xxx (xxxx) xxx

Contents lists available at ScienceDirect

Journal of Substance Use and Addiction Treatment

journal homepage: www.journals.elsevier.com/journal-of-substance-use-and-addiction-treatment

The role of mindfulness, meditation, and peer support in recovery capital among Recovery Dharma members☆

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ARTICLE INFO

Keywords:
Buddhism
Substance use disorder recovery
Peer recovery support
Mutual-help organization

ABSTRACT

Introduction: Recovery Dharma (RD) is a Buddhist-based peer support program for the treatment of addiction that incorporates mindfulness and meditation into meetings, program literature, and the recovery process, creating the opportunity to study these variables in a peer-support program context. Mindfulness and meditation are beneficial for people in recovery, yet we know little about their relationship to recovery capital, a positive indicator of recovery outcomes. We explored mindfulness and meditation (average length of sessions and average frequency per week) as predictors of recovery capital and examined perceived support in relation to recovery capital.

Methods: The study recruited participants ($N = 209$) through the RD website, newsletter and social media pages for an online survey that included measures of recovery capital, mindfulness, perceived support, and questions about meditation practices (e.g., frequency, duration). Participants' mean age was 46.68 years (SD = 12.21), with 45 % female (5.7 % non-binary), and 26.8 % from the LGBTQ2S+ community. The mean time in recovery was 7.45 years (SD = 10.37). The study fitted univariate and multivariate linear regression models to determine significant predictors of recovery capital.

Results: As anticipated, multivariate linear regressions indicated that mindfulness ($\beta = 0.31$, $p < .001$), meditation frequency ($\beta = 0.26$, $p < .001$), and perceived support from RD ($\beta = 0.50$, $p < .001$) were all significant predictors of recovery capital when controlling for age and spirituality. However, longer time in recovery and the average duration of meditation sessions did not predict recovery capital as anticipated.

Conclusions: Results indicate the importance of a regular meditation practice for recovery capital rather than engaging in prolonged sessions infrequently. The results also support previous findings, which point to the influence of mindfulness and meditation on positive outcomes for people in recovery. Further, peer support is associated with higher recovery capital in RD members. This study is the first examination of the relationship between mindfulness, meditation, peer support, and recovery capital in recovering people. The findings lay the groundwork for the continued exploration of these variables as they relate to positive outcomes both within the RD program and in other recovery pathways.

1. Introduction

Substance use disorder (SUD) often results in significant impairment across several domains, including physical and mental health, relationships, and occupational status (U.S. Department of Health and Human Services, 2016; World Health Organization, 2019). Mutual-help organizations (MHOs) offer community support for people struggling with SUD and help alleviate societal harms caused by the condition (Donovan et al., 2013) by providing peer support and care that is available to anyone, free of charge. The most widely available and longest standing MHO is Alcoholics Anonymous (AA); research shows that AA is either as effective or more effective than clinical interventions (e.g., cognitive behavioral therapy, motivational enhancement therapy) for helping people maintain abstinence, among other positive outcomes

☆ This research project was supported by the first author's start up grant. Noel Vest was supported by the National Institute on Drug Abuse of the National Institutes of Health under Award Number T32 DA035165 and K01 DA053391.The authors would like to thank the Recovery Dharma Board of Directors for their assistance with recruitment for this study.

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https://doi.org/10.1016/j.josat.2022.208939
Received 3 May 2022; Received in revised form 31 July 2022; Accepted 30 December 2022
Available online 7 January 2023

(Kelly et al., 2020). Additionally, recent work suggests other MHOs (i.e., SMART, LifeRing, Women for Sobriety) may have comparable efficacy rates (Zemore et al., 2018), strengthening the case for the overall effectiveness of MHOs.

Recovery Dharma (RD) is a relatively new (e. 2019) Buddhist-based MHO (e. 2019) that includes several program components that are linked to positive recovery outcomes. The program includes a process for recovery (Laudet et al., 2002), mindfulness and meditation practice (Garland & Howard, 2018; Pruett et al., 2011), and peer support (Boisvert et al., 2008; Johansen et al., 2013). The combination of all three factors in the RD recovery process provides the opportunity to explore these critical recovery-supporting variables with positive recovery outcomes. Thus, the aim of this article is to investigate the role of mindfulness, meditation, and perceived support in recovery capital among members of RD.

1.1. Background and history of Recovery Dharma

RD is a Buddhist-based MHO for alcohol use disorder or SUD, mental health problems, and process or behavioral addictions. The program was founded in 2019 by former members of Refuge Recovery (i.e., another Buddhist recovery program) who wanted to shift away from the leadership-based Refuge Recovery program to a peer-led approach (see LaBelle et al., 2021, for RD characterization study; and Dossett, 2019, for critical analysis on Buddhist recovery). Like other MHOs, the RD program consists of attending meetings, working through a recovery program, and giving and receiving peer support.

