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From social marketing and service-dominant logic to engagement in mindfulness practice: a field experiment

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Abstract

Purpose – Based on the assumption of the service-dominant logic (S-D logic) that every exchange is service-for-service and on the relevance of the beneficiary's role in the co-creation of value, this paper aims to investigate the effects of engagement in the context of social marketing, where the value proposition is an invitation to practice mindfulness.

Design/methodology/approach – A field experiment was carried out with 72 volunteers, using a pre-test/post-test control group design. The treatment applied was a set of strategies to increase the engagement of the participants to attain a better result in five dependent variables associated mainly with the benefits of mindfulness practice. Measurements were made from a profile analysis, and submitted to Mann-Whitney and *t*-tests.

Findings – A large effect of group and time factors were observed in the multivariate test, as well as differences in the co-creation of value between groups.

Originality/value – This study can contribute to stimulate experimental transdisciplinary research in humans, using concepts from S-D logic and social marketing to promote positive behavioral change.

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This approach is probably more efficient at explaining and improving human behavior, given its complex nature.

Keywords Social marketing, Mindfulness, Self-efficacy, Social interventions, Service-dominant logic

Paper type Research paper

Introduction

The main objective of this study was to investigate the effect of the beneficiaries' engagement on value cocreation resulting from a social marketing intervention. We carried out the investigation of such a construct in a study based on service-dominant logic (S-D logic) to contribute to its theoretical deepening and show the importance of managing social interventions engagement.

Ever since the 1960s, marketing has been expanding its scope, encompassing various types of exchanges in addition to trade and including the assessment of impacts on other stakeholders, as well as the agents directly involved in the exchanges (Ferber, 1970; Grohmann, Battsitella, Lutz, & Beuron, 2015; Kotler & Kotler, 1982; Kotler & Levy, 1969; Lavidge, 1970; Simon, 1968).

To understand commercial and social exchanges in a context of greater complexity, Vargo and Lusch (2004) proposed the S-D logic with the purpose of unifying marketing knowledge based on foundational premises. The central idea of S-D logic is that all exchanges are service-for-service exchanges, in which "service" must be understood as the application of knowledge, skills and competencies to the benefit of interacting parties. Following this theoretical framework, beneficiaries play active roles as resource integrators at value co-creation.

The approach we considered in this paper analyzes social marketing by taking S-D logic as a theoretical framework, to integrate and broaden the analytical perspective, overcoming the limits of the traditional view (Lefebvre, 2012; Luca, Hibbert, & Mcdonald, 2016; Russell-Bennett, Wood, & Previte, 2013). In social marketing proposals, where the service seeks behavioral change, the active role of the beneficiary and, consequently, her/his engagement becomes even more relevant, given the intangible and complex nature of the offer (Luca *et al.*, 2016), with benefits that are difficult to estimate beforehand, such as the improvement of health and quality of life.

As the level of engagement defines how much the actors involved in exchanges mobilize available resources and integrate them to create value (Brodie & Hollebeek, 2011; Lusch & Vargo, 2014), understanding how the engagement process can be driven and sustained is crucial for the success of initiatives with complex and subjective value proposals. Following the Marketing Science Institute's (MSI) guidelines for researching the way in which marketing can promote positive behavioral change through new approaches and interventions (Marketing Science Institute, 2016), we investigated the invitation to practice mindfulness as a call to a behavioral change also based on the evidence of the central role of engagement to meditation practice to treatment outcomes (Parsons, Crane, Parsons, Fjorback, & Kuyken, 2017; Strohmaier, 2020). In other words, we studied a mindfulness intervention as a social marketing intervention, which also fits into one of the research priorities listed by MSI for the 2020–2022 triennium (Marketing Science Institute, 2021), that proposes the study of actions that promote the quality of consumers' lives.

With Buddhist roots and adapted to Western medicine by Kabat-Zinn (2003a), mindfulness is easily applicable to the everyday context (Magalhães, 2014) and has positive results that are demonstrated and known (Grossman, Niemann, Schmidt, & Walach, 2004). The practice has recently reached widespread popularity (Cebolla, García-Campayo, &

Demarzo, 2014; Magalhães, 2014) and has become a real, replicable and low-cost alternate to therapies and prophylaxis in various contexts (Magalhães, 2014). The growing relevance of the subject has led to the inclusion of meditation among the practices that form part of the procedures chart of [Sistema Único de Saúde (Brazilian Unified Health System)], in the category of health promotion and prevention (Ordinance n. 145, 2017).

We investigated the effect of engagement in the effectiveness of social marketing interventions on the practice of mindfulness. The degree of effectiveness was measured by the variation of four psychometric scales related to the benefits of mindfulness and by the probability of recommendation. The latter could be understood as an indicator of the value created or the customer-determined and co-created benefit (Vargo, 2008), revealing his assessment of the increase in his well-being (Vargo, Maglio, & Akaka, 2008). We sought to contribute to the development of the medium-range theories needed to consolidate S-D logic (Brodie, Saren, & Pels, 2011), extending its epistemic potential to address ethical, political and citizenship issues underlying social change (Domegan, Collins, Stead, Mchugh, & Hughes, 2013).

