

# Effects of a Mortality Salience Exercise during Mindfulness-Based Self-Practice/Self-Reflection on Physical and Mental Well-Being among Cognitive-Behavior Therapy Trainees

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**Abstract** Meditations on death and dying that raise mortality salience (MS) are occasionally used during mindfulness-based Self-Practice/Self-Reflection with Cognitive-Behavior Therapy (CBT) trainees. However, Terror Management Theory studies suggest this may have adverse impacts. This study reports on the effect of a MS exercise on physical and psychological well-being in N = 211 CBT trainees. Findings show physical well-being was unaffected, but mental well-being was temporarily reduced in vulnerable participants. Adverse impact of MS exercises may be reduced if trainees have solid mindfulness skills. MS exercises may be justified if they can be shown to benefit therapists' professional competency or personal resilience.

**Keywords:** *self-practice/self-reflection, mortality salience, terror management theory, mindfulness, therapist training*

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## 1. Introduction

A positive helping alliance (HA; [1]) is the major non-specific factor that predicts good outcomes in psychotherapy [2]. Aspects of mental health providers' competency that foster a strong HA include empathy and openness, especially when patients challenge therapists [3]. Among the many aspects of therapist / patient interactions that present challenges for therapists are situations that raise the mental health professional's own mortality salience (MS).

Terror Management Theory (TMT; [4,5]) postulates that increases in MS may have a variety of undesirable interpersonal consequences, including increased prejudice and decreased openness and empathy. A nearly forty-year accumulation of research findings has confirmed these postulates (see [6], for a book-length summary). These findings have also been confirmed in clinical settings, for example through evidence of decreased empathy toward patients when physicians face death in their daily work [7].

Self-Practice and Self-Reflection (SP/SR; [8,9]) in the training of psychotherapists is designed to allow experiential exploration, practicing of therapeutic skills, and self-reflection to promote various therapeutic

competencies, including those that foster the HA. Pertinent competencies include the ability to maintain an open and empathic stance in psychotherapy when challenged by difficult situations such as client suicidality. While traditional SP/SR does not include exercises aimed at increasing MS, it has been suggested that practicing mindfulness, openness, and empathy in a pedagogical context that increases MS may also help inoculate psychotherapists against engaging in untherapeutic behaviors when faced with thoughts of death, potentially avoiding the detrimental effects of an increase in MS. (cf. [10,11]). Use of MS exercises as part of the training of mental health providers is currently in its infancy and no firm evidence exists of its potential benefits. However, given the very real possibility of adverse consequences when MS is increased (cf. [5]), the question arises whether MS exercises may lead to temporary or lasting adverse impairment which may offset any potential training benefit of an increase in MS as part of SP/SR. If this were the case, especially if lasting adverse effects were found, potential benefits of MS exercises as part of mental health provider training would be low, in no small part because a psychotherapist's own psychological quality of life has been shown to impact their therapeutic effectiveness [12].

While Cognitive-Behavior Therapy (CBT) techniques, such as cognitive restructuring, which are often included

in SP/SR (cf. [13]), may aid in the management of death anxiety [14], mindfulness and related Buddhism inspired techniques may be particularly helpful [15,16,17,18]. Mindfulness meditations on death and dying have a long tradition in Buddhism [16,18]. Trait mindfulness has also been shown to blunt adverse effects of MS inductions [17], and mindfulness interventions have similarly been shown to reduce defensive and rigid reactions to experimentally induced MS [19,20].

For these reasons, it has been postulated that MS inductions in the context of mindfulness training might help prepare clinicians to better cope with regular reminders of death in the course of their work, such as when working with suicidal or terminally ill clients [15,16,18,21]. Training protocols for mental health providers that specifically include mindfulness meditations on death and dying are available in English [10,11], and in German [21].