The RD book, *Recovery Dharma: How to Use Buddhist Practices and Principles to Heal the Suffering of Addiction* (2019), highlights three key concepts of the RD program: the Buddha, the Dharma, and the Sangha. The Buddha represents the understanding of one's potential for awakening (i.e., recovery); the Dharma describes the Four Noble Truths that are the process to achieve awakening; and the Sangha refers to the community of peers. In terms of the structure and practice of the RD program, members commit to deepening their understanding of the Four Noble Truths and to applying the Eightfold Path of wise practices to their lives. The first three noble truths pertain to a universal aspect of the human experience: suffering. Specifically, RD members acknowledge that suffering exists, recognize that craving is at the root of suffering, and come to understand that an end to suffering is possible. The Fourth Noble Truth summarizes the Eightfold Path, or the essential elements of recovery that create a path out of addiction: Wise Understanding, Wise Intention, Wise Speech, Wise Action, Wise Livelihood, Wise Effort, Wise Mindfulness, and Wise Concentration (see Recovery Dharma, 2019).

Importantly, RD formally incorporates mindfulness and meditation into the recovery process (Recovery Dharma, 2019). Many other MHOs (e.g., 12-step programs) either include or suggest meditation but leave it to the individual to establish and maintain a practice. In contrast, all RD meetings include a group-based, guided meditation in addition to the usual peer-support sharing format typical to MHOs, and members are encouraged to develop a personal meditation practice with the meditation scripts in the book and to use mindfulness to explore their actions, intentions, and cravings. Integrating meditation into meetings, literature, and personal practice allows for an examination of meditation among RD members that is not possible to study in other MHOs without intervention. In summary, the RD program utilizes a recovery process that includes mindfulness and meditation, RD meetings, and peer support to help facilitate positive outcomes that include recovery capital.

1.2. Recovery capital

The concept of recovery capital was first introduced by Cloud and Granfield (2008) and is defined as the summation of an individual's resources that facilitate the initiation and maintenance of recovery. Recovery capital represents the higher-order constructs of personal, social, environmental, and cultural capital (i.e., the contextual factors that facilitate recovery) (Cloud & Granfield, 2008; for review, see Hennessy, 2017). By offering a strengths-based framework for understanding the interrelated factors that impact the recovery process, recovery capital allows for a global understanding of the amount of internal and external resources available to people seeking or sustaining recovery.

Researchers have found that recovery capital rapidly increases after entry into recovery, followed by incremental gains thereafter (Kelly et al., 2018). When measured prospectively, it predicts sustained recovery, higher life satisfaction, and lower stress among people in recovery one year later (Laudet et al., 2009; Laudet & White, 2008; Mawson et al., 2015). Much of the previous research on recovery capital has focused on understanding predictors of recovery capital across different populations of individuals in recovery (Hanauer et al., 2019). Some of these populations include inpatient treatment settings (Best et al., 2015; von Grieff & Skogens, 2014), students in recovery (Pesetski, 2015), emerging adults (Mawson et al., 2015), individuals in drug court (Zschau et al., 2016), therapeutic communities (Best et al., 2017), adolescents needing treatment (Hennessy, 2017), and different stages of recovery (Best et al., 2017; Best & Hennessy, 2021; Laudet et al., 2009; Laudet & White, 2008; O'Sullivan et al., 2017). Notably, a large proportion of the research has focused on people in 12-step MHOs, making it essential to examine recovery capital in non-12-step MHOs to fill knowledge gap.

White and Cloud (2008) and Cloud and Granfield (2008) first introduced the concept of recovery capital. Shortly thereafter, researchers developed the Assessment of Recovery Capital (ARC; Groshkova et al., 2013) followed by the Brief Assessment of Recovery Capital (BARC-10; Vilsaint et al., 2017); both measures are widely utilized in recovery research. Research has used the framework of recovery capital to examine other important issues to RD members (LaBelle et al.), including behavioral addictions and mental health concerns (Gavriel-Fried, 2018; Tew, 2013; Vandereycken, 2012). Despite the growing body of research on the role of recovery capital in the recovery process, the construct has not yet been explored in members of RD, or in relation to mindfulness and meditation.

1.3. Mindfulness and meditation in recovery research

Mindfulness and meditation are generally associated with better outcomes, including affect, emotional regulation, distress, and psychological well-being (for meta-analyses, see Eberth & Sedlmeier, 2012; Giluk, 2009). Additionally, mindfulness and meditation improve prosocial emotions and behavior (Luberto et al., 2018), which is particularly relevant for people in recovery. Mindfulness-based interventions improve the ability to regulate addictive behaviors (Sancho et al., 2018), prevent relapse (Penberthy et al., 2013; Priddy et al., 2018), and are positively associated with psychological well-being for people in recovery (Sancho et al., 2018; Shonin & Van Gordon, 2016). Meditation can be a useful component of addiction recovery (Pruett et al., 2011; Young et al., 2011); it is helpful for substance use cessation (Ranes et al., 2017), alcohol and substance use disorders (Luoma et al., 2011; Wang & Stone, 2022), and boosts psychological flexibility for people in recovery (Azkhosh et al., 2016).