Theoretical background and hypothesis development

Service dominant logic and social marketing

S-D logic is a metatheory that has been developed over the past 20 years mainly by Stephen L. Vargo and Robert F. Lusch and claims human relations are permeated by exchanges of service for service (Lusch & Vargo, 2014). Service would be the fundamental basis of any exchange, defined as the application of resources for the benefit of another actor or him/herself, with the aim of increasing his/her viability, quality of life and resourcefulness. Despite the seminal contribution of S-D logic to marketing theory, it seems to lack cultural sophistication and promote a naive view of consumer culture based on a simplistic and mistaken view of value in commodity markets (Hietanen, Andéhn, & Bradshaw, 2018).

S-D logic takes suppliers and consumers as actors engaged in the exchange process and suggests that both play an active role as resource integrators through collaboration (Lusch & Vargo, 2014). Value co-creation is a mutual and inherent process that occurs with or without the willingness of those involved in the exchanges and is the measurement of the success of the transactions. As the exchanges have different natures, their success must be defined according to the value proposition and the perspective of the actor considered as the beneficiary (Lusch & Vargo, 2014). For a social marketing proposal, success could be measured by the subjective assessment of beneficiaries, as the value proposition is an invitation to a behavioral change, with a result or value created, which is unique and determined by the beneficiary.

Unlike the "value-in-use" concept proposed by Grönroos (2011), in this paper, we considered value creation as an all-encompassing process that includes the provider and the user activities, taken both as actors that interact during service exchange. We assumed that value is created by the beneficiary in a phenomenological way, even though the possibility of considering the perspective of beneficiary exclusively and the entire interactive process in the same definition of value co-creation seems to be conflicting, according to Grönroos (2011). We chose Lusch and Vargo (2014) perspective, in which this approach is possible.

Thus, we ignored the need to analyze the scope, *locus* and nature of value creation and co-creation in service exchange following the clear distinction of the customer and provider roles, as Grönroos and Voima (2013) had advocated.

As an active player, the capacity of using his/her essential resources (skills, knowledge, time and effort) in exchanges to co-create value depends on the beneficiary's engagement in an interactive service relationship process (Brodie & Hollebeek, 2011). As interaction and

connectivity can increase engagement and the co-creation of value (Lusch & Vargo, 2014), we examined whether strategies for the promotion of engagement influence the perceived result, given that value is unique, individual and context-specific (Brodie & Hollebeek, 2011; Lusch & Vargo, 2014).

The net-promoter score (Reichheld, 2003) can show the perception of the general value co-created from the probability that a person has of recommending a particular product or service to friends and family. In this way, we propose:

H1. Volunteers who received the interventions to promote engagement would co-create more value, and, therefore, would be more likely to recommend a course of mindfulness than those who do not receive the actions.

In this study, social marketing is understood as the use of traditional marketing resources and strategies to voluntarily influence people's behavior to improve their quality of life (Andreasen, 1994). It promotes exchanges that interest the target audience (Rothschild, 1998) and that belong to a wide range of exchanges that can be investigated by behavioral sciences and integrated by S-D logic.

Our study understands and investigates social marketing within the S-D logic framework (Lefebvre, 2012; Luca *et al.*, 2016; Russell-Bennett *et al.*, 2013). Previous studies have already recognized the importance of S-D logic concepts for social marketing, such as the value co-creation and the importance of collaborative and interactive networks in this process. However, it is not yet clear how the context and the actors' interaction can modify engagement and the co-creation of value (Luca *et al.*, 2016). Domegan *et al.* (2013), for example, critically explored value co-creation, considering the engagement and the active role of the interested party in the search for the desired solution, and suggests the study of value co-creation from an empirical perspective, such as this one. Zainuddin, Previte, and Russell-Bennett (2011) use depth interviews in an experiential approach to value, applying a wellness paradigm. We expanded this experiential approach based on a proposal that empirically tests the effect of engagement driven by the actors' own interaction.

S-D logic premises focus on the role of the beneficiary as an operant, active resource, in the co-creation of value from an exchange, which, in turn, occurs after the beneficiary's engagement with a value proposition (Vargo & Lusch, 2016). Our interventions were intended to make the beneficiaries more engaged with the value proposition – the call to practice mindfulness –, considering that successful social marketing initiatives are based on the engagement of target groups (Australian Association of Social Marketing, 2013).

Engagement

Engagement is defined in different ways in the educational, psychological, management and marketing literature. In some cases, it assumes specific context definitions, such as being established when a person faces a set of goals for which he/she can handle and mobilize his/her skills for appropriate responses (Csikszentmihalyi, 1997) or occurring as a state of involvement, absorption and sustained attention to something (Higgins & Scholer, 2009). In others, as in management literature, the concept is more generalist, meaning an enduring affective-cognitive state not focused on any particular object (Schaufeli & Bakker, 2004).

