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Out of sight, out of mind? Exploring the long-term effects of Relational Mindfulness Training (RMT)

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ABSTRACT

Recent studies showed mixed findings regarding the sustainability of the effects of mindfulness and loving-kindness meditation interventions. This study, conducted on a sample of 128 management students divided into treatment and control groups, is the first that examines the long-term effects of the training in relational mindfulness. We focus on Relational Mindfulness Training (RMT), an 8-week intervention designed to help participants to be more present, aware, and kind towards themselves and others during social interactions. The results show a significant long-term impact of RMT on self-compassion, perceived stress and mindfulness. The impact of RMT on compassion and subjective happiness was significant in the short run, but only marginally significant in the long run for compassion and non-significant for subjective happiness. Furthermore, individuals who maintained an individual practice in the follow-up period showed notably better results concerning all examined effects, except compassion. The results suggest that the development of compassion is more dependent on the context of a training group. We provide recommendations for future interventions in order that they can make a more sustainable impact on compassion.

1. Introduction

The last decade witnessed growing evidence of the beneficial impact of mindfulness and loving-kindness meditation (LKM) on well-being and stress management (Goyal, Singh, Sibinga, & Gould, 2014; Rudaz, Twohig, Ong, & Levin, 2017; Zeng, Chiu, Wang, Oei, & Leung, 2015). Studies that examined long-term effects in the case of classic mindfulness or LKM practice, however, show mixed findings (e.g., Oman, Shapiro, Thoresen, Plante, & Flinders, 2008; Perich, Manicavasagar, Mitchell, Ball, & Hadzi-Pavlovic, 2013; Shapiro, Brown, Thoresen, & Plante, 2011; Weibel, McClintock, & Anderson, 2016). Recent studies have also focused on relational mindfulness (also known as interpersonal mindfulness), that entails the development of mindfulness and loving-kindness within social interaction, which has been suggested as a suitable practice for flourishment in dynamic social environments (Falb & Pargament, 2012; Kohlenberg, Tsai, & Kuczynski, 2015; Surrey & Kramer, 2013; Vich & Lukeš, 2018). Meanwhile, sustaining the effects of training in relational mindfulness seems to be even more challenging than in the case of training in classic mindfulness based on individual meditations, because it occurs mostly in triads or dyads, and thus it seems to be more dependent on the active presence in the particular training group (Kramer, 2007). The empirical evidence of the long-term effects of training in relational mindfulness has been missing to date. Therefore, we address the lack of evidence in the field and examine the effects of Relational Mindfulness Training (RMT) in the long run. To our knowledge, the present study is the first to examine the effects of individual home practice in the follow-up period regarding the sustainability of the effects of RMT.

The main goal of RMT is to help participants to be more present, aware and kind towards themselves and others during everyday social interactions These goals are achieved through the development of a capability to be present during conversations and to apply and further develop other related principles of mindfulness and LKM in any particular moment (Falb & Pargament, 2012; Vich & Lukeš, 2018). RMT helps train this capability through facilitated practices in dyads (dyadic mindful dialogue) or the main group (mindful group discussion) during which the participants are frequently invited to make a silent pause and engage in short relational mindfulness micro-practices (see Fig. 2). Micro-practices can be either focused on the development of mindfulness and compassion towards oneself while being in the interaction (the domain of mindfulness of self-in-relationship) or on the mindfulness and compassion towards another person while being in the

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Table 1
Previously conducted studies in the field of Relational Mindfulness.

Study	N	Sample	I	RM practices	Significant effects and effect sizes
Bowen et al. (2012)	104	Students (U)	Interpersonal mindfulness intervention 1-h session (brief intervention)	MGD (N/A) 30% of all practice (approx.)	higher connectedness with others (N/A) lower experiential avoidance (N/A)
Jennings et al. (2013)	50	Teachers	CARE (30 h) 4 one-day sessions (4 × 7.5 h) in a period of 4–6 weeks	DMD (N/A) MGD (N/A) 15% of all practice (approx.)	higher trait mindfulness[a] (d = 0.56), higher emotional reappraisal[b] (d = 0.80) higher personal accomplishment[a] (d = 0.40) higher efficacy[a] (N/A) lower physical symptoms[b] (d = - 0.32) lower time urgency[a] (d = - 0.42)
Kohlenberg et al. (2015)	114	Students (U)	Interpersonal mindfulness intervention 1-h session (brief intervention)	MGD (N/A) 30% of all practice (approx.)	higher inclusion of others in self[b] (d = 0.30) higher social connectedness[b] (d = 0.44) higher state mindfulness[c] (d = 0.25)
Hildebrandt et al. (2017)	332	Adults	ReSource (P + A) (47 h) 13 weekly sessions (13 × 2 h) +3 day retreat (3 × 7 h)	DMD (10 min long) 50% of all practice	higher compassion[b] (N/A) higher self-compassion[b] (N/A)
Vich and Lukeš (2018)	66	Students (U)	RMT (22 h) 8 weekly sessions (8 × 2 h) +1 one-day session (6 h)	DMD (10–45 min long) MGD (15–25 min) 70% of all practice	higher trait mindfulness[b] (d = 0.73) higher self-compassion[b] (d = 0.70) higher authentic leadership[a] (d = 0.61) higher empathic accuracy[c] (d = 0.45)

Note. RM = relational mindfulness; CARE = cultivating awareness and resilience in education.
ReSource (P + A) = Perspective and Affect modules of ReSource project.
RMT = Relational Mindfulness Training; I = Intervention; N = Number of *participants*; N/A = information not available in the paper; U = university.
DMD = Dyadic mindful dialogue; MGD = Mindful group discussion.
[a] $p < .05$.
[b] $p < .01$.
[c] $p < .1$.

interaction (the domain of mindfulness of other-in-relationship) (Surrey & Kramer, 2013).

The roots of the practice of relational mindfulness can be found both in Buddhism (Kramer, 2007) and Western Therapeutic approaches such as Gestalt Therapy and Coaching, Person-Centered Therapy, or Bohmian Dialogue (Falb & Pargament, 2012; Surrey & Kramer, 2013). There are only a few studies that have already examined the effects of training in relational mindfulness (Bowen, Haworth, Grow, Tsai, & Kohlenberg, 2012; Hildebrandt, McCall, & Singer, 2017; Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013; Kohlenberg et al., 2015; Kok & Singer, 2017; Vich & Lukeš, 2018), but they have brought some pioneering evidence into the field. However, only three studies (Hildebrandt et al., 2017; Kok & Singer, 2017; Vich & Lukeš, 2018) have examined an intervention that has a primary focus on the practice of relational mindfulness. To our knowledge, no studies have examined whether the effects of the training in relational mindfulness are sustained after the end of the intervention (see Table 1).

