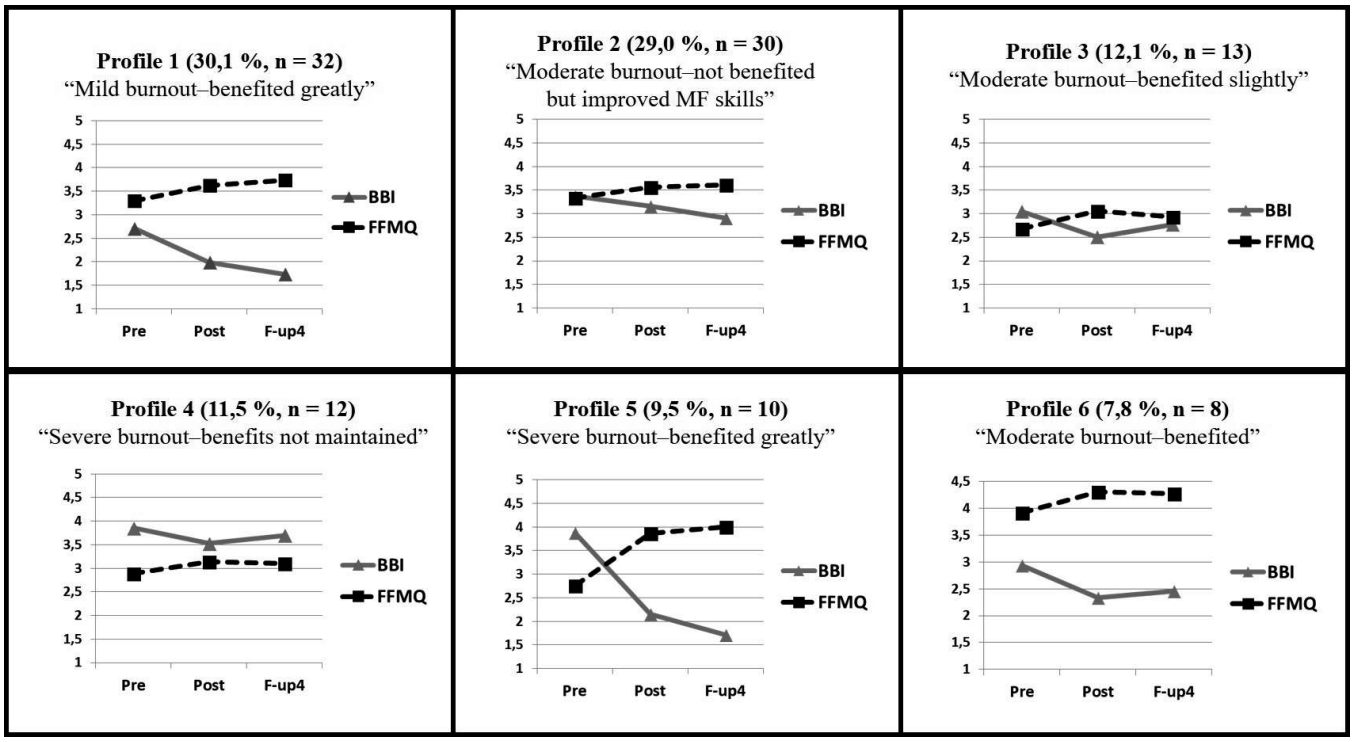

Figure 1. Latent profiles of burnout and mindfulness skills during the 6-month study period (8-week intervention and 4-month follow-up; n = 105)