We argue that engagement of the actor is a focal and contextual state that occurs directed to a specific agent/object, as proposed by Higgins and Scholer (2009) and, the more the engagement with a goal, the more the experienced value linked to it (Higgins & Scholer, 2009). Hence, the unfolding of our second hypothesis:

H2. The participants who are the target of the interventions to promote engagement would have wider variations in the scales related to mindfulness benefits.

Engagement occurs when connections and dispositions are aligned with the value proposition (Chandler & Lusch, 2015). Connections and dispositions are described as five properties of engagement, namely: temporal connections, relational connections, past dispositions, present dispositions and future dispositions (Chandler & Lusch, 2015). The first two are external to the player (environment and context) and the last three internal (Chandler & Lusch, 2015).

Based on the premise that actors can assist others in aligning these connections and dispositions (Chandler & Lusch, 2015), we sought to intensify the engagement of the service beneficiary in a mindfulness intervention, understood as a social marketing intervention in this context. For that, we used interactions on a Facebook group, focused on aligning at all times the temporal and relational connections of beneficiaries to the value proposition. Engagement interventions will be described in the respective section.

Mindfulness and its benefits

The value proposition was the invitation to behavioral change through compliance to the practice of mindfulness, a mode or mental state that can be trained or developed, such as a skill (Bishop *et al.*, 2004), by paying intentional attention to the present moment, without judging or evaluating the experience (Kabat-Zinn, 2003a). The first secular protocol was applied in the 1970s by Jon Kabat-Zinn and colleagues at the University of Massachusetts Stress Reduction Clinic (which became the center for mindfulness in medicine, health care and society of the University of Massachusetts) to run a group stress reduction program, called mindfulness-based stress reduction – MBSR. It consists of face-to-face activities, organized in a structured way over eight weeks, with weekly meetings of two and a half hours and distance activities that should be performed at home or at work on a daily basis, with an average time of 45 min so participants can incorporate meditation into their daily lives and feel prepared to do the techniques alone, making the intervention sustainable (Demarzo, 2011) and its benefits tangible shortly after the interventions.

Mindfulness training includes, but is not limited to, meditation practice, carried out for centuries in various cultural, religious and philosophical traditions and has now been integrated into the clinical practice of psychology and medicine (Demarzo, 2011). It has gained relevance in the academic context (Magalhães, 2014; Cebolla *et al.*, 2014), as the recent techniques made available by the advancement of neuroscience have allowed an empirical investigation of the anatomical, functional, psychological and behavioral changes – and their interrelations – as a result of this practice (Santarnecchi *et al.*, 2014). The anatomical changes are related to a series of positive effects mainly related to an optimization in the processing of reactions to stimuli and emotional self-regulation (Chiesa & Serretti, 2009; Santarnecchi *et al.*, 2014).

Among the psychological benefits associated to the practice of mindfulness is the ability to interrupt his or her behavior automatically and to become aware without judgment of his/her experiences (Barros, Kozasa, Souza, & Ronzani, 2015), extending the level of mindful attention and awareness. This process has beneficial consequences that interact with each other and lead to an improvement in the above-mentioned emotional self-regulation, stress tolerance and reduction in the general perception of stress (Hsu, Collins, & Marlatt, 2013). Also, the comprehensiveness of mindfulness brought about by training makes possible a kind and welcoming acceptance of suffering, though active and empowered, which enables

the person to develop a more lucid posture in the face of suffering and skill to return to a state of peace (Souza & Hutz, 2016), called self-compassion.

Based on the definition that being an agent means to influence one's own functioning and life circumstances in an intentional way (Bandura, 2008) and that self-influences bring about changes in the agent's perspective (Bandura, 1997), in the case of the intended intervention, the improvement in the perception of self-efficacy can also be expected as a result of the practice of mindfulness, as a consequence of the improvement in the management of stress situations (Demarzo, 2011).

Our work empirically explored the proposal of the regulatory theory of engagement (Higgins, 2006), with the hypothesis that based on the promotion of engagement of the volunteers who received the daily interventions, the greater the engagement with mindfulness practice, the greater the general experienced value linked to it and, the greater the perception of the evolution of the benefits described: improvement in mindful attention and awareness, self-compassion and self-efficacy and stress reduction during the interventions and two months later.