Mindful experiential explorations of death and dying are a relatively new and innovative element in the training of mental health clinicians. When such innovation occurs, one important basic question is whether there are unintended adverse consequences for participants. The ethical principle involved has been termed “first, do no harm” and is enshrined in all allied health professions’ codes of conduct. It appears, for example, in medical ethics under the concept of “nonmaleficence” [22] and in the ethics code of the American Psychological Association under Principle A: Beneficence and Nonmaleficence [23]. This principle is particularly pertinent when using MS inductions in the course of professional training because of possible adverse effects of MS on vulnerable persons, such as those with low self-esteem [24], as such persons have been shown, for example, to be at increased risk for depression when experiencing increased MS [25].

The present study aims to add to the literature on the use of MS inductions in the training of mental health professionals by examining the effect of an MS induction on SP/SR trainees with particular focus on those who may be vulnerable to adverse outcomes.

## 2. Method

### 2.1. Participants

Participants (N=211) were initially approached for participation, with all providing informed consent in compliance with German research ethics guidelines. All participants were trainees undergoing SP/SR as they sought post-graduate qualifications to become qualified CBT therapists in Germany [9,26]. All participants had completed prior qualifying university studies as counselors, clinical psychologists, or physicians. See Table 1 for descriptive statistics.

### 2.2. Instruments

**Sociodemographic Questionnaire:** Upon consent, participants completed a questionnaire on basic sociodemographic and employment information regarding the characteristics summarized in Table 1.

**Table 1. Participant Characteristics (N=211)<sup>a</sup>**

Characteristic	Descriptive Statistic
Male/female/other	49 (23%) / 160 (77%) / 0
National origin	German 200 (96%) / other 9 (4%)
Age (M, SD)	37 (6.9)
Partnered/single	141 (68%) / 68 (32%)
Employment Status	FT 95 (45%) / PT 53 (25%) / not employed 61 (29%)

Note. FT = full time; PT = part time.

<sup>a</sup>n for each descriptive statistic varies between 205 – 211 due to missing data.

The original German version of the 12 item Short Form Health Survey (SF-12) was used to collect information on physical and psychological functioning [27]. Such surveys have been shown to be a cross-culturally valid indicator of quality of life including among Germans [28]. Items on the SF-12’s pose Likert and yes/no scored mental health and physical health questions such as “During the past 4 weeks, how much did pain interfere with your normal work including work outside the home and housework? (all of the time, most of the time, a good bit of the time, some of the time, a little of the time, none of the time)” and “During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious): Did you do work or activities less carefully than usual? (yes/no)”. Scales are scored using a computer algorithm [29] which yields scaled T-scores with M=50, SD=10. In the present study, the SF-12’s two-factor scaling was used which yields a physical component summary (PCS), and a mental component summary (MCS). Higher PCS and MCS scores signify respectively better physical and mental functioning. Like other international versions, the German version of the SF-12 has been shown to have good psychometric properties, with Cronbach’s  $\alpha = .89$  for both PCS and MCS [30].

### 2.3. Procedure

The study employed a single group design where participants served as their own controls. Study data were collected confidentially using a pseudonym to separate data collection from educational workshop activities. Data collection occurred at the beginning and end of each of six two-day mindfulness-based SP/SR workshops (see [21], pp 101-172 for a complete description) spanning a total of 120 to 150 hours over about a 15 month period<sup>1</sup>. Workshops were conducted in a closed group paradigm with workshop cohorts of six to eight participants completing the entire six-session series together. The workshop series has been shown to have both personal and professional benefits for participants [31]. The MS induction (see Table 2) occurred about halfway through Workshop 2. Activities during the other five workshops

<sup>1</sup> Due to differing government regulations, clinical psychologists and counselors are required to participate 120 hours, physicians 150 hours. Physicians therefore attend an additional 30-hour three-day meditation retreat which is scheduled most often between the third and fifth SP/SR workshop. Clinical psychologists and counselors in the same training cohort are also invited to attend the additional meditation retreat; an offer accepted to varying degrees depending on the cohort.

