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# Preschool teachers' psychological distress and work engagement during Covid -19 outbreak: The protective role of mindfulness and emotion regulation

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**Abstract:** The COVID-19 has dramatically affected mental health and work environment of many labor sectors, including the educational sector. Our primary aim was to investigate preschool teachers' psychological distress and work engagement during the early stages of the COVID-19 outbreak, while examining the possible protective role of participating in mindfulness-based intervention (C2C-IT) and emotion regulation. Emotional distress, work engagement and COVID-19 concerns' prevalence were evaluated among 165 preschool teachers in the early stages of the COVID-19 outbreak in Israel, using self-report questionnaires. Findings show that preschool teachers have experienced increased emotional distress. Teachers who had participated in the C2C-IT intervention six months before the pandemic outbreak (N=41) reported lower emotional distress, higher use of adaptive emotion regulation strategies and higher work engagement, compared to their counterparts that had not participated in the mindfulness training (N = 124). Emotion regulation strategies mediated the link between participating in the CTC-IT intervention and emotional distress and work engagement. Teaching is a highly demanding occupation, especially during a pandemic, therefore it is important to invest resources in empowering this population. According to the findings of the current study, implementation of mindfulness-based intervention during the school year, may benefit teachers' well-being, even during stressful events such as the COVID-19 pandemic.

**Keywords:** Teachers, Mindfulness, Emotion regulation, COVID-19, Work engagement, Emotional distress

## 1. Introduction

Starting December 2019, the coronavirus disease (COVID-19) rapidly spread turning into a global pandemic disrupting the proper functioning of the human community and pose a mental health threat of great magnitude around the world for both individuals and communities [1]. The fear of the virus and the restrictions imposed due to its outbreak, has tremendous effect on our mental health and changed many aspects of our lives including our work life. According to studies, the well-being and work engagement of workers in general, and teachers particularly, has been affected [2-4]. Teachers had to cope with students who experience tremendous social-emotional difficulties being isolated from their peers and with overwhelmed parents who struggled between keeping their jobs and supporting their children [5]. Similarly, teachers also needed to balance between their personal and professional roles [6]. Another challenge teachers face was the fear of becoming infected, and infecting family members [7], as schools considered a major source of exposure to covid-19 [8]. These challenges may be even more overwhelming for teachers working in kindergartens and primary schools, as they may feel a greater responsibility toward younger children who need more care and protection. Additionally,

working with preschoolers involves much more physical contact such as hugs, caresses and holding, and their hygienic habits are still unformed [9-10]. In the context of the pandemic, the physical closeness and unformed hygienic habits of preschoolers could be a major source of stress for teachers working with this age group [11]. Indeed, kindergarten teachers reported that exposing members of their family or themselves to COVID-19 due to interaction with infected children was one of the greatest concerns for them during the pandemic [7].

These stressors had a detrimental impact on teachers' affecting their mental health (Vu et al., 2020). For example, a survey conducted early in the pandemic among over then 80,000 teachers in China, revealed that the prevalence of anxiety in teachers was almost three times higher than those reported in the general population, while primary school teachers appeared to have the highest level of anxiety [12]. An additional study conducted among 1,633 teachers in Spain working with students at different ages, found that teachers working in kindergartens and primary schools, were those who showed the highest scores of anxiety symptoms [13]. Furthermore, in two longitudinal studies comparing mental health indicators before and during the COVID-19 pandemic, it was found that during the pandemic, teachers' anxiety levels were elevated, while their quality of life and optimism decreased [2,14]. The difficulties teachers encounter during the pandemic crisis may have affected their work engagement as well [4,15]. Work engagement is an affective-motivational construct defined as a positive, fulfilling, work-related state of mind that is characterized by high levels of energy while working, strong involvement in one's work and concentration and engrossment in the work [16]. Work engagement is related to positive outcomes for teachers and students' well-being and work performance [17]. For example, engaged teachers are less prone to burnout [18-19], and their students show higher levels of academic progress [20]. In addition, there is a strong inverse relation between teachers' work engagement and teachers' drop-out tendencies [18]. Rates of teachers leaving the profession were considered high even before the pandemic, with approximately 23% of new teachers in Israel, and 30–46% of the teachers in the USA leave the teaching profession before the third year on the job [21-22]. Due to the stress involved in the pandemic crisis, these levels may raise even further [15]. As a result of the circumstances brought about by the COVID-19 crisis it is essential to study factors that may aid teachers' ability to cope. A well-documented and timely set of skills for buffering stress, including in educational settings, are mindfulness practices [23-24].