Methods

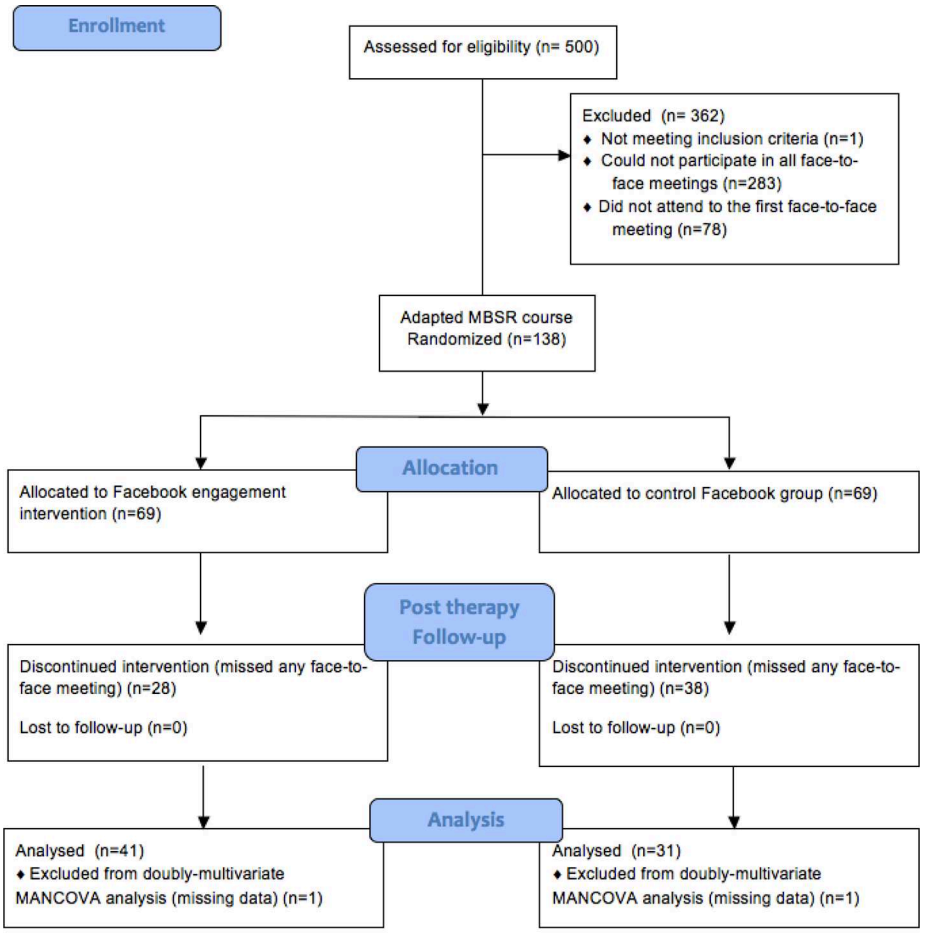
Sample and procedure

We carried out a field experiment based on a single-factor design between subjects, with two groups: an experimental one and a control group (Malhotra, 2001). In health sciences, it is a double-blind parallel-group randomized controlled trial. For this, we enrolled 138 undergraduate and graduate students from the same Brazilian university, who volunteered for this study. The recruitment process included screening on online forms to verify the inclusion and exclusion criteria. We included all students regularly enrolled in undergraduate and postgraduate courses and excluded people with chronic depression, anxiety disorders, dissociative disorders and schizophrenia. Participants flow through the experiment is fully described in Figure 1 and the study was conducted following the CONSORT ethical guidelines.

Volunteers were warned that mindfulness is not a health treatment and that they should not abandon possible current therapeutic interventions, and they received information by e-mail about risks arising from the practice, such as emotional and physical experiences that are difficult to manage (Lomas, Cartwright, Edginton, & Ridge, 2015), already predicted by ancient Buddhist texts (Engler, 2003) and considered to be an inherent part of mindfulness interventions. Our research complies with international standards for human research and all study protocols and consenting procedures were approved by the research ethics committee of the university where it was held.

The volunteers were randomly split into two groups, with 69 participants each. The experiment involved instruction on the practice of mindfulness and information on the benefits by a specialist (Luszczynska & Schwarzer, 2005), carried out by all the volunteers jointly in a large group, with the specificity that, for the volunteers of the experimental group, along with the instructions of professionals, a series of daily interventions was conducted to increase engagement through a support group on Facebook.

The mindfulness instruction – baseline intervention –, for both groups, was carried out in an adapted form of MBSR, in three large face-to-face meetings on the university campus, 4 h long each, in intervals of 14 days, to a total of 28 days. It was a double-blind study, and the three instructors – interacting simultaneously – were the same for both groups. The volunteers knew that they would be separated into two Facebook groups and that their online interactions would be observed as part of the study. They were guided and signed a commitment in which they pledged not to share interactions in one group with members of the other group.