Therefore, we explore how the long-term effects of RMT compare with mindfulness-based interventions (MBIs), Mindfulness-Based Stress Reduction (MBSR), and Mindfulness-Based Cognitive Therapy (MBCT). We also compare the effects of RMT with the loving-kindness meditation interventions (LKMIs) that primarily focus on a secular practice of the loving-kindness meditation (LKM) and self-compassion (Zeng et al., 2015). The core of the practice of relational mindfulness practice lies in the ability to apply micro-practices while being in social interaction. Although all micro-practices are interrelated, we assume that certain micro-practices influence the development of specific beneficial qualities (outcomes of the practice) (see Fig. 1).

A central part of micro-practices focuses on the domain of self-in-relationship that focuses on the inner experience of the practitioner while the other individuals serve as a context for the practice (Surrey & Kramer, 2013). Those micro-practices primarily develop basic aspects of mindfulness, as described in Bergomi, Tschacher, and Kupper (2013). Essentially, micro-practices guide participants towards attending to the experience while being with others, towards engaging in sharing with awareness, and towards being able to label what they are experiencing in the present moment (we list examples of instructions in Fig. 2). RMT assumes that this facilitated and conscious engagement in dynamic interactions helps individuals to internalize the tendency to deal with regular social situations with more presence and awareness. Hence, this training might support the long-term development of trait mindfulness, which refers to the propensity to be mindful during daily situations (Bergomi et al., 2013; Gu, Xu, & Zhu, 2018). Previous studies on relational mindfulness have confirmed this effect but only in the short run (Jennings et al., 2013; Vich & Lukeš, 2018), while a proportion of the studies on MBIs and LKMIs have shown significant long-term effects on trait mindfulness (Graser, Höfling, Weßlau, Mendes, & Stangier, 2016; Gu et al., 2018; Moynihan, Chapman, & Klorman, 2013; O'Doherty, Carr, & McGrann, 2015; Shapiro et al., 2011, 2008), while the rest of those studies have not (Jedel, Hoffman, Merriman, & Swansong, 2014; Perich et al., 2013).

We also examine the impact of training in relational mindfulness on the level of perceived stress. Stress management is one of the most examined areas of mindfulness research (e.g., Goyal et al., 2014), but the studies on long-term effects have mixed findings, whereby a few studies revealed a significant impact (Geary & Rosenthal, 2011; Oman et al., 2008; Omidi & Zargar, 2015; Pbert, Madison, & Druker, 2012) and two studies did not (Erogul, Singer, McIntyre, & Stefanov, 2014; Shapiro et al., 2011). We have also found no study on LKMI that would examine this effect in the long run. Social interactions are indicated as one of the primary sources of stress in our life (Beery & Kaufer, 2015), and the training in relational mindfulness simulates some of those social interaction situations. Participants are invited to engage in intense and usually stressful practices such as maintaining eye contact and sharing of the present thoughts, feelings, or personal stories (Kramer, 2007; Vich & Lukeš, 2018). Those practices are accompanied by micro-practices (see Fig. 2) that help participants to stay with such an experience without avoiding related feelings or tensions on the one hand, but also with being detached from the experience on the other hand. Therefore, we assume that training in relational mindfulness is an appropriate practice for the sustainable decrease in perceived stress.

We further assume that the training in relational mindfulness represents a sustainable practice for the development of the qualities that support human flourishment. One of the main aspects of this practice is learning how to care for oneself as well as caring for others (Vich & Lukeš, 2018). Thus, we examine self-compassion that entails the capacity of care for oneself, especially while facing a failure, social discomfort, or harsh emotions (Neff, 2003). Short-term effects of the

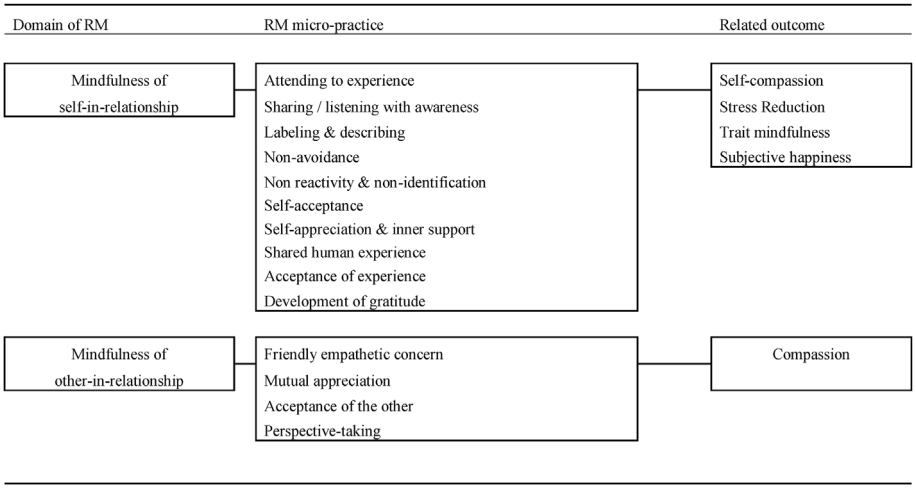

Fig. 1. Domains, micro-practices and outcomes of Relational Mindfulness.

training in relational mindfulness on self-compassion have been confirmed by two studies (Hildebrandt et al., 2017; Vich & Lukeš, 2018) while a proportion of the studies on MBIs and LKMIs have shown significant positive effects in the long run (Arimitsu, 2016; Erogul et al., 2014; Kearney, Malte, & McManus, 2013; Neff & Germer, 2013; Rimes & Wingrove, 2013; Robins, Keng, Ekblad, & Brantley, 2012) while the others have not (Graser et al., 2016; Shapiro et al., 2011; Weibel et al., 2016). The interaction with others during the training in relational mindfulness (either in dyads or in the main group) offers an opportunity to observe and kindly accept the tendencies of being either self-judgmental or isolated from others and the guidance of the instructor helps participants to respond in a more self-compassionate way to every particular interaction. The development of such a self-compassionate attitude is achieved through the facilitation of micro-practices that are focused on the acceptance of self and experience, the development of self-appreciation & inner support, as well as the feeling of shared human experience (see Fig. 2). We expect that participants would internalize this self-compassionate attitude and even maintain it during daily situations after the end of the training period.