The growing interest in the effects of mindfulness on SUD treatment has led to the development of interventions such as Mindfulness-Based Relapse Prevention (MBRP; Bowen et al., 2009), yet researchers have found mixed support for the efficacy of MBRP. While some studies report positive effects (Bowen et al., 2009; Witkiewitz et al., 2014), a meta-analysis found limited effectiveness compared to relapse prevention, health education, and cognitive behavior therapy (Grant et al., 2017). Further, mindfulness-based treatments for SUD have had varying significant effects on posttreatment abstinence (small effect), substance cravings (medium effect), and stress (large effect) in SUD populations (Li et al., 2017). Last, researchers have linked mindfulness to decreased substance craving (Enkema et al., 2021; Garland et al., 2019; Murphy &

MacKillop, 2014), and reduced substance use (Garland, 2009; Karyadi et al., 2014). The conflicting evidence in the existing literature on mindfulness and recovery leave many unanswered questions.

Notably, evidence exists that the frequency of meditation practice and duration of meditation sessions may be important factors to consider. Crane et al. (2014) conducted a clinical trial and found that people who meditated at least three times a week were nearly half as likely to relapse into depression compared to those who reported fewer days of meditation. In another study, higher average time spent in meditation was related to increased self-compassion (Berghoff et al., 2017), suggesting that the frequency and duration of meditation (i.e., "dose") may be important to consider when exploring the relationships between meditation and positive outcomes.

Despite the promising effects of mindfulness and meditation on recovery, researchers have yet to fully investigate their role in MHOs—possibly due to the lack of formal integration of these practices into MHO recovery programs. Further, previous studies in this area have focused on people seeking recovery or early interventions, with little attention to people already in recovery with more substantive outcome measures in place of a dichotomous alcohol or substance use variable (did use/did not use). The current study aimed to clarify the role of mindfulness, meditation, and perceived support in recovery capital in the Buddhist-based MHO, Recovery Dharma.

1.4. The role of social support in recovery capital and Recovery Dharma

Social support is essential to developing and sustaining recovery capital (Best et al., 2015; Majer et al., 2021), which predicts long-term recovery (Hser, 2007; Laudet et al., 2002). Increased social support assists with the initiation of recovery and sustained remission of SUD (Majer et al., 2016; Tanriverdi et al., 2020). The presence of abstinence-supporting friends in a social network supports positive recovery outcomes (Longabaugh et al., 2010; McGaffin et al., 2018), and having recovery-specific social networks (i.e., friends from MHOs) predicts treatment outcomes and long-term recovery (Bathish et al., 2017; Best et al., 2016; Kelly et al., 2014). Social support is an aspect of the RD program that is shared with most other MHOs for addiction (e.g., 12-step programs, SMART recovery, Women for Sobriety, religious-based approaches, etc.). Specifically, the RD membership—collectively referred to as the 'Sangha' (i.e., the traditional Buddhist term for community)—is critical to RD. The RD program provides essential support for the recovery journey and for dealing with issues that arise in daily life. Being a part of the RD Sangha provides peer support, accountability, and the opportunity to be helpful to other people who are navigating their recovery journeys (Recovery Dharma, n.d.). The fundamental role of social support in the RD program, combined with RD's incorporation of mindfulness and meditation in the recovery process, allows for the unique opportunity to explore associations among recovery capital, mindfulness, meditation, and social support in recovering individuals in an MHO.

1.5. The current study

In the current study, we investigated trait mindfulness, meditation, and perceived support from RD and their associations to recovery capital in members of RD. Further, given that RD is a religious-based program (Buddhist), we controlled for self-reported levels of spirituality and religiosity. Based on previous literature (Kelly et al., 2018), we hypothesized that (1) longer time in recovery would be associated with higher recovery capital. We also expected to find that (2) higher levels of trait mindfulness would predict higher recovery capital. Further, we anticipated a relation between (3) longer average duration of meditation session and recovery capital, and (4) higher weekly frequency of meditation and recovery capital. Last, given the critical role of social support in recovery capital, we anticipated (5) that higher levels of perceived support from RD would predict higher levels of recovery capital in RD members.

2. Methods

The Research Ethics Board at the corresponding author's university approved this study in December 2019 before data collection began. The RD Board of Directors posted a recruitment statement with a link to the Qualtrics survey in the RD newsletter, on the RD website, and in the main RD social media group in exchange for a demographic profile of the RD membership, along with answers to several questions of interest (e.g., pathway to RD program, usefulness of RD supports). Additionally, we recruited from 85 city-, region-, and identity-specific private and public RD Facebook groups and pages (e.g., RD Detroit, RD United Kingdom, RD Women, etc.). The survey link remained open for 14 days.