Note: Participants flow through trial. The flow of participants in the study is displayed, divided in four phases, namely, the enrollment phase, indicating that 500 participants were assessed for eligibility, with 138 students starting the MBSR face-to-face course; the allocation phase, where participants were divided in experimental and control groups, with 69 participants in each; the post-therapy and follow-up phase, indicating that the experimental group lost 28 participants during the intervention and the control group 38; the analysis phase, with 41 participants in the experimental group and 31 participants in the control group

Figure 1.
CONSORT flow-diagram

Engagement interventions

We performed the interventions daily throughout the course (28 days) to bring about the alignment of relational and temporal connections, past, present and future dispositions to the value proposal, as suggested by Chandler and Lusch (2015), so as to intensify the engagement in the experimental group. They were carried out online in a support group on Facebook, through different actions and strategies, such as the posting of songs, cartoons, videos,

informative texts, academic texts and poems. The main theme of the posts was drawn from discussions raised by the participants themselves on Facebook or a prior face-to-face meeting.

The interactions were selected throughout the experiment from the opportunities that emerged during the meetings and in discussions on the group's own page, as engagement is an interactive, dynamic and co-created process. In the face-to-face meetings, there was a protocol moment for the discussion of experiences among the participants, namely, an account of difficulties, insights, sensations, memories, etc., which was used as one of the sources of themes of the interventions. A Facebook group was also created for the control group, but there was no daily intervention with the purpose of promoting engagement, only questions that spontaneously arose from the participants were answered, and some information posts were made (which was also done in the experimental group).

Manipulation check

The manipulation check of engagement was carried out by testing for differences between groups at practice time (measured in minutes), as time allocated to the activity is a good indicator of activity engagement (Newton, Pladevall-Guyer, Gonzalez, & Smith, 2016), mainly because it can clarify actual behavior, which is a less biased product of engagement. It was estimated by written self-reporting in practice journals delivered by the participants in the second-course meeting, at the final meeting, and two months after the end of the course. The first two deliveries (T-1 and T-2) were pooled for analysis corresponding to the practice time during the interventions, and, for comparison purposes, the third delivery (T-3) was analyzed separately as the practice time after engagement interventions.

The analysis was done with Mann-Whitney's non-parametric test, as the Shapiro Wilk normality test (significance level 5%) showed results of 0.940, $p = 0.002$ and 0.453, $p = 0.001$ for practice time during engagement interventions and practice time after this manipulation.

During the manipulation, the results indicate that the experimental group performed more than the control group, with a mean of 40.72, while the control group showed 30.92 (one-sided $p = 0.025$). The result for the practice time after the course did not present a significant statistical result (one-sided $p = 0.181$), which shows that after the interventions were finished, there was no difference in mean practice time between groups. We found support for our manipulation, as the experimental group practiced mindfulness for longer than the control group.

Measures

The volunteers answered questionnaires at the three-course meetings and online two months after completing the course. We used continuous scales for all variables, in which respondents put a check where they think appropriate on a line, with markings of options corresponding to each of the extremes, not limited to marks previously fixed by the researcher (Malhotra, 2001). For control purposes, in the initial meeting, we used a personal involvement scale based on Zaichkowsky (1985), with the objective of measuring external effects related to previous involvement with meditation that eventually could impact our results. The four-item scale was applied at the first meeting (T-0) before the volunteers' contact with course content. Cronbach's alpha of the construct was 0.816. Table 1 shows the variables and times of measurement:

- *Probability of recommendation:* The net-promoter score (Reichheld, 2003) was used to measure the probability of recommending a course of mindfulness for relatives and friends held on the last day of the course (T-2). The row was 10 centimeters long, and the right and left ends had: 0% (no possibility) and 100% (certainly will recommend), respectively.

Variables	T0	T1	T2	T3
Prior involvement with meditation (control)	+	−	−	−
Practice time (activity engagement)	−	+	+	+
Probability of recommendation (co-created value)	−	−	+	−
Self-efficacy	+	−	+	+
Mindful attention awareness	+	−	+	+
Self-compassion	+	−	+	+
Perceived stress	+	−	+	+

Table 1. Measurements and time of assessment

Notes: T0, T1 and T2 = three face-to-face course meetings; T3 = two months' follow-up, measured at an online survey; sign "+" means that the variable was measured and "-" if it was not measured at that time. Probability of recommendation, Self-efficacy, Mindful Attention Awareness, Self-Compassion and Perceived stress were measured with continuous scales; practice time was measured by the records in each participant's practice journal. Source: drawn up by the authors

Dependent variables related to the benefits of mindfulness were measured from scales containing items with straight lines of seven centimeters, equivalent to a scale of 0 to 7 points. The markings corresponding to the right and left ends of the line were those indicated in the literature of origin of each scale, but the intermediate points were not shown so that the volunteer was free to mark an x on any point of the line. The scales of the benefits were measured at the initial and final meetings, face-to-face and two months after completion of the course via the Survey Monkey online form.