The ability to care for others as well as to develop a strong motivation to improve their well-being is represented by compassion (Kok & Singer, 2017). Compassion is suggested to be one of the key indicators of the real beneficial impact of contemplative training in society (Creswell, 2017), but the evidence regarding the long-term effects is

Relational mindfulness micro-practice	Example of the instruction*
Attending to experience	*"Notice your body, its weight, sensations on your skin. What is happening there? Just be with your body right now and, therefore, in the present moment…also, remember your body during the sharing."*
Sharing / listening with awareness	*"I would like to invite you to give full focus when you are sharing or listening. Be aware and aware of this process. Know what you are doing."*
Labeling & describing	*"And now, try to observe your feelings and just describe to yourself how you feel."*
Non-avoidance	*"If you notice any stress or discomfort in your body right now, just try to face this experience with curiosity and accept it as it is."*
Non-reactivity & non-identification	*"Whatever you feel or experience at this moment, either pleasant, unpleasant or neutral, just try to observe this experience as a scene on the stage. You do not need to have anything to do with it, just let it be."*
Self-acceptance	*"How do you feel about yourself at this moment? Whatever attitude towards yourself you express right now, just try to accept it. If you observe that you are self-critical or feel alone, I would like to invite you to accept yourself as you are, including your tendency to be self-critical."*
Self-appreciation & inner support	*"I would like to invite you to thank yourself for taking part in this practice as well as all the other social challenges you're going through in your life. If there is anything you need right now and you feel that you can give it to yourself, you may do so."*
Shared human experience	*"I would like to invite you to be aware that you are not alone in your experience. Similarly to you, your partner is sometimes happy, sometimes sad, is sometimes feeling accepted, and is sometimes feeling rejected. This is also similar to the other people in this group. Just be aware of that."*
Acceptance of experience	*"Whatever thoughts, feelings or bodily sensations you experience at this moment, whether they are pleasant, unpleasant, or neutral, just try to accept them as they are."*
Development of gratitude	*"I would like you to appreciate the richness of this moment - your body, your feelings, your thoughts, the air that you breathe, the sounds that you hear, your training partner, and everybody else in this room right now. You may allow yourself to be grateful for everything that you experience right now."*
Friendly empathetic concern	*"I would like to invite you to focus on your partner and try to feel what does he/she needs right now. If you feel touched by these feelings or concerned for your partner, allow yourself to experience that."*
Mutual appreciation	*"You may focus on your training partner and try to honor him/her for his/her dedication in your mutual practice. What else do you appreciate about your partner right now?"*
Acceptance of the other	*"How do you feel about your training partner right now? No matter whether you feel pleasant, unpleasant or neutral, just try to accept those feelings as they are as well as the person in front of you. Just let him/her be."*
Perspective-taking	*"And now, just try to imagine how the person in front you feels right now? How would it be for you to to be in his/her skin at this moment?"*

Note.
*The following examples of the instructions are suited for the dyadic mindful dialogue.
Instructions for other settings such as mindful group discussion are given with minor adjustments.

Fig. 2. Examples of the micro-practices of relational mindfulness.

Table 2
Outline of relational mindfulness training (RMT).

Session (time)	Individual practices	RM practices	Primary RM micro-practices
Weekly session 1 (2 h)	Basic sitting meditation	DMD Sharing in the group (2x)	Attending to experience Sharing/listening with awareness Non-avoidance practice
Weekly session 2 (2 h)	Body-scan Recapitulation	DMD (2x) Sharing in the group (2x) Development of gratitude in the group	Non-reactivity & non-identification Development of gratitude Acceptance of experience
Weekly session 3 (2 h)	Basic sitting meditation Self-compassion meditation	Simple DMD (2x) Sharing in the group (2x)	Self-acceptance Self-appreciation & inner support Shared human experience
Weekly session 4 (2 h)	Basic sitting meditation Loving-kindness meditation	DMD (2x) Sharing in the group (2x)	Friendly empathetic concern Mutual appreciation Acceptance of the other Perspective-taking
Weekly session 5 (2 h)	Basic sitting meditation	Advanced DMD (interpersonal tensions) DMD Sharing in the group (2x)	Labeling & describing
Weekly session 6 (2 h)	Basic sitting meditation	Advanced DMD (strengths and weaknesses) Sharing in the group (2x)	Focusing on practices from sessions 3 & 5
Weekend session (6 h)	Basic sitting meditation Body-scan Mindful walking Loving-kindness meditation	Advanced DMD (stress & fear awareness) DMD (4x) Sharing in the group (3x) Mindful games in the group	Focusing on all RM micro-practices
Weekly session 7 (2 h)	Basic sitting meditation	Advanced DMD (mutual closeness) DMD Sharing in the group (2x)	Focusing on practices from sessions 3 & 4
Weekly session 8 (2 h)	Basic sitting meditation	Advanced DMD (long eye gazing & sharing) DMD Sharing in the group (2x)	Focusing on practices from sessions 1, 2 & 5

Note. RMT = Relational Mindfulness Training; DMD = Dyadic mindful dialogue.

limited. In our literature search, we found one study on LKMIs with results that showed significant effects (Graser et al., 2016) and two other studies on LKMIs that found these effects to be non-significant (Kearney et al., 2013; Weibel et al., 2016). One study on training in relational mindfulness has results that show a significant short-term effect on compassion (Hildebrandt et al., 2017). Participants of the training in relational mindfulness are invited to connect through sharing, maintaining eye contact, and development of mutual kindness (Kramer, 2007; Vich & Lukeš, 2018). A significant part of the micro-practices in RMT is focused on the domain of other-in-relationship. Those practices guide participants towards acceptance and appreciation of each other, taking the perspective of the other, and developing empathetic concern (see Fig. 2). We assume that this practice helps participants to sustainably cultivate the ability to infer the emotional state of others and to develop their willingness to support others needing compassion.