included mindfulness meditations and other activities centered on other personally and professionally relevant themes, such as prior personal romantic experiences (Workshop 1), experiences related to family or origin (Workshops 3, 4, and 5), and experiences with difficult clients (interspersed throughout). Participants were reminded prior to the end of Workshop 1 that Workshop 2 would focus on the MS induction. This was also well known to participants in advance of their enrolment in the SP/SR workshop series. Participants were also generally alerted ahead of signing up for the workshop series that workshops might trigger personally difficult emotions. All activities occurred in the context of mindfulness and self- and other-directed empathy. Participants additionally completed about 10 hours of at-home self-reflection and meditation between workshops. Workshops were conducted by a team of one male and one female facilitator, both of whom had more than 30 years' experience with the conduct of mindfulness meditation and similar workshops.

### 2.4. Analysis Plan

First we calculated descriptive demographic statistics (see Table 1) and obtained scaled PCS and MCS scores from the SF-12 for all 12 measurement points using the

computerized method ([29]; see Table 3). Next, Attrition analysis was conducted for each of the six workshops by using logistic regression to compare whether participants whose data was captured differed from those whose data was not captured. Next, we utilized dependent sample t-tests to determine whether there were significant changes across all participants from each pre-workshop measurement to its corresponding post-workshop measurement (see Table 3). We also used dependent sample t-tests to see if PCS and MCS post MS induction scores from Workshop 2 differed significantly from the mean post score from the other five workshops (see Table 3). Pre/post dependent sample t-test analyses were then repeated separately for participants whose overall psychological functioning was above the median MCS for Workshops 1, 3, 4, 5, and 6 vs. below the median (see Table 4). Finally, to detect potential adverse events, we identified participants who were impacted by the MS exercise to a degree that was likely personally meaningful. We then descriptively cross-classified personally meaningful negative vs. positive impact with being above or below the median MCS. We also described MCS scores across all six workshops for participants who were personally meaningfully negatively impacted by the MS exercise to see if any negative effect of the MS exercise would endure across time.

**Table 2. Mortality Salience Exercise: Meditational Imagination Journey Through the Process of Participants' own Death and Dying.**

Focus of Activity	Sample Meditational Suggestions
Centering	Focus on the breath, centering, mindfulness, and self-compassion.
Impending Death in the Imaginal Present	<p>You receive an indisputable diagnosis of your impending death.                      Your immediate thoughts in response to the diagnosis?                      Your actions undertaken in response to the diagnosis?                      Who do you speak with first? What are the qualities of a person whom you would speak with?                      Who could be of help? Qualities of a person who could be of help?                      Would it be better for you if you were to die right then? If you were to die quite soon after the diagnosis? If you were to die a considerable time after the diagnosis?                      How would loved ones experience your death if you were to die right then, if you had a bit of time before you died, or if you had a considerable amount of time left before your certain death?</p>
Imaginal Journey to the Past given Impending Death	<p>What are three regrets about your past in the face of your imminent death?                      What are three joys about your past?                      What was your most intense experience ever with another person? By yourself?                      What was the most intense psychological injury inflicted upon you?                      What helped you overcome this injury you received?                      What was the most intense psychological injury you inflicted upon another person?                      What helped you overcome this injury you perpetrated?                      What might have helped this other person overcome the injury you perpetrated upon them?                      What do you feel guilty about? What has helped you accept your guilty feelings?                      Who are persons with whom you have unresolved conflict?                      What has been the meaning of your life given your impending death?</p>
Imaginal Journey to the Future	<p>What new realities regarding your own death and dying has this exercise made you aware of?                      What might you do different going forward given your new awareness of the reality of your death and dying?</p>