2.1. Participants

The sample included 209 RD members who indicated being over 18 years of age (M = 46.68 years; *SD* = 12.21; range 20–77). Participants indicated consent before completing the study and were entered into a raffle to win one of four $25 e-gift cards as an incentive for their time. Table 1 presents demographic data for the sample. The results section describe additional participant information.

2.2. Measures

2.2.1. Demographics and recovery-related information

Participants provided demographic data (see Table 1), recovery-specific background information, length of recovery (i.e., date associated with beginning of current recovery period, or an estimate of time elapsed since last use), primary and secondary substances used, number of years of substance use, previous inpatient or outpatient treatment attempts (if applicable), and history of other recovery programs or treatment modalities used in previous attempts.

2.2.2. Spirituality and religious background

Given that RD is a Buddhist approach to recovery, we asked participants about their past and current religious and spiritual identification. Participants selected the option they currently identify with from a list of choices (e.g., agnostic, atheist, Buddhist, Christian, Hindu, etc.). The list was alphabetized, and the study briefly defined the terms agnostic and atheistto ensure the participants understood the meaning of each word. The list also included the items "*spiritual, but not committed to a particular faith*', '*I don't give religious things much thought*", "*prefer not to say*" and a write-in response option to fully capture a wide range of religious identities and spiritual views. Participants also indicated if they had *ever* considered themselves a member of a particular faith or denomination to capture a lifetime history of religious affiliation. If they indicated yes, they wrote in their previous affiliation. Last, participants rated their level of religiosity (i.e., "*How religious are you?*") and spirituality (i.e., "*How spiritual are you?*") separately on 5-point Likert-type scales (1 = not at all to 5 = extremely).

2.2.3. Recovery capital

The Brief Assessment of Recovery Capital (BARC-10; Vilsaint et al., 2017) is a 10-item, 5-point Likert-type scale (1 = strongly disagree to 6 = strongly agree) used to assess the psychological, social, and environmental resources that are important for recovery (Vilsaint et al., 2017). Sample items include "*I get lots of support from friends*", "*I am proud of the community I live in and feel a part of it*", and "*I regard my life as challenging and fulfilling without the need for using drugs or alcohol*." The measure is scored by summing the items with higher scores indicating higher recovery capital. The BARC-10 has excellent internal consistency (α = 0.90) and high concurrent validity (r = 0.92) with the Assessment of Recovery Capital (Groshkova et al., 2013). Scores range from 10 to 60, and a cut-off score of 47 predicts sustained recovery (i.e., 12+ months of

Table 1
Demographic information (N = 209).

	n	%
Race		
White/Caucasian	175	83.7
Multiracial	16	7.7
Caribbean	4	1.9
East Asian	3	1.4
Indigenous	3	1.4
Black	2	1.0
Oceanic	2	1.0
South Asian	1	0.5
Other/Prefer not to say	3	1.5
Gender		
Male	103	49.3
Female	94	45.0
Non-Binary	12	5.7
Sexual orientation		
Heterosexual	144	68.9
LGBTQ2S+	56	26.8
Other/Prefer not to say	9	4.3
Marital status		
Married/domestic partnership	83	39.7
Single, never married	48	23.0
Divorced	35	16.7
In a relationship/dating	28	13.4
Separated	13	6.2
Widowed	2	1.0
Country of Residence		
USA	188	90.0
Canada	7	3.3
Other	12	5.7
Education		
Did not complete high school	4	1.9
High school graduate or GED certificate	42	20.1
Two-year (associate's) degree	24	11.5
Four-year (bachelor's) degree	72	34.4
Master's degree (e.g., M.A., M.S., M.B.A., etc.)	46	22.0
Doctoral (e.g., Ph.D., M.D., J.D., etc.)	21	10.0
Employment status		
Employed full-time	119	56.9
Employed part-time	23	11.0
Self-employed	22	10.5
Retired	21	10.0
Unemployed/Unable to work	21	10.0
Homemaker	3	1.4
Religious affiliation		
Buddhist	71	34.0
Atheist (believe there is no God)	26	12.5
Agnostic (not sure if there is a God)	15	7.2
Christian	12	5.8
Jewish	6	2.9
Hindu	1	0.5
Native American/Indigenous Spirituality	1	0.5
Spiritual, but not committed to a particular faith	49	23.6
Don't give religious things much thought	4	1.9
Other	21	10.1
Prefer to not say	2	1.0

Note. Not all categories equal 100 % due to missing data or multiple selections per category.

abstinence). The BARC-10 showed good internal consistency (α = 0.83) in the current sample.