The training in relational mindfulness also includes basic therapeutic and counseling aspects (Surrey & Kramer, 2013), because participants are frequently invited to give each other emotional support and to listen to each other's life stories in an empathetic way while being non-judgmental and accepting (Vich & Lukeš, 2018). This practice is similar to Person-Centered Therapy (Rogers, 1961), which is a therapeutic approach that is considered to be beneficial for human flourishment and well-being (Surrey & Kramer, 2013). Unlike the standard therapy, the training in relational mindfulness invites participants to engage in the roles of both the giver and the receiver (i.e., the therapist and the client). Active engagement in this process seems to help participants to become more sustainable in their ability to perceive life in a more accepting and grateful way. This aspect is further supported by the fact that certain micro-practices of the domain of self-in-relationship focus on the development of gratitude during social interaction (see Fig. 2). Therefore, this practice might support the increase of individual well-being, represented by subjective happiness (Lyubomirsky & Lepper, 1999), in the long run. The positive short-term effect of LKMIs on subjective happiness has been proven by two studies (Jazaieri et al., 2014; Neff & Germer, 2013), but we have not found any controlled study related to LKM or mindfulness that would examine this effect in the long run.

Finally, our study also examines the impact of a follow-up process regarding individual mindfulness practice on the sustainability of the effects in the long run. In the case of the MBIs, the significant effects of home practice on the examined variables have been confirmed both during the intervention and in the follow-up period, although the findings are mixed (Lloyd, White, Eames, & Crane, 2018; Morgan, Graham, Orsillo, & Roemer, 2014). We assume that the follow-up process for individual mindfulness practice should, at least to some extent, serve as a substitute for the relational practice and thus support the sustainability of all examined effects.

2. Method

2.1. Intervention

Relational Mindfulness Training (RMT) is an 8-week intervention (eight sessions of 2 h duration per week and one session of 6 h duration in a weekend session) that primarily focuses on the practice of relational mindfulness. The program also involves individual practice represented by classic mindfulness meditations (sitting meditation, body-scan) and LKM that would help participants to be familiar with the development of mindfulness, compassion, and other related qualities in solitude. The practice of relational mindfulness then guides participants to apply and further develop those qualities within the social interactions. The main relational practice is called the dyadic mindful dialogue and includes guided dialogue divided by silent pauses (started and ended by a simple sound), during which two individuals change their roles of speaker and listener while maintaining eye contact (Kramer, 2007). Every dyadic mindful dialogue contains micro-practices (listed in Fig. 2) that may be focused either on oneself or the other based on the specific focus of the session (see Table 2). Another practice of relational practice is the mindful group discussion that entails sharing in the whole group while being aware of the sensations, feelings, and tensions that may arise either in oneself or the other. Again, the

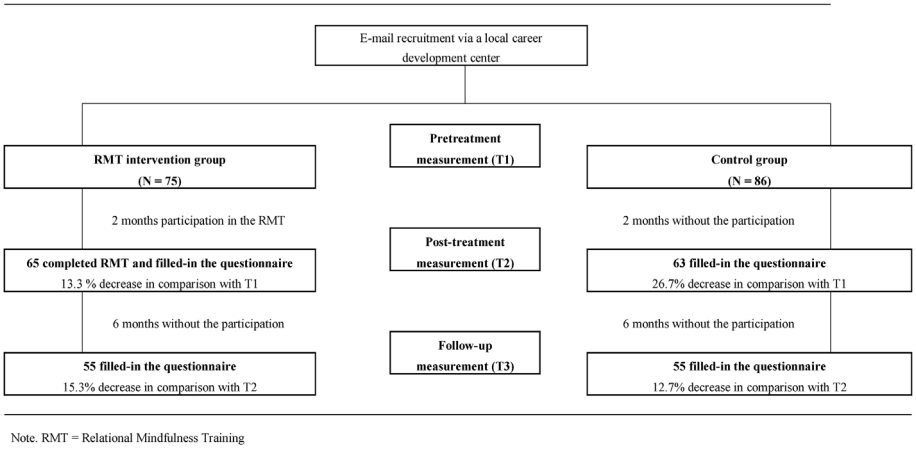

Fig. 3. Participant flow chart from pre-treatment to six-month follow-up.

facilitators use the sound signals in order to help participants perform the micro-practice.

The modified version of RMT that is examined in this paper has been updated in a few ways from the pilot version described in Vich and Lukeš (2018). First, it gives even more focus (17 out of a total 22 h) on the practice of relational mindfulness. Second, the program contains new practices of relational mindfulness (see Table 2). The most important of the practices is an advanced dyadic mindful dialogue that combines the classic dyadic sharing with contemplation on various relational topics (e.g., similarities with the training partner, analysis of the relational tensions, analysis of strengths and weaknesses). Another practice is the development of gratitude in the group that integrates the practice of mindful group discussion with the practice of gratitude. The new version of the program also includes a richer set of micro-practices designed to develop the primary aspects of mindfulness, self-compassion, and compassion (Bergomi et al., 2013; Neff, 2003; Kok & Singer, 2017). We list all the micro-practices in Fig. 2. Third, we have also restructured the schedule of all weekly sessions in this way: 1) an introductory talk; 2) a short individual mindfulness practice; 3) an individual recapitulation of the previous day or practice during the previous week; 4) a short dyadic mindful dialogue focused on the sharing of the recapitulation; 5) a break 10 min duration; 6) the long dyadic mindful dialogue coupled with individual mindfulness or LKM practice; and 7) sharing within the group. Finally, the program also includes stronger support for home practice. Participants received weekly instructions and recordings for formal and informal individual home practice. Weekly recommendations for the formal practice involved: 1) basic sitting meditation (5 min) or a body-scan practice (15 min) at least once per day; 2) LKM or self-compassion meditation (15 min) at least twice a week; 3) recapitulation practice (5 min) at least once per day. Therefore, the required duration of individual home practice is, in the case of RMT, much more reduced in comparison with MBSR or MBCT, which require 45–60 min of individual practice per day (Lloyd et al., 2018). The particular RMT in the present study has been facilitated by two mindfulness instructors. Both instructors were experienced mindfulness practitioners with a background in psychotherapy. Each instructor led two training groups with approximately 18 participants. In order to successfully complete the RMT curriculum, the participants had to attend at least 20 out of the total 22 training hours.