**Table 3. SF-12 Physical Component Summary (PCS) and Mental Component Summary (MCS) scores for all 6 Workshops**

	WS-1	WS-2 <sup>a</sup>	WS-3	WS-4	WS-5	WS-6
n	141	182	152	151	203	182
PCS Pre M (SD)	53.19 (5.94)	51.72 (7.47)	51.24 (7.47)	51.56 (7.50)	52.08 (6.88)	51.56 (7.12)
PCS Post M (SD)	53.35 (6.01)	52.05 (7.47)	51.45 (8.08)	51.65 (7.22)	52.47 (6.65)	51.79 (7.19)
MCS Pre M (SD)	49.66 (6.86)**	48.05 (8.70)**	49.98 (8.63)	48.23 (9.53)	49.74 (8.74)*	50.11 (8.51)
MCS Post M (SD)	48.83 (7.15)**	46.91 (9.13)** <sup>b</sup>	49.31 (8.64)	48.03 (8.98)	49.07 (8.86)*	49.97 (8.77)

Note. SF-12 = 12 item Short Form Health Survey; WS = workshop; PCS = SF-12 Physical Component Summary; MCS = SF-12 Mental Component Summary.

<sup>a</sup> Mortality Salience exercise occurred between pre- and post-measures during this workshop (WS-2).

<sup>b</sup> **Bolded** Post workshop MCS is significantly below the average of the other five post workshop MCSs (p<.001, based on within subjects t-test)

\* p<.05, based on within subjects pre/post t-test; \*\* p<.01, based on within subjects pre/post t-test.

### 3. Results

Participants were predominantly female, in their mid-30s, and employed either part-time or full-time. Most were partnered and nearly all reported they were of German national origin. See [Table 1](#) for details.

The attrition analysis showed that data capture at all six workshops was unrelated both to demographic factors and to the average PCS across Workshops 1, 3, 4, 5 and 6 (see below for computational details and rationale). Nonsystematic examination of the raw data showed that the vast majority missing data points were due to entire workshop cohorts not completing measures at certain points in time. Informal inquiry with workshop leaders revealed various nonsystematic reasons for this such as broken copy machines.

As seen in [Table 3](#), across all six workshops, participants' PCS fell slightly above the population mean of 50 with their MCS slightly below 50. These scores are typical of physically and mentally healthy middle-aged adults (cf. [32]). Within subjects t-tests showed no change in PCS from pre to post for any workshop. However, there was a significant MCS drop from pre to post for Workshop 1 ( $t(140)=2.60$ ;  $p=.01$ ;  $d=.23$ ) at the end of which the MS induction had been briefly discussed. There was also a significant MCS drop for Workshop 2 which included the MS induction ( $t(182)=3.21$ ;  $p=.002$ ;  $d=.24$ ), and for Workshop 5 ( $t(203)=2.24$ ;  $p=.026$ ;  $d=.16$ ).

A within subjects t-test comparison of post Workshop 2 PCS and MCS scores with the average of the other five post Workshop scores from Workshops 1, 3, 4, 5, and 6 ( $M_{PCS}=52.27$ ;  $SD_{PCS}=4.83$ ;  $M_{MCS}=48.88$ ;  $SD_{MCS}=6.54$ ) found no significant difference in PCSs, but the MCS post MS induction in Workshop 2 was significantly below the mean of the other five post workshop MCSs ( $t(196)=3.67$ ;  $p<.001$ ;  $d=.33$ ; see **bolded** score in [Table 3](#)).

In preparation for median split analysis (see [Table 4](#)), we averaged the pre-workshop MCSs across Workshops 1, 3, 4, 5, and 6. Workshop 2 was not included in this calculation because it focused on the MS induction. The median of the pre-workshop MCSs for these five workshops

was 50.86 ( $M=49.38$ ;  $SD=6.39$ ). Using this median score, participants were then split into two sub-groups. We then conducted within subjects t-tests to compare pre- and post-workshop PCSs and MCSs separately in both sub-groups. PCS scores in both sub-groups and across all six workshops were stable and did not differ significantly pre/post for any workshop. Patterns of MCS changes differed between median split sub-groups (see [Table 4](#)). Among those above the median MCS, there was a significant MCS reduction for Workshop 5 ( $t(101)=2.37$ ;  $p=.02$ ;  $d=.26$ ), the final of three workshops that focused on family of origin work. In contrast, among those below the median MCS, there were significant MCS reductions for Workshops 1 ( $t(67)=2.15$ ;  $p=.035$ ;  $d=.26$ ) and Workshop 2 ( $t(91)=3.41$ ;  $p<.001$ ;  $d=.35$ ), Workshop 1 included a reminder of the upcoming MS induction at the next workshop (Workshop 2). The reminder occurred just prior to the collection of post Workshop 1 SF-12 data. Workshop 2 focused on the MS induction.