2.2.4. Mindfulness

The Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) is a 15-item measure of trait mindfulness in which participants rate their agreement with statements on a 6-point Likert-type scale (1 = almost always to 6 = almost never). Example items on this scale include: "*I find it difficult to stay focused on what's happening in the present*" and "*I find myself doing things without paying attention*". The total score (range is 1–6) is calculated by computing a mean score for the 15 items, with higher scores reflecting higher trait mindfulness. Across multiple studies, the MAAS has had excellent internal validity (α = 0.80 to 0.90) and has demonstrated high test-retest reliability, discriminant and convergent validity, and criterion validity. The MAAS showed excellent internal consistency (α = 0.92) in our sample.

2.2.5. Meditation frequency and duration

Participants reported the average frequency of meditation sessions per week on a single-item, 6-point scale (1 = less than once a week to 6 = more than once each day), which yielded a score ranging from 1 to 6. Additionally, participants indicated the average duration of each meditation session (in minutes). We included questions on meditation frequency and duration to determine whether more regular practice and higher duration of minutes during practice were associated with higher recovery capital.

2.2.6. Perceived support from RD

To assess participants' perceived support from RD, we used a 7-item measure previously used to measure MHO support (Curtis et al., 2019). The study presented participants with a list of statements about support from RD and asked to rate their level of agreement on a 7-point Likert-type scale (1 = strongly disagree to 7 = strongly agree). We adapted the scale by changing the program name to *'Recovery Dharma'* (e.g., "I have made lasting friendships with those I have connected with in *Recovery Dharma*", and "*Recovery Dharma* provides support for things I am dealing with in my personal life."). Scores range from 7 to 49, with higher scores representing higher levels of perceived support from RD (α = 0.87).

2.3. Data analysis

The research team performed analyses using IBM SPSS Statistics (Version 28; IBM Corp., 2020). GPower determined sample size (Faul et al., 2009). We used a hierarchical multiple regression model to test hypotheses 1 through 5. The study assessed relationships between the primary outcome variables and covariates with Pearson's correlations to determine applicability to the model before performing the regression analysis. To assess the effect of duration of recovery, mindfulness, meditation frequency, average meditation session length, and perceived RD support on recovery capital, we included two sets of covariates for each analysis. We predicted that age, income, education, gender, sexual orientation, spirituality and religiosity would exert an effect on BARC-10 scores. However, only age and spirituality correlated with recovery capital at a significance level of $p \leq 0.25$. Set 1, which included age and spirituality, was entered into the first level of each regression analysis as model 1. Set 2 included the single predictor variable relevant to each hypothesis test and we entered it in the second step of each analysis. The study investigated potential issues of multicollinearity with variance inflation factors, which ranged from 1.04 to 1.93, indicating non-multicollinearity (Hair et al., 1995).

3. Results

3.1. Participants characteristics

The mean length of current recovery time for participants was 7.45 years (*SD* = 10.37; range = 0–38). The primary issue identified by RD members was SUD (48.8 %), followed by mental health problems (14.4 %), and trauma (10.5 %), although almost all participants reported having a history of SUD (97.1 %). Most participants (80.2 %) reported previous SUD treatment attempts (including peer support groups) prior to Recovery Dharma, and treatment histories varied widely (*M* = 2.51; *SD* = 2.42; range = 0–10). Primary substances were alcohol (65.9 %), opioids (7.2 %), marijuana (5.9 %), and other substances (15.3 %). A large portion (69.4 %) of participants indicated mental health issues with depression (51.2 %) or anxiety (50.2 %), among others. Participants reported high levels of perceived support from RD (*M* = 41.51; *SD* = 6.37, range 17–49). Just over half of the sample (50.5 %) indicated involvement in a Buddhist approach to recovery for one year or less,

while others indicated involvement for 2 to 10+ years through involvement in Buddhist-based recovery groups. Table 1 displays additional sample characteristics.

3.2. Zero order correlations

Table 2 presents correlations among demographics and variables of interest. Correlational analysis revealed a significant positive correlation among recovery capital and age, spirituality, perceived support, number of years in recovery, meditation frequency, and time in recovery. The analysis also uncovered a significant positive correlation among meditation session *length* and age, religiosity, perceived support and number of years in recovery, and a significant negative correlation with perceived support. Meditation session *frequency* was positively and significantly correlated with age, spirituality, perceived support, years in recovery, and mindfulness. Last, mindfulness, age, spirituality, and years in Buddhist recovery were positively and significantly correlated.

3.3. Regression analysis

The results of the univariate and multivariate linear regression models predicting recovery capital are presented in Table 3.

While the full model of age, spirituality and length of recovery significantly predicted BARC-10 scale scores, $F(3,198) = 7.10$, $p < .001$, the addition of total months in recovery (Model 2) did not lead to a statistically significant increase in R^2, $F(1,198) = 0.86$, $p = 354$. Thus, the hypotheses that longer duration of recovery predicted increased BARC-10 scale scores was not supported.