- *General self-efficacy:* We used a scale of the construct validated in Brazil (Meneses & da Silva Abbad, 2010), which has 15 items. Cronbach's alpha was 0.774 (T-0), 0.828 (T-2) and 0.905 (T-3) in each of the respective measurements.
- *Mindful Attention Awareness Scale (MAAS):* We applied the version of the 15-item scale validated in Brazil (Barros *et al.*, 2015) of the tool originally developed by Brown and Ryan (2003) to verify the individual differences in the frequency of states of mind and in the degree of awareness over time, called the MAAS. Cronbach's alpha measured at T-0, T-2 and T-3 were 0.856, 0.893 and 0.902, respectively.
- *Self-compassion:* We used the Brazilian validated scale of 26 items (Souza & Hutz, 2016) based on the work that began to be developed by Neff (2003) to evaluate a person's ability to understand their difficulties as part of the human condition and to resume a state of peace after situations of imbalance, from a posture of kindness to themselves. The result was Cronbach's alpha of 0.927 (T-0), 0.950 (T-2) and 0.963 (T-3).
- *Perceived stress:* The volunteers responded to the 10 items of the perceived stress scale, validated in Brazil (Siqueira Reis, Ferreira Hino, & Romélio Rodriguez Añez, 2010) originally developed by Cohen, Kamarck and Mermelstein, in 1983. Cronbach's alpha was 0.866 at T-0, 0.887 at T-2 and 0.920 at T-3.

Analytic strategy

We analyzed the data in the IBM SPSS Statistics Version 20. All the construct variables were calculated according to corresponding published works previously cited in the measurements section.

Mann-Whitney's non-parametric test was used to compare the likelihood of recommendation, as the Shapiro Wilk normality test indicated a non-normal distribution for this variable (significance level 5%, result of 0.799, $p = 0.001$).

For the scales of general self-efficacy, mindful attention awareness, self-compassion and perceived stress, measured in this study at three different times (T-0, T-2 and T-3), a specific type of profile analysis was performed – doubly-multivariate design (Tabachnick, Fidell, & Ullman, 2007), to reduce the error rate of the set and, consequently, the probability of making a Type-I error (Dancey & Reidy, 2014). The data met the multivariate normality assumptions (Royston normality test, $p = 0.472$) and homogeneity of the covariance matrices between the two groups (Box M test, $p = 0.821$), tested in R software. As a covariable, we used the variable prior involvement to the theme meditation, measured at T-0.

Results

In total, 72 volunteers completed the course, 41 in the experimental group and 31 in the control group. In total, 70.8% were female (77.4% in the control group and 65.9% in the experimental group). Ages ranged from 18 to 54 years and the mean was 28.2 years old (28.9 in the control group and 27.6 in the experimental group). In total, 51.4% of the participants were under 25 years old (51.6% in the control group and 51.2% in the experimental group). The chi-square tests of independence did not show any association between gender and group ($\chi 2 = 1.143$, df = 1, $p = 0.285$) and age and group ($\chi 2 = 0.164$, df = 2, $p = 0.921$).

For the use of Facebook, the usage time ranged from zero to 82 h per week, with a mean of 7 h per week (6.4 in the control group and 7.4 in the experimental group, with no statistically significant difference: U = 568.0, $p = 0.444$.

For the hypothesis tests, we analyzed data only from the sample that completed the experiment, and in the case of double-multivariate design profile analysis (Tabachnick *et al.*, 2007), one individual in each group was excluded from the analysis because they turned in questionnaires with missing data, as this technique cannot be performed with unbalanced data. Thus, the analysis involved 30 individuals in the control group and 40 individuals in the experimental group. The minimum number of 20 observations per cell to perform the multivariate analysis of covariance test was met (Hair, Babin, Money, & Samouel, 2005). Markings on continuous scales were measured using rulers and written down to one decimal place.

Tables 2 and 3 summarize the analysis strategies and the results. The Mann Whitney test showed results of $U = 490.0$, one-sided $p = 0.047$ for the probability of recommendation

Variable	Time practiced T1+T2	Time practiced T3	Probability of recommendation T2
U	462.5	556.0	490.0
One-sided *p*-value	0.025*	0.181	0.047*
Mean rank experimental group	40.72	–	40.05
Mean rank control group	30.92	–	31.81

Notes: Time practiced represents the time recorded at participants' journal delivered at T1, T2 and T3; the T1+T2 represents the sum of practice time recorded during face-to-face mindfulness course and engagement intervention; T3 represents the time of practice recorded from post-experimental assessments until 2 months' follow-up; the probability of recommendation according to continuous scale measured at post-experimental assessments; *U* of Mann-Whitney test; *$p \leq 0.05$. Source: drawn up by the authors

Table 2. Time practicing meditation (activity engagement) and the probability of recommendation differences between groups

and the double-multivariate design profile analysis tests did not show any covariate effect of prior involvement and group for any variable ($\lambda = 0.725/F_{(1.56)} = 1.771/p = 0.076/\eta_p^2 - 0.275$ and $\lambda = 0.816/F_{(1.56)} = 0.054/p = 0.415/\eta_p^2 = 0.184$, respectively). The interaction between group and time factors also did not show statistical effects ($\lambda = 0.452/F_{(1.56)} = 0.324/p = 0.724/\eta_p^2 = 0.013$). For the time factor, the result was significant ($\lambda = 0.912/F_{(1.56)} = 1.022/p = 0.001/\eta_p^2 = 0.702$).