Finally, to detect potential adverse events and estimate any potential personally meaningful impact of the MS exercise on individual participants rather than on participants as a group, we computed change scores from pre-Workshop 2 to post-Workshop 2 ( $n=182$ ), which was the workshop that contained the MS exercise. In keeping with the criterion referenced interpretation of MCS scores [32], we considered a deterioration or improvement of  $\pm 1$  SD or more to be personally meaningful. This corresponds to an absolute change score in the MCS of  $\geq 10$ . We then cross-classified the presence of personally meaningful MCS change scores with whether each participant scored above or below the median of the average pre-Workshop MCSs from Workshops 1, 3, 4, 5, and 6 ( $MCS_{1,3,4,5,6}$ ; see above for detail and rationale). Results are summarized in [Table 5](#). Of the  $n=182$  participants who experienced the MS exercise,  $n=15$  (8%) were impacted by the MS exercise in a personally meaningful way. Of these  $n=13$  (87%) were personally meaningfully negatively impacted,  $n=2$  (13%) were positively impacted. Of the  $n=13$  negatively impacted participants,  $n=11$  (85%) had an average  $MCS_{1,3,4,5,6}$  score below the median.

**Table 4. Median split analysis of SF-12 Mental Component Summary (MCS) scores for all 6 Workshops separately for participants above the median and below the median on MCS averaged across Workshops 1, 3, 4, 5, and 6**

	WS-1	WS-2	WS-3	WS-4	WS-5	WS-6
> median $MCS_{1,3,4,5,6}$						
n	73	90	79	69	102	93
MCS Pre M (SD)	52.88 (4.15)	52.18 (5.71)	54.29 (3.95)	54.75 (3.73)	54.85 (4.49)*	55.05 (3.71)
MCS Post M (SD)	52.23 (4.45)	51.88 (5.78)	54.13 (4.05)	54.14 (4.13)	54.10 (5.25)*	54.77 (4.39)
< median $MCS_{1,3,4,5,6}$						
n	68	92	73	82	101	89
MCS Pre M (SD)	46.20 (7.50)*	44.02 (9.31)***	45.31 (9.83)	42.75 (9.47)	44.58 (8.96)	44.96 (9.05)
MCS Post M (SD)	45.19 (7.11)*	42.04 (9.21)***	44.11 (9.26)	42.88 (8.74)	43.99 (8.88)	44.94 (9.39)

Note. SF-12 = 12 item Short Form Health Survey; WS = workshop; PCS = SF-12 Physical Component Score; MCS = SF-12 Mental Component Score. \*  $p<.05$ , based on within subjects pre/post t-test; \*\*\*  $p<.001$ , based on within subjects pre/post t-test.

**Table 5. Number of participants (n) with personally meaningful impact<sup>a</sup> of the Mortality Saliency (MS) exercise cross-classified with being above or below the median on the average Mental Summary Score (MCS) from Workshops 1, 3, 4, 5 & 6**

	Personally Meaningful Negative MS Impact	Personally Meaningful Positive MS Impact	Total
> median $MCS_{1,3,4,5,6}$	2	1	3
< median $MCS_{1,3,4,5,6}$	11	1	12
Total	13	2	15

Note. <sup>a</sup>“personally meaningful impact of MS exercise” defined as a change in Workshop 2 MCS from pre to post of  $\geq |1SD|$  ( $\geq 10$ ).