In support of the second hypothesis, the analysis revealed when age and spirituality were controlled for, mindfulness was significantly associated with BARC-10 scale scores, $F(3,198) = 15.36$, $p < .001$. When we added mindfulness to the control variables, it resulted in a statistically significant increase in R^2 of.0.88 and explained an extra 8.8 % of the variance in BARC-10 scale scores, adjusted $R^2 = 0.177$, $p < .001$.

The initial correlational analysis of BARC-10 scale scores and meditation session length yielded insignificant results. Given the lack of a significant relationship between the two, the research team did not perform a regression analysis. As such, the hypothesis that longer meditation session length would predict higher BARC-10 scale scores was not supported.

Hypothesis 4 indicated an expected relationship between higher meditation frequency and higher scores on the BARC-10. Analysis revealed that meditation frequency was significantly related to BARC-10 scale scores $F(3,204) = 13.43$, $p < .001$, controlling for age and spirituality. When the study added meditation frequency to age and spirituality, it resulted in a statistically significant increase in R^2 of.059 to explain an extra 5.9 % of the variance in BARC-10 scale scores, adjusted $R^2 = 0.153$. $p < .001$.

Finally, we predicted that an individual's perceived RD support would be related to recovery capital. This association was significant after controlling for age and spirituality, $F(3, 199) = 34.81$, $p < .001$. With an adjusted R^2 of 0.33, the inclusion of perceived RD support to control variables resulted in a statistically significant increase in R^2 of 0.243 and explained an additional 24.3 % of the variance in BARC-10 scale scores.

4. Discussion

The current study is the first investigation of mindfulness, meditation, and perceived program support as predictors of recovery capital among RD participants. As expected, we found that higher mindfulness in RD members was related to greater recovery capital (H2), and the relation between the two remained significant after taking age, gender, race, level of education, spirituality and religiosity into account. We also found a significant positive association between meditation frequency (i.e., the number of times participants meditated in one week) and recovery capital (H4), as well as between perceived support from RD and recovery capital (H5). Members of RD who indicated higher perceived support from RD also were higher in recovery capital. However, the expected relation between length of time in recovery and higher levels of recovery capital (H1) was not significant after controlling for demographics, religiosity, and spirituality. Last, the expected association between average meditation session duration (in minutes) and recovery capital (H3) was not supported.

Although mindfulness and recovery capital are independently associated with improved recovery outcomes, a dearth of research explores the relationship between these two variables. Many of the items on the mindfulness scale reflect the ability to focus one's attention on the present moment. Rather than ruminating, this silent acknowledgment and acceptance of one's feelings, thoughts, and sensations may aid in providing a state of mind favorable to the endorsement of specific recovery capital scale items (such as, “in general, I am happy with my life”, or “I am making good progress on my recovery journey”). Furthermore, given that mindfulness predicts greater emotional response to inhibition

Table 2
Correlations between key variables (N = 209).

	1	2	3	4	5	6	7	8	9	10	11	12
1 Age	–											
2 Income	0.12*	–										
3 Religiosity[a]	−0.01	0.15*	–									
4 Spirituality[b]	0.23*	−0.14*	0.24**	–								
5 Past treatment episodes	−0.03	−0.14	−0.01	0.05	–							
6 Perceived support from RD	0.10	−0.01	−0.23**	0.11	0.08	–						
7 Years in Buddhist recovery	0.37**	−0.02	0.12	0.11	−0.03	−0.03	–					
8 Meditation frequency (weekly)	0.25**	−0.07	0.00	0.22*	0.14	0.29**	0.25**	–				
9 Meditation session length (mins)	0.15*	0.07	0.23**	0.00	0.04	−0.26**	0.29**	0.02	–			
10 Time in recovery (years)	0.48**	0.01	0.04	0.08	−0.14	−0.15*	0.47**	0.18**	0.25**	–		
11 Recovery capital (BARC)[c]	0.29**	0.02	−0.02	0.22**	−0.07	0.53**	0.23**	0.33**	−0.01	0.18*	–	
12 Mindfulness (MAAS)[d]	0.26**	−0.05	−0.04	0.19**	−0.02	0.12	0.25**	0.33**	0.07	0.19**	−0.38**	–
M	46.68	$78 k	–	–	2.51	41.5	–	–	23.9	7.45	49.55	59.55
SD	12.21	$67 k	–	–	2.42	6.37	–	–	14.38	10.37	6.90	12.50

Note. *$p < .05$ (2-tailed); **$p < .01$ (2-tailed); k = 1000 USD.

[a] Response to two single-item questions: “how religious [spiritual] do you consider yourself to be?”; rated on a 5-point scale (1 = not at all religious [spiritual] to 5 = very religious [spiritual]).