We performed Tukey's post-hoc test for the time factor, which showed, through the pairwise comparisons of the marginal means between groups, whose values were adjusted by the mean value of the covariate previous involvement, that there was a significant difference between times 2 and 3 compared to T-0 (baseline) for all variables, regardless of the group.

Hypothesis testing

As the Mann-Whitney test presented a significant result for the recommendation probability (one-sided $p = 0.047$) with the mean rank in the experimental group equal to 40.05, compared to 31.81 in the control group, there was a difference in the likelihood of recommendation among the experimental and control groups and the experimental group showed a higher probability of recommending a course of mindfulness for relatives and friends. Therefore, we found statistical support for *H1*.

The profile analysis did not present statistical significance for the group factor ($p = 0.415$) and there was no significant interaction between group and time ($p = 0.724$). The group factor tested the effects of the independent "engagement" variable, which was carried out through treatment interventions that differentiated the two groups of the experiment. Therefore, we found no evidence for *H2*, that the participants in the group who received interventions to promote the engagement would have greater variations in psychometric scales related to benefits of mindfulness than the group that only did the course in mindfulness without the interventions, during the period they lasted and two months later.

Discussion and conclusions

The random distribution of the participants between the two groups ensured a homogeneity between groups in relation to the median previous involvement with meditation (U = 480.5, $p = 0.078$), which guarantees that our results can be interpreted with greater confidence.

We have found that volunteer students targeting daily interventions to promote engagement in social interventions to practice mindfulness are more likely to recommend the course to relatives and friends. We also found that, although there is no significant differential effect for interventions with regard to changes in perceptions of self-efficacy, mindful attention awareness, stress and self-compassion, the size of the group effect factor,

Table 3.
Effects of covariate previous involvement with meditation, time, group and time by group interaction on meditation benefits variables

Variable	$F_{(1,56)}$	p-value	η_p^2	λ	Confidence interval
Previous involvement with meditation	1.771	0.76	0.275	0.725	(0.261−0.343)
Time	1.022	0.001*	0.702	0.912	(0.664−0.743)
Group	0.054	0.415	0.184	0.816	(0.122−0.289)
Group × time	0.324	0.724	0.013	0.452	(IC 0.009−0.027)

Note: Time = change from pre- to post-experimental and 2 months' follow-up assessments; group represents the effects of engagement intervention; η_p^2 partial eta squared; $^*p \leq 0.05$. Source: drawn up by the authors

which reflects the result of interventions, is large and this value can be interpreted independently of the statistical significance.

Theoretical and practical implications

Our work contributes to theoretically expand the perspective of preparation and analysis of social marketing programs, based on the use of the S-D logic paradigm of exchanges and value creation. It was possible to empirically test the proposal to intensify engagement, suggested by Chandler and Lusch (2015), using a widely accessible and popular platform: Facebook. Showing how to make social marketing behavioral interventions through the strengthening of the engagement in value co-creation stimulates the building of medium-range theories, following Brodie *et al.'s* (2011) suggestion, which can fill the gap between S-D logic macro-structure and practical applications.

The field experiment method with this design has been encouraged in marketing studies because of the several advantages it presents in data analysis, to the detriment of implementation challenges (Gneezy, 2017). It is also considered the gold standard in health sciences. The use of analog scales enables increased uptake of data variability and increased reliability of the answers (Couper, Tourangeau, Conrad, & Singer, 2006) because volunteers only have a visual reference, which can draw their response closer to reality and decrease the bias of intention.

Another relevant theoretical-practical question to be discussed is the size of the effect of the group factor found ($\eta_p^2 = 0.184$), although it did not show statistical significance. The size of the effect can be interpreted independently of the statistical relevance of the factor, and above 0.14 it can be considered large (Fritz, Morris, & Richler, 2012). As it provides a description of the phenomenon observed, possibly free from incorrect influences of the sample size (Fritz *et al.*, 2012), there is evidence that interventions performed daily to promote engagement have a positive effect on the evolution of the perception of these four benefits associated to the practice of mindfulness. For the theory, this suggests replication of the study with larger samples and, in the practical sphere, it suggests that Facebook can be a good intervention tool for managers of social marketing programs, with a low cost and widely used. This finding is of interest to both private managers of social marketing interventions and public managers. It implies the possibility of using an accessible tool with the objective of expanding the value created in a service exchange with positive results to any business.