**Table 6. Comparison of Pre/Post MCS Scores for Participants Below the Median on MCS Pre-Scores Averaged Across Workshops 1, 3, 4, 5, and 6 (MCS<sub>1,3,4,5,6</sub>) who were Personally Meaningfully Negatively Impacted (PMNI)<sup>a</sup> by the Mortality Salience Exercise with Group Means for All Other Participants Below the Median**

	WS-1	WS-2	WS-3	WS-4	WS-5	WS-6
PMNI Participants < median MCS <sub>1,3,4,5,6</sub>						
n	7	11	8	9	11	10
MCS Pre M (zΔ)	44.28 (-.26)	48.13 (.44)	48.05 (.28)	43.63 (.09)	46.63 (.22)	46.31 (.15)
MCS Post M (zΔ)	43.45 (-.23)	35.19 (-.74)	43.81 (-.03)	44.46 (.18)	42.22 (-.20)	45.30 (.04)
All Participants < median MCS <sub>1,3,4,5,6</sub>						
n	60	80	64	72	89	78
MCS Pre M (SD)	46.47 (7.40)	43.56 (9.54)	44.87 (9.89)	42.97 (9.20)	44.49 (9.20)	44.72 (9.07)
MCS Post M (SD)	45.40 (7.46)	42.87 (9.18)	44.03 (9.17)	42.87 (8.69)	44.35 (9.05)	44.91 (9.48)

Note. MCS = 12 item Short Form Health Survey (SF-12) Mental Component Summary; WS = workshop; zΔ = is the z-score difference between the mean MCS score of PMNI participants compared and the mean MCS of all participants < median MCS<sub>1,3,4,5,6</sub> at the corresponding measurement point.

<sup>a</sup> “personally meaningful negatively impact” defined as a decrease in Workshop 2 MCS from pre to post of  $\geq 1$  SD ( $\geq 10$ ).

Because there was only one personally meaningfully positively impacted participant above the median MCS<sub>1,3,4,5,6</sub> and one such participant below the median, longer-term effects of the MS exercise on personally meaningfully positively impacted participants were not analyzed. Further analysis of longer-term effects of the MS exercise on personally meaningfully negatively impacted participants above the median MCS<sub>1,3,4,5,6</sub> was limited due to their low number ( $n=2$ ) and because both participants missed Workshop 3, the workshop that immediately followed the workshop containing the MS exercise but returned for the remaining workshops in the series. This may be because both participants experienced a large negative impact of the MS exercise which depressed their post-Workshop 2 MCS score below their corresponding group mean by  $z=-2.79$ , a percentile rank of 0.003. Further analysis of the longer-term effects of the MS induction on the  $n=11$  personally meaningfully negatively impacted participants below the median MCS<sub>1,3,4,5,6</sub> showed that there were no detectable longer term negative mental health sequelae (See Table 6).

## 4. Discussion

Postgraduate CBT trainees ( $N=211$ ), including physicians, counselors, and psychologists participated in a 120hour to 150hour series of six SP/SR two-day workshops over a 15-month period. The second workshop included a MS exercise. Participants generally scored consistently with established age norms regarding both physical and mental quality of life. They were thus representative of typical physically and mentally healthy adults in their 30s.

When they participated in the MS exercise, physical health scores were unaffected, but mental health scores dropped. Median split analysis found this drop in psychological quality of life was evident exclusively among those who were below the median on psychological health. These more vulnerable participants also experienced significant reductions in their psychological quality of life when merely reminded of the upcoming MS meditation exercise at the end of the first workshop. Those above the median on psychological health did not experience any such adverse effects. While the effect sizes were modest, the changes can be benchmarked against norms obtained from known patient

populations. The approximately two point drop in psychological quality of life pre/post MS induction is consistent with PCS reductions experienced by patients who develop chronic backpain or chronic dermatitis ([32], p. 7:17).