2.2. Participants

The baseline sample included 161 management and economics students from a university located in Central Europe. First, we recruited students through the local career development center by sending an email to approximately 3000 students assigned to the center. One hundred and seventeen (117) students responded to the e-mail, attended the initial baseline measurement (T1 = one week before the start of the program), and met the inclusion criteria. The criteria involved the following: participants had to be students of the university, answered all questions in the initial survey, and did not suffer from acute psychological illnesses or addiction to alcohol or drugs. Subsequently, they were randomly assigned to the intervention group (75 participants) and the control group (42 participants). Regarding the capacity of the training rooms and requirements of the facilitators, we knew that we had a capacity to provide the intervention for 75 participants, so we randomly selected the 75 out of 117 participants who passed through the T1 measurement and the rest of the participants were assigned to the control group. Second, the control group was further expanded by 44 participants who had registered in an alternative career development course of 8 weeks duration that was facilitated by the first author of this study. The 44 participants went through the same initial baseline measurement. In order to ensure that such a group expansion is possible, we conducted the independent samples *t*-test for age and chi-square test for other baseline control variables (sex, Caucasian, previous meditative experience, managerial or entrepreneurship experience, and occasional alcohol or drug use) and the main variables in order to examine any baseline differences between both parts of the control group. In the case of the main baseline variables, the independent samples t-test showed no significant difference at the $p < .05$ level. Also, there were no significant differences in baseline control variables, except for age, where the participants from the alternative course were 2.2 years younger than the rest of the participants (t (84) = 4.410, p = .001). See Fig. 3 for the flow chart of the participants.

At first, our analysis focused on the examination of the effects of RMT in the short run. Sixty-five (65) participants from the RMT group and 63 participants from the control group successfully participated in the second measurement (T2 = one week after the end of the intervention). Ten participants of the RMT group did not complete the criteria for the completion of the RMT curriculum (they had more than 2 h of absence), and thus they were not eligible for participation in the post-test measurement. In sum, there was a 13.3% drop in participants recognized in the RMT group, while the control group decreased by 26.7%. A non-participation check showed no significant differences ($p < .05$) between individuals who participated in T2 and dropped from the study for any of the baseline variables. In T2, the RMT group participants (M age = 24.18, SD = 3.23) were 58.5% female, and 93.8% Caucasian; 23.1% reported having previous meditative experience; 27.7% previous managerial or entrepreneurial experience and 4.6% reported occasional alcohol or drug use. In the case of the control group (M age = 22.59, SD = 2.55), 66.7% of the participants were female and 96.8% were Caucasian; 15.9% reported having previous meditative experience; 25.4% possessed previous managerial or

entrepreneurial experience, while 12.7% reported occasional alcohol or drug use. The independent sample t-test showed a significant difference in age (t (126) = 3.102, p = .002). Therefore, age was included as a covariate in the following analyses of differences between the groups. The chi-square test did not show significant differences between any of the other control variables. We also did not find any significant differences between the mean results of the main variables for the groups of each instructor as well as for both parts of the control group.

Then, we focused on the analysis of the RMT in the long run, which included individuals who successfully participated in the follow-up measurement after six months (T3). Fifty-five (55) participants from both conditions participated in this measurement, meaning that our sample recognized a 15.4% decrease in participants in the RMT group and a 12.7% decrease in participants in the control group. The final sample, therefore, contained 110 participants. The composition of the sample was very similar as in T2 (detailed description is available by the authors). Again, the independent sample t-test showed a significant difference between RMT group and the control group in age (t (108) = 2.736, p = .007). Therefore, age was included as a covariate in the following analyses of differences between the groups. Similarly to T2, the chi-square tests did not show significant differences between any of the other control variables.

Finally, we also conducted an analysis that was focused on the examination of the effects of individual practice in the period between T2 and T3. This analysis focused on the comparison between the high-practice (HP) and low-practice (LP) subgroups of the RMT group. The measurement of individual practice was applied to participants in T1 and T3. Based on the T3 measurement, participants were divided into the HP RMT group (i.e., individuals responded with 3–4 in the case of individual practice) and the LP RMT group (i.e., individuals responded with 1–2 in the case of individual practice). The final sample contained 54 participants (i.e., one participant did not respond), in which the HP RMT group included 20 participants, and the LP RMT group included 34 participants. The analysis of the differences between baseline control variables between the two groups found no significant differences for any of the variables.

2.3. Measures

All measures used in the study were translated from the English language to the Czech language and back again by the first and second authors of the study and an independent translator.

Self-Compassion The 26-item Self-Compassion Scale (SCS; Neff, 2003) was used as a measure of self-compassion. Similar to the previous studies in the literature that used this measure, the level of self-compassion was examined as a total score (e.g., Erogul et al., 2014; Neff & Germer, 2013). Participants indicated how they treat themselves in difficult situations by using the 1–5 Likert scale from 1 [almost never] to 5 [almost always]. Cronbach ‘s alpha was .88.

Compassion Participants evaluated the level of compassion by using the Compassion Scale (CS; Pommier, 2011) that contains 24 items. Neff and Germer (2013) showed that the scale has an appropriate factor structure and that a single higher-order factor of compassion explains the strong inter-correlations among the subscales (CFI = 0.96). Participants indicated on the 5-point Likert scale from 1 [almost never] to 5 [almost always] how frequently they had an experience that was similar to the experience described in each statement. Cronbach's alpha was .90.

Perceived Stress The level of perceived stress was examined by the use of the 10-item Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983). Participants evaluated their thoughts and feelings during the past month by choosing a statement on the 1–5 Likert scale (from 1 [never] to 5 [very often]). Cronbach ‘s alpha was .86.

Mindfulness The level of mindfulness was examined by the 15-item Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003). Participants indicated on the 6-point Likert scale from 1 [almost always] to 6 [almost never] how frequently they had a daily experience similar to the experience described in each statement. MAAS shows good predictive validity and is suggested to be an appropriate measure for inexperienced mindfulness practitioners (Bergomi et al., 2013). Cronbach's alpha was .81.

Subjective Happiness The Subjective Happiness Scale (SHS) (Lyubomirsky & Lepper, 1999) was used as a measure of the level of subjective happiness. SHS contains four items that can be answered on the 7-point Likert scale, ranging from 1 [e.g., not at all; less happy] to 7 [e.g., a great deal; happier]. Cronbach's alpha was .85.