[b] Response to two single-item questions: “how religious [spiritual] do you consider yourself to be?”; rated on a 5-point scale (1 = not at all religious [spiritual] to 5 = very religious [spiritual]).

[c] Brief Assessment of Recovery Capital.

[d] Mindful Attention Awareness Scale.

Table 3
Univariate and multivariate regression analysis results for recovery capital (N = 209).

	Univariate				Multivariate			
	B	*SE B*	*β*	*p*	*B*	*SE B*	*β*	*p*
Control variables								
Age[x]	0.16	0.04	0.29	< 0.001				
Spirituality[a,x]	1.53	0.48	0.22	0.002				
Predictors								
Time in recovery (years)	0.01	0.00	0.18	0.010	0.00	0.00	0.07	0.354
Perceived RD support	0.57	0.07	0.53	< 0.001	0.54	0.06	0.50*	< 0.001
Meditation frequency (weekly)	1.81	0.36	0.33	< 0.001	1.40	0.37	0.26*	< 0.001
Mindfulness[b]	0.21	0.04	0.38	< 0.001	0.17	0.04	0.31*	< 0.001

[a] Response to a single-item question: "how spiritual do you consider yourself to be?"; rated on a 5-point scale. (1 = not at all spiritual to 5 = very spiritual).
[b] Mindful Attention Awareness Scale
[x] Univariate predictors included in the first step of the multivariate model as covariates.
* Significant multivariate predictors at $p < .005$.

(Garland et al., 2019), some skills derived from mindfulness training may directly contribute to one's ability to build strong social and community ties, take responsibility for one's actions, and increase a sense of mastery over self and tasks. For example, social processes are linked to enhanced response inhibition more broadly (Tompson et al., 2020), and researchers have found that response inhibition is associated with measures of adaptive functioning such as emotional regulation, ego resilience, empathy, agreeableness, conscientiousness, openness to experience, and psychological well-being (Sahdra et al., 2011).

Evidence for the relationship between recovery capital and weekly meditation frequency in the results of this study imply that the frequency with which a person meditates may be more important for recovery capital than the length of time spent in each meditation session. Previous research has established that continuous and frequent practice is connected to better skill performance and self-efficacy (Miller et al., 2020). The findings of this study align with previous research that show consistent practice is associated with increased attentional control and better mental health outcomes (Compton & Becker, 1983; Delmonte, 1985; Fisk & Schneider, 1983). Given the link between mindfulness and impulse control, increasing practice may result in greater emotional response inhibition, executive function control, and could potentially explain the relationship with recovery capital, as the BARC-10 scale items represent endorsement of surroundings based on one's level of adaptive function. Notably, our findings may be helpful for people who cannot commit to more time-intensive meditation practices on a semi-regular basis and promise benefit for those who integrate short bouts of meditation into their routine regularly. This information may be particularly useful for people with limited meditation experience, especially those just beginning their recovery journey.

Current research indicates that perceived support from community-based recovery programs improves treatment retention (Boisvert et al., 2008) and recovery capital (Ashford et al., 2021), yet questions about perceived support in a Buddhist recovery program had previously remained unanswered. As hypothesized, our results indicated that perceived RD support was related to higher levels of recovery capital. Given the relationship between recovery capital and treatment retention, support for the role of the organization in creating an atmosphere conducive to a sense of social support cannot be understated. The Social Identity Model of Recovery (SIMOR) posits recovery is facilitated by changing social networks, meaningful activities, and social influence (Best et al., 2016); while group membership builds identification with MHOs (Haslam et al., 2019) and predicts lower relapse and craving (Buckingham et al., 2013). A potential future research direction is to examine the individual contributions of perceived support, social identity, and group membership among people in recovery, and their combined impact on positive outcomes.

While we hypothesized that the average length of meditation sessions would be related to the level of recovery capital, the lack of significant findings was potentially the result of a combination of factors that may have contributed to an unexpectedly high level of recovery capital among study participants compared to other populations. As an example, in the National Recovery Survey conducted by Kelly et al. (2018) the average BARC-10 score (i.e., recovery capital) of non-treatment-seeking persons with resolved substance use-related difficulties was around 43 ($SD = 10$; Kelly et al., 2018). Participants in our study had an average BARC-10 score of 49.6 ($SD = 6.90$). Notably, people who had been in recovery for more than one year had a considerably higher BARC-10 score ($M = 50.71$, $SD = 6.14$) than those who had been sober for less than one year ($M = 47.05$, $SD = 7.78$), yet both groups showed higher than expected levels of recovery capital. As a result, individuals in our study may have entered the RD program with higher-than-average baseline levels of recovery capital and that our results reflect a ceiling effect in this regard, given that the highest score obtainable is 60. Last, we found a negative correlation between average meditation session length and perceived support from RD. More introverted RD members may spend more time in individual meditation practice, and less time engaged in the social aspects of the RD program (e.g., group meeting attendance, group meditation, social events), which could directly contribute to their level of perceived support. Accordingly, examining introversion and the role it plays in social support among MHO participants is a potential future research direction.