### *Mindfulness*

Mindfulness refers to the capacity to bring one's complete attention to the experiences occurring in the present moment, in a nonjudgmental or accepting way [25]. There is growing empirical evidence supporting the existence of a link between mindfulness and well-being, and that there is a negative association between mindfulness and mental health issues such as depression, anxiety, and stress [26]. In recent years, mindfulness has begun to receive attention in organizational psychological literature [27-29], as mindfulness have a positive relationship with work performance, work engagement and employees' well-being [28-32]. According to [32] mindfulness modulates dysphoric mood states of employees through cultivation of compassion and self-compassion, improving the ability to control stress, using more effective coping strategies, and adopting an accepting and non-judgmental attentional set. Mindfulness is especially important among teachers, as teaching is an exceedingly challenging and stressful profession [33-34]. It was found that mindfulness skills impact teachers' emotional support in class and relationships with children, by enhancing self-compassion and compassion for others, and by increasing empathy, social connectedness, and emotional intelligence [34-35]. In addition, mindfulness-based interventions (MBIs) have been shown to have positive effects on teachers' mental health include the improvement of well-being, self-compassion, emotional awareness in the classroom and reduction of stress, burnout, and depression (see for review; [36]). A prospective controlled study conducted among teachers during the first COVID-19

lockdown showed the MBI intervention enhanced resilience and improved well-being among teachers, while the control group suffered from increase in burnout levels and a decline in psychological well-being [37]. There are some potential mechanisms underlying the salutary effects of MBIs, a mechanism that has consistently been proposed as a central process is ER (see for review; [38]), however this assumption has yet to be tested under increased stress conditions, such as the COVID-19 outbreak.

### *Mindfulness and Emotion Regulation*

Emotion regulation (ER) defined as extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, to accomplish one's goals [39]. The process of ER includes different ER strategies that can broadly be divided into adaptive and maladaptive strategies [40-41]. Positive refocusing, positive reappraisal, putting into perspective, refocus on planning and acceptance are typically considered adaptive strategies, as they usually downregulating negative emotions. On the other hand, rumination, self-blame, blaming others and catastrophizing are considered maladaptive regulation strategies because they may prolong or even deepen negative emotions [40]. Although yet to be tested during crisis, studies conducted during routine have found that teachers who tend to use adaptive ER had lower levels of psychological symptoms, beyond what was predicted by work related stressors and showed lower burnout and higher engagement in their occupational role [6, 42-44]. Therefore, enhanced ER can lead to positive outcomes for teachers during the COVID-19 outbreak. Mindfulness can lead to more adaptive ER in a variety of ways. For example, non-judgmental awareness, which is a key component in mindfulness [25], facilitates healthy involvement in emotions, thus allowing people to experience and express their emotions without trying to reject or suppress them but rather accept them [45]. Likewise, compassionate awareness may alter individuals' way of relating to their own internal experiences in ways that may directly reduce the intensity of emotional responses [46]. Moreover, mindfulness skills enhance the use of adaptive regulation strategies such as reappraisal and reduce the maladaptive use of rumination and suppression by promoting emotional acceptance [45,47]. Therefore, ER strategies may serve as a mediator to explain the effectiveness of MBIs on psychological distress and work engagement.

### *Mindfulness, Emotion Regulation and Teaching*

In recent years, MBIs have been adapted and applied in the teaching context [36]. For teachers, practicing mindfulness meditation may be an effective means of reducing stress and burnout while enhancing well-being, via promotion of ER abilities [36,48]. For instance, Mindfulness-Based Stress Reduction for teachers (MBSR) [49] is a mindfulness training based on meditation techniques, which seeks to change teachers' relationship with stressful events. Theoretically, MBSR may reduce symptoms of stress by modifying ER processes and improved ability or willingness to allow and be present with negative emotions rather than attempt to suppress or avoid them [45]. This theory has been confirmed in studies conducted among the general population [50], clinical populations [51] and teachers [52] but never been tested during a major crisis.

The Call2Care-Israel for Teachers (C2C-IT) is a mindfulness and compassion-based intervention geared to foster self and other compassion/care [53]. This intervention has been adopted by the Ministry of Education, and is offered as in-service training for all teachers, as part of the ministry's efforts to impart mental resilience to teachers. In the intervention, three modes of care: receiving care, developing self-care, and extending care, with the understanding that each mode empowers the others, are structured in sequence which includes mindfulness meditations, social skill training and group activities. Preliminary results indicated that C2C-IT intervention has a significant effect on reducing teachers' stress level and on promoting their well-being [54]. Testing whether ER strategies mediate the effects of the C2C-IT intervention and its efficacy in the context of pandemic may

be imperative. Although the effectiveness of mindfulness interventions for the well-being of teachers has been extensively tested, a minority of studies have examined the mechanisms mediating the effects of such interventions. In addition, examining the protective role of such interventions in acute stress conditions such as the COVID-19 outbreaks, is important to establish the contribution to resilience at times when they are most needed.

### *Current study*

The main objective of the present study was to investigate pre-school teachers' psychological distress and work engagement during the early stages of the COVID-19 outbreak, while examining the possible protective role of participating the C2C-IT intervention and the mediating role of ER strategies. To the best of our knowledge, no study has examined the relationship between participating in a MBI and emotional distress and work engagement in times of crisis. Hence, the research aims were as following: (1) to evaluate the extent of preschool teachers' exposure to the COVID-19 pandemic during the