Results for the time variable means that mindfulness produced the positive effect expected within the sample for mindful attention awareness (Barros *et al.*, 2015), self-compassion (Souza & Hutz, 2016), self-efficacy (Demarzo, 2011) and stress (Brown & Ryan, 2003; Kabat-Zinn, 2003b) during the course period, with sustainable results in the short term, but with a decrease in the rate of individual evolution after protocol training. With practical effects in increasing self-efficacy through the practice of mindfulness, our study reveals a theoretical and practical implication of interest to social marketing. For the cognitive social model (Bandura, 1986), widely used in social marketing (Cugelman, Thelwall, & Dawes, 2011; Hastings, Brown, & Anker, 2010), self-development and change in human behavior would be explained by an agency perspective, which attributes intentionality in its own behavior and in the circumstances of life, without disregarding the determining effect of the environment (Bandura, 2008). Perceived self-efficacy refers to the personal belief that one is able to perform a given action necessary to achieve a specific goal (Luszczynska & Schwarzer, 2005), and the more self-efficacious the person feels, the more likely they are to take an initiative in an instrumental way and the more committed to this decision they will be (Luszczynska & Schwarzer, 2005). This relationship opens up a range

of mindfulness research possibilities in the context of social marketing programs, as the increase in self-efficacy through mindfulness can mean the availability of a possible generalist tool to behavioral change interventions. The measurement of the probability of recommendation showed high means in both groups (9.01 and 8.29, for experimental and control, respectively) and there were significant differences between groups, indicating that the engagement interventions were definitive in this regard. The net-promoter score (Reichheld, 2003), insofar as it demonstrates in a simple way the perception of the overall value co-created by the service recipient, shows that the interaction with the beneficiaries of service in the exchanges positively impacts the value co-creation and contributes to improve their final evaluation of results.

Limitations and future directions

For our findings on the group factor, it should be noted that studies with similar descriptive basic characteristics – means, distributions, confidence intervals – may differ in their statistical significance according to the sample size, but not in their estimated effect sizes (Fritz *et al.*, 2012). Thus, even if the test did not provide significant data for this factor, the evidence that the interventions performed during the course have a positive effect on the evolution of the perception of the benefits tested point to the need for new studies with more powerful testing (Fritz *et al.*, 2012). If all parameters are equal, the larger the sample size, the greater the power of the study. A larger sample would allow a decrease in the probability of making a Type II error that is obtaining false negative results, in other words, not rejecting H_0 when it is false. Thus, to continue the type of investigation initiated, we suggest longitudinal studies with larger samples, calculated from the effect size observed in this research (Ellis, 2010; Fritz *et al.*, 2012) and longer.

For the time factor, which reflects the result of the practice of mindfulness between times regardless of the interactions, there is a positive effect of great intensity and statistically significant for the four benefits when considered together. This effect occurs individually for all variables in the interval corresponding to the beginning of the course to the end of the course and beginning of the course and two months after the course. This shows that mindfulness for the sample tested worked as an intervention that demonstrates, in itself, results in promoting the positive effects tested during the protocol period. Among them, the self-efficacy construct is the main antecedent of the model proposed by Bandura (1986) and has a central role because it showed itself to be the most predictive construct in behavioral studies involving its alteration to beneficial postures (Contento, Randell, & Basch, 2002). As the self-efficacy construct presented a significant result when considering the time factor and the period during the intervention, our study successfully points to mindfulness as a type of intervention that may be useful as preparation for behavioral change proposals, as the individual who has a greater perception of self-efficacy, through his cognitive action mediation (Souza, 2013), manages to recruit available resources with greater efficiency to overcome challenges and to implement new behaviors. We recommend that this investigation be done.

One possibility that would bring objectivity to the measurement of the results of interventions with mindfulness, especially with regard to the self-efficacy construct, would be to work with dependent magnetic resonance imaging variables. As emotional regulation is linked to a higher perception of self-efficacy, our aim is to measure anatomical changes related to this regulation, such as those listed by Santarnecchi *et al.* (2014).

Various possibilities appear to investigate the social marketing embedded in the S-D logic framework. By treating the calls for exchange as value propositions, which may or may not attain the attention and engagement of the beneficiaries, we propose investigating questions such as:

Q1. How can one, through marketing, help people to change non-adaptive behaviors that become habits?

Q2. Why are some people able to change non-adaptive behaviors more easily than others?

Q3. How can mindfulness practice help in this process, both individually and collectively (thinking of public policy)?

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Author's contribution: Carolina Pantuza Vilar dos Santos designed and executed the study, completed data analyzes and wrote the paper. Evandro Luiz Lopes collaborated with the research design and final edition. Júlia Costa Dias collaborated with the research design, literature search, writing and the editing of the final manuscript. André Gustavo Pereira de Andrade collaborated with the methodological design and assisted in performing and analyzing statistical analysis. Celso Augusto de Matos collaborated with the final edition of the manuscript. Ricardo Teixeira Veiga contributed with conceptualizing and refining research ideas, methods and writing the manuscript. All authors approved the final version of the manuscript for submission.

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