Finally, we expected that longer time in recovery would be related to higher recovery capital, but the study did not substantiate this hypothesis. Previous research indicates that recovery capital increases sharply in the early stages of recovery, followed by an incremental increase over time (Kelly et al., 2018). Given that RD was established in 2019, we anticipated that more people would be in the early phase of recovery. However, most of the sample population (77.0 %) reportedly were in recovery for more than one year, with 61.7 % of the sample reporting previous involvement in Buddhist recovery prior to Recovery Dharma. Furthermore, given that the sample endorsed higher levels of recovery capital compared to other populations and most were established in their recovery journey, we cannot rule out that the null findings are the result of other factors, such as differential treatment attrition or selection bias, and a study sample that would be impeded by recovery capital predictors. For example, people with lower levels of recovery capital may have switched to inpatient treatment or more intensive treatment options, discontinued their participation in RD, or declined to participate in the study for other reasons.

4.1. Strengths and limitations

This study is an important first step in examining mindfulness, meditation, and perceived support in recovery capital in RD members. However, the project has limitations that present an opportunity for future study. First, we conducted our study online; it does not accurately assess all RD members but those who engage in RD content via email, social media, and the RD website. The sample did not include people

who do not have access to a computer or cell phone and/or without access to the internet. Second, as a cross-sectional study, it is impossible to determine whether mindfulness, meditation, and perceived support in RD directly cause higher recovery capital for members (or vice versa) or if there are other factors that influence the development and maintenance of recovery capital. Further research should determine the extent of these relationships and explore related concepts. Specifically, we suggest longitudinal studies to examine changes over time.

Despite the noted limitations, our research presents a novel initial investigation of predictors of recovery capital in a Buddhist recovery population. Additionally, this study is the first to explore the relationship between mindfulness, meditation, perceived support and recovery capital in an MHO.

4.2. Future research

Additional analysis on the effects of meditation on recovery-related and mental health constructs is a strongly suggested direction for future research, given the fundamental role of meditation in the RD program. The current study asked about other recovery supports (e.g., 12-Step programs) previously and currently utilized by participants. Future research should consider comparisons between RD and other recovery programs, as they may elucidate factors that act as barriers or accelerates to recovery, based on recovery program philosophy, meeting format, and membership composition. This suggestion is especially important given that much of the previous research regarding recovery capital in MHOs has been done against the backdrop of 12-step programs. Future researchers should consider comparison studies between RD samples and samples from other MHOs to better match recovery pathways to people seeking treatment from addiction.

Finally, previous research indicates that social support derived from MHOs predicts increased social support for abstinence (Karriker-Jaffe et al., 2020; Kelly et al., 2014) and is an important factor in the SUD recovery process (Boisvert et al., 2008; Kelly et al., 2014; Mignon, 2014; Reif et al., 2014). Given the large percentages of RD members who reported previous engagement with 12-step MHOs (70.8 %, $n = 148$) as well as current engagement (45.9 %, $n = 96$), future research should examine if RD and other MHOs are fulfilling different needs for support, or whether they offer similar support in a format that is more palatable for some individuals. We do not know whether RD offers similar support compared to other MHOs; as such, it would be helpful to identify key characteristics of those who prefer RD to other MHOs to help better match people with SUD to recovery pathways that may be more aligned with their values and beliefs.

5. Conclusion

The findings of this study offer a preliminary look at the role of mindfulness, meditation, and support in levels of recovery capital among members of the Buddhist-based program for addiction, Recovery Dharma. Regular meditation practice appears to be more important for recovery capital among RD members than the amount of time spent in each meditation session. In addition to regular meditation practice, perceptions of support from RD peers also played a role in recovery capital for RD members. Further study on these topics should determine the specific role of regular meditation practice and peer support as they relate to recovery capital, sustained abstinence, and positive outcomes in this population.

Author statement

All co-authors have contributed to the revision of the manuscript and approve the changes.

Funding

This research project was supported by the first author's start up grant. The third author was supported by the National Institute on Drug Abuse of the National Institutes of Health under Award Number T32 DA035165 and K01 DA053391.

CRediT authorship contribution statement

Onawa LaBelle: Conceptualization, Methodology, Investigation, Data curation, Writing – original draft, Supervision. **Maurissa Hastings:** Conceptualization, Data curation, Formal analysis, Writing – original draft, Visualization. **Noel Vest:** Formal analysis, Supervision, Writing – review & editing. **Matthew Meeks:** Data curation, Formal analysis, Writing – review & editing. **Krista Lucier:** Project administration, Writing – review & editing.

Declaration of competing interest

None.

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