Individual practice We created a simple 1-item measure to examine the amount of individual practice among the RMT group participants. The construction of this measure has been inspired by the measure developed by Morgan et al. (2014). Participants responded on a 4-item Likert scale, that is 1 = never or very occasionally, 2 = once a week, 3 = 2–3 times a week, 4 = four times a week or more.

3. Results

Data were analyzed using SPSS Version 21. To determine whether the experimental group demonstrated a significantly greater degree of improvement than the control group, including the effect sizes calculated by examining gain scores with Cohen's d (see Table 3), we used 2 (Group) X 2 (Time) mixed ANCOVA for an examination of the effects of RMT in the short run and 2 (Group) X 3 (Time) mixed ANCOVA for an examination of the effects of RMT in the long run. Based on the common practice in the field (e.g., Neff & Germer, 2013; Shonin, Gordon, Dunn, Singh, & Griffiths, 2014), we also report the simple main effects of time captured by using the paired samples t-test, but we do not report the main effects of group and time in an ANCOVA. The

Table 3
Differences Between the RMT group and the Control Group in the Short Run, Analyzed with 2 (Group) X 2 (Time) ANCOVA and Effect Sizes Using Cohen's d.

Outcome	RMT Group		Control Group			
	T1	T2	T1	T2	F	Effect size
	M (SD)	M (SD)	M (SD)	M (SD)	Time x Group	Cohen's d
Mindfulness (MAAS)	3.80 (0.65)	4.19 (0.50)	4.07 (0.52)	3.96 (0.56)	22.465[a]	0.85
Self-Compassion (SCS)	2.94 (0.59)	3.36 (0.58)	2.96 (0.63)	2.96 (0.63)	21.204[a]	0.83
Compassion (CS)	3.79 (0.56)	3.94 (0.43)	3.74 (0.60)	3.69 (0.65)	5.040[b]	0.40
Perceived Stress (PSS)	2.90 (0.70)	2.53 (0.57)	2.74 (0.66)	2.99 (0.68)	21.212[a]	0.83
Subjective Happiness (SHS)	4.88 (1.24)	5.31 (1.06)	4.90 (1.32)	4.85 (1.24)	5.933[b]	0.40

Note. RMT = Relational Mindfulness Training; MAAS = Mindful Attention Awareness Scale; SCS = Self-Compassion Scale.
CS = Compassion Scale; PSS = Perceived Stress Scale; SHS = Subjective Happiness Scale; M = mean; SD = standard deviation.
T1 = pre-intervention period; T2 = post-intervention period.
[a] $p < .01$.
[b] $p < .05$.

Table 4
Differences Between the RMT Group and the Control Group in the Long Run, Analyzed with 2 (Group) X 3 (Time) ANCOVA, and Effect Sizes Using Cohen's d.

Outcome	RMT Group			Control Group				
	T1	T2	T3	T1	T2	T3	F	Effect size
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	Time x Group	Cohen's d
Mindfulness (MAAS)	3.83 (0.68)	4.16 (0.49)	4.24 (0.62)	4.07 (0.56)	3.90 (0.57)	3.96 (0.63)	11.347[b]	0.65
Self-Compassion (SCS)	2.96 (0.55)	3.34 (0.57)	3.26 (0.64)	2.90 (0.63)	2.91 (0.64)	2.85 (0.64)	10.979[b]	0.65
Compassion (CS)	3.79 (0.55)	3.96 (0.43)	3.81 (0.43)	3.75 (0.61)	3.72 (0.64)	3.70 (0.63)	2.537[c]	0.31
Perceived Stress (PSS)	2.87 (0.73)	2.52 (0.60)	2.68 (0.78)	2.79 (0.67)	3.04 (0.69)	3.07 (0.81)	8.028[b]	0.55
Subjective Happiness (SHS)	4.91 (1.27)	5.35 (1.09)	5.20 (1.09)	4.84 (1.33)	4.77 (1.26)	4.83 (1.28)	2.294	0.29

Note. RMT = Relational Mindfulness Training; MAAS = Mindful Attention Awareness Scale; SCS = Self-Compassion Scale.
CS = Compassion Scale; PSS = Perceived Stress Scale; SHS = Subjective Happiness Scale; M = mean; SD = standard deviation; T1 = pre-intervention period; T2 = post-intervention period; T3 = 6-month follow-up period.
*$p < .05$.
[b] $p < .01$.
[c] $p < .1$.

results for short-term effects showed significant differences for mindfulness (F (1, 128) = 22.465, $p < .01$, d = 0.85), self-compassion (F (1, 128) = 21.204, $p < .01$, d = 0.83), compassion (F (1, 128) = 5.040, $p < .05$, d = 0.40), perceived stress (F (1, 128) = 21.212, $p < .01$, d = 0.83) and subjective happiness (F (1, 128) = 5.933, $p < .05$, d = 0.40). Furthermore, results from the paired samples *t*-test showed positive significant differences within RMT group for mindfulness (t (64) = −4.613, $p < .01$), self-compassion (t (64) = −5.923, $p < .01$), compassion (t (64) = - 2.616, $p < .05$), subjective happiness (t (64) = −2.938, $p < .01$) and negative differences within RMT group for perceived stress (t (64) = 3.880, $p < .01$).

Our second main analysis focused on the effects of RMT in the long run. Results from the 2 (Group) X 3 (Time) mixed ANCOVA (see Table 4) showed a significant effect for mindfulness (with medium effect size) (F (1, 110) = 11.347, p < .01, d = 0.65), self-compassion (F (2, 110) = 10.979, p < .01, d = 0.65), and perceived stress (F (2, 110) = 8.028, p < .01, d = 0.55). However, the improvement was only marginally significant ($p < .10$) for compassion (F (2, 110) = 2.537, $p < .10$, d = 0.31), and it was non-significant for subjective happiness (F (2, 110) = 2.294, $p = .105$, d = 0.29). Subsequently, in the case of the RMT group, the paired samples *t*-test demonstrated significant differences between T1 and T3 for mindfulness (t (54) = −3.661, $p < .01$) and self-compassion (t (54) = - 3.841, p < .01). The results showed marginal significance (p < .10) for perceived stress (t (54) = 1.687, $p = .097$) and subjective happiness (t (32) = - 1.956, p = .056). The growth of compassion was not significant (t (54) = - 0.267, $p = .791$).