Further analysis found about 8% of participants were impacted by the MS exercise in a personally meaningful way. Of these, the vast majority (87%) were personally meaningfully negatively impacted, while only two of 198 participants experienced a personally meaningful improvement in their mental health scores after the MS exercise. Of those who were personally meaningfully negatively impacted, the vast majority (85%) were from the vulnerable group whose mental health was below the median throughout the approximately 15-month workshop series. Longitudinal analysis of personally meaningfully negatively impacted participants showed these adverse consequences were likely temporary even if some of those who were personally meaningfully negatively affected temporarily absented themselves from the workshop immediately following the MS exercise.

Limitations of the present study include a confounding of ordinal position and MS induction which occurred during Workshop 2 for all participants. This raises the theoretical possibility that MCS changes seen around this time may be related to that particular stage of training. However, across training cohorts, workshops occurred at different points during a three-year postgraduate course of study in CBT and intervals between workshops also varied from a few weeks to a few months. These random variations somewhat alleviate the concern about this confound. The study is also limited because only a single outcome measure was used. While the SF-12 is well established and validated in many countries, it may not be ideal to track short-term vs. long-term changes in mental health. Furthermore, the study did not include measures of other factors known to affect reactivity to MS inductions, such as mindfulness [17,33] or self-worth [34]. A final limitation is that the study was conducted at only one German training center with one pair of workshop leaders with nearly all participants native to that country. However, cross-cultural TMT research has found that MS inductions affect individuals from various cultures similarly [35], including those from East-Asian cultures such as Japan [36].

Strengths include that the study was conducted in a mental health provider training environment with

trainees that represented several different professions, including counseling, clinical psychology, and medicine. Furthermore, the specific training sequence employed in the study has previously been shown have personally and professionally relevant benefits for trainees [31]. An additional strength is that any attrition from measurement was found to be unrelated to either demographic factors or pertinent study variables and nearly all participants completed the training sequence over the approximately 15-month time span. Also, the large N of well over 200 participants yielded good power and the ability to detect even subtle differences. The use of a well validated outcome instrument, the SF-12, is a final strength of the study.

These findings replicate prior work accumulated over several decades of TMT literature that show that those with low self-esteem are particularly vulnerable to the adverse effects of MS inductions (for a review see [34]). The study was not designed to detect whether participation in the MS exercise would benefit mental health providers' clinical competency but the training context of which the MS exercise was a part has previously been shown to have such benefits [31].

Integrating MS inductions as part of the training of mental health therapists may improve their professional competencies when it comes to dealing with clinical situations that invoke death anxiety [16,18,21]. However, in the absence of conclusive evidence of such benefits, present findings raise the concern that training-related MS exercises may have at least a temporary adverse effect on the psychological quality of life specifically among trainees who may be vulnerable to low self-esteem and, possibly, depression. Such vulnerable trainees are also much more likely to have personally meaningful adverse reactions to a MS exercise. Ironically, such vulnerable trainees may be also the ones who could theoretically benefit the most from experiential learning involving MS inductions, because they are likely subject to greater detrimental reductions in empathy and openness when facing death thoughts during their clinical work [25,33,34].

Experiential learning involving MS exercises is usually embedded in a mindfulness meditation paradigm [15,16,18,21]. This aspect is vital, as both state mindfulness and acute mindfulness have been shown to buffer adverse consequences of MS inductions such as increased rigidity, loss of empathy, or lowered sensitivity to members of other cultures [17,18,35]. Mindfulness has also been shown to foster self-esteem [37,38] which buffers adverse effects of MS [25]. However, to ensure that mindfulness can exert these beneficial MS buffering effects, trainers may want to ensure that vulnerable trainees have already developed strong mindfulness competencies before exposing them to experiential learning exercises that increase MS. Otherwise, there is the risk that vulnerable trainees can experience at least transitory and potentially personally meaningful reductions in psychological quality of life.

## Data Availability Statement

Data are available for reanalysis contingent on IRB approval of proposed research.

## Competing Interests Statement

Drs. Mösler and Poppek participate financially in book sales of the Self-Practice/Self-Reflection program discussed in this article and in workshops implementing the program. Drs. Collet and Leonhard have no conflicts to report.

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