Our third main analysis focused on the examination of differences between the HP RMT group and the LP RMT group for the period between T2 and T3, in order to examine the effects of the individual practice on a sustainability of the increased levels of outcome variables. Although the results from the 2 (Group) X 2 (Time) mixed ANCOVA indicated notable effect sizes in differences between both groups, there was only a marginally significant effect ($p < .10$) for self-compassion (F (1, 54) = 3.938, $p = .052$, d = 0.55). Differences for the other variables were non-significant, that is mindfulness (F (1, 54) = 1.808, $p = .185$, d = 0.38), compassion (F (1, 54) = 1.155, $p = .287$, d = 0.30), perceived stress (F (1, 54) = 2.476, $p = .122$, d = 0.43) and subjective happiness (F (1, 54) = 1.799, $p = .186$, d = 0.37).

4. Discussion

We conducted this study to assess the long-term effects of Relational Mindfulness Training (RMT). Our analysis showed a significant positive impact of RMT on self-compassion and trait mindfulness and the significant negative impact of RMT on perceived stress. We compare our results with previously conducted controlled studies on multiple-week versions (5–12 weeks) of MBIs and LKMIs that were conducted on the sample of adults (18+ years of age), that required active participation in the training group, and included 2–12 months of follow-up measurement (see Table 5 for the outline of the studies). Table 5 shows that 6 out of 8 studies led to a significant positive impact on self-compassion, 5 out of 8 studies proved a significant positive impact on trait mindfulness, and 4 out of 6 studies showed a negative impact on perceived stress. The effect sizes of the reported results (i.e., for those studies that reported them) were similarly as strong as in our study.

The significant long-term impact on the aforementioned qualities can be explained by two main mechanisms. The impact may have been influenced by the development of micro-practices of the first domain of relational mindfulness, i.e., the mindfulness of self-in-relationship (Surrey & Kramer, 2013). The development of mindful awareness and self-compassion in this domain uses the presence of other individuals as a context for an examination of one's present state of mind and body as well as for giving care to oneself. This practice, therefore, seems to be less dependent on the particular training group and thus is more easily internalized and further practiced informally after the end of the intervention. The mentioned effects could have also been influenced by individual mindfulness or LKM practice. However, the individual meditations have a secondary role in the case of RMT because they take no more than one-fourth of all training hours. Furthermore, the analysis of the individual home practice on the study outcomes in the follow-up period showed a notable but non-significant effect on perceived stress and trait mindfulness while the effect on self-compassion was marginal ($p < .10$). However, we cannot entirely exclude the impact of the individual practice on the study results.

Our analysis further showed a significant positive impact on compassion in the short run and a marginally positive impact on compassion in the long run. As can be seen in Table 5, there are only a few relevant studies that examined the impact on compassion in the long run. The findings of those studies are mixed as one study did not show a significant impact on compassion at all (Kearney et al., 2013), two studies led to the significant positive impact in the short run only (Neff & Germer, 2013; Weibel et al., 2016), and one study showed a significant positive impact both in the short and long run (Graser et al., 2016). This comparison suggests that the sustainable development of compassion represents a notable challenge and that RMT has the potential to represent one of the ways to progress further in this area if the proper measures are considered in future studies. We assume that compassion is primarily developed through the micro-practices of the second domain of relational mindfulness, the mindfulness of other-in-relationship. In the case of this domain, the other individual does not only provide a context for the development of the mindful and caring awareness but represents the object of the practice itself (Surrey &

Table 5
Comparison of the long-term effects of RMT with previous studies on MBSR, MBCT, and LKMIs.

Study	I	N	Sample	T3 N	Effect size (Cohen's d)			
					SCS	PSS	MAAS	Cs
Our study	RMT	110	University Students	6 m	0.65[b]	- 0.55[b]	0.65[b]	0.31[c]
Oman et al. (2008)	MBSR	44	University Students	2 m	–	- 0.51[b]	–	–
Shapiro, Oman, Thoresen, Plante, and Flinders (2008)	MBSR	44	University Students	3 m	–	–	0.93[a]	–
Shapiro et al. (2011)	MBSR	30	University Students	12 m	N/A[a]	0.10	0.36	–
Pbert et al. (2012)	MBSR	83	Adults with asthma	6 m	–	N/A[a]	–	–
Robins et al. (2012)	MBSR	41	Adults	2 m	0.84[b]	–	–	–
Geary and Rosenthal (2011)	MBSR	108	University employees	12 m	–	N/A[a]	–	–
Moynihan et al. (2013)	MBSR	201	Adults (65+)	8 m	–	–	0.25[a]	–
Erogul et al. (2014)	MBSR	58	University Students	3 m	0.97[b]	- 0.51[c]	–	–
Jedel et al. (2014)	MBSR	55	Patients with inactive ulcerative colitis (UC)	12 m	–	–	N/A	–
Omidi and Zargar (2015)	MBSR	60	Adults with tension headache	3 m	–	N/A[b]	–	–
Perich et al. (2013)	MBCT	95	BD patients	6 m	–	–	N/A	–
Van Son et al., 2014	MBCT	139	University Students	6 m	–	- 0.76[b]	–	–
O'Doherty et al. (2015)	MBCT	62	CHD patients	6 m	–	–	0.43[b]	–
Gu et al. (2018)	MBCT	44	University Students (ADHD)	3 m	–	–	1.06[b]	–
Weibel et al. (2016)	LKMI	71	University Students	2 m	N/A[c]	–	–	N/A
Kearney et al. (2013)	LKMI	42	Post-traumatic stress disorder veterans	3 m	0.92[b]	–	–	0.14
Graser et al. (2016)	LKMI	11	Patients with diagnosed psychological illnesses	3 m	N/A	–	0.36[a]	0.21[a]
Neff and Germer (2013)	LKMI	52	Adults	6 m	N/A[b]	–	–	–
Arimitsu (2016)	LKMI	40	University Students	3 m	0.51[b]	–	–	–

Note. RMT = Relational Mindfulness Training; SCS = Self-Compassion Scale; PSS = Perceived Stress Scale.
MAAS = Mindful Attention Awareness Scale; Cs = Compassion scales (Compassion Scale (CS) or Compassion Love Scale (CLS)).
MBSR = Mindfulness-Based Stress Reduction; MBCT = Mindfulness-Based Cognitive Therapy.
LKMI = loving-kindness meditation intervention; I = Intervention; N = Number of participants.
T3 N = number of months between post-intervention (T2) and follow-up period (T3).
[a] $p < .05$.
[b] $p < .01$.
[c] $p < .1$.

Kramer, 2013). Therefore, the development and maintenance of this practice are likely to be more dependent on the active presence in the safe and caring training group, and 8 weeks of participation might not be sufficient for the sustainable development of compassion. Furthermore, the analysis of the individual practice in the follow-up period also showed neither the significance nor the positive trend in the case of compassion, which implies that compassion is less easily sustained by individual practice than self-focused characteristics such as self-compassion or mindfulness.

Finally, our results also show a similar trend for the impact of RMT on subjective happiness. The significant effects in the short run support our assumption that participation in RMT helps participants to develop a more positive view on their life by giving each other a simple therapy in the form of engagement in accepting, empathetic and non-judgmental listening. However, similarly to compassion, a non-significant long-term effect suggests that this practice is dependent on the presence in the training group. Nevertheless, we propose that under the proper conditions, the sustainable effects of the training on compassion and subjective happiness can be improved, and we discuss these below.

4.1. Limitations and recommendations for future research

The study design did not examine the pure effects of the training in relational mindfulness because the examined intervention also contained individual practice. Combining the relational and individual practice has, to our knowledge, been part of all previously conducted studies on multiple-week training in relational mindfulness (e.g., Hildebrandt et al., 2017; Jennings et al., 2013) and the intervention that was examined in the present study has provided more focus on relational mindfulness practice (i.e., > 75%) than all those studies. Nevertheless, we recommend future studies to use the designs that would assess the effects of relational mindfulness more clearly. Researchers can focus on the examination of the differences between brief individual and relational practices, similarly to the studies of Bowen et al. (2012) and Kohlenberg et al. (2015). However, unlike those studies, the relational part of the training needs to be dedicated solely to the practice of relational mindfulness. Another recommended option is the incorporationof the classic MBIs such as MBSR or MBCT (Creswell, 2017) into the study design as a control condition. Furthermore, similarly to other examined programs in the field (Collins, Kugler, & Gwadz, 2016; Uwatoko, Luo, Sakata, & Kobayashi et al., 2018), the researchers should consider using multiphase optimization strategy (MOST) (Bernstein, Dziur, Weiss, & Toll, 2018; Collins et al., 2016) in order to increase the effectiveness, efficiency, and scalability of the RMT. More specifically, this framework can reveal the impact and optimal proportion of individual and relational mindfulness practices, and also the impact and optimal combination of micro-practices (included in relational mindfulness practices). The application of MOST can also play an essential role in an adaptation of RMT to other settings because it has the potential to reveal the optimal duration and representation of practices for the particular sample and environment. It might be particularly fruitful for organizational settings, where the higher efficiency of programs is required due to the limited amount of time that is dedicated to contemplative training (Good, Lyddy, & Glomb, 2016).

Furthermore, our study did not use the opportunity to examine the level of relational mindfulness as an outcome of the study. Future studies can, for example, include a 20-item scale that was recently developed by Pratscher, Rose, Markovitz, and Bettencourt (2018). Our findings have suggested that domains of self-in-relationship and other-in-relationship are likely to influence different qualities among the training participants. Researchers who are willing to develop a new scale should, therefore, consider the development of the measure that would assess distinct domains of relational mindfulness (Surrey & Kramer, 2013) to examine our assumption further.

Our study is also limited by the fact that it relies solely on self-report questionnaires. We recommend future studies to consider other methods. Qualitative interpretative analyses may explore the process, motivation, and individual assumptions related to training in relational

mindfulness (Solhaug et al., 2016). The impact on pro-social qualities can be validated by behavioral games such as Zurich Prosocial Game (ZPG; Leiberg, Klimecki, & Singer, 2011), while the measurement of brain responses through the methods such as event-related brain potentials (ERP) can help assess the effects of relational mindfulness on psychophysiological level (Bostanov, Ohlrogge, Britz, Hautzinger, & Kotchoubey, 2018). Organizational researchers willing to access performance outcomes might also consider objective measures such as KPIs (Zalis, Prochazka, & Vaculik, 2019).

This study is focused on the sample of management students. Comparison with other studies (see Table 5) indicates that effect sizes of our study are similar to other studies irrespective of whether those studies were conducted on university students, adults, or patients. However, the recent analysis shows that generalizing from students to the general public can be problematic in the case of research that focuses on personal and attitudinal variables (Hanel & Vione, 2016). Therefore, we recommend future studies to include the general public population in order to explore the effects of RMT on the general population.

Finally, our results show significant positive effects on compassion in the short run that partially diminish in the long run. Interventions that can provide sustainable effects on compassion may develop the supervised follow-up groups for the graduates of the program to help them stay in touch with the relational mindfulness practice, as well as with the caring environment of RMT. This practice also has the potential to support the sustainable development of subjective happiness. Alternatively, future interventions can reshuffle individual participants into new training groups for every session. The constant change of peers can help participants to be less dependent on a particular group and thus more easily develop and sustain compassion with respect to the "strangers". Another possible step towards the more sustainable impact of training in relational mindfulness on compassion is represented by more emphasis on the home practice of LKM. A connection between LKM and relational mindfulness is suggested as crucial for the development of affective and pro-social qualities (Hildebrandt et al., 2017). This can be further supported by more relational sharing of home practice during the training sessions, as well as by the inclusion of other supportive material, such as recordings or training books in the program. Finally, developing and including more micro-practices in the domain of other-in-relationship might also support the impact of RMT on other-focused outcomes such as compassion.

Additional notes

Participation in the study was voluntary and free of charge. The study has been approved by the faculty internal grant committee (March 23, 2015) that is responsible for considering and approving the ethical aspects of research.

Contribution of authors

The first author of the study co-created the study design, cooperated in the translation of the measures, prepared the content of RMT intervention, lead the intervention in two groups, gathered the data, performed the analyses and drafted the manuscript. The second author co-created the study design, cooperated in the translation of the measures, framed the overall manuscript and refined it multiple times. The third author helped in developing the content of RMT intervention and leading the intervention in two groups.

Compliance with ethical standards

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Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Declaration of competing interest

No conflict of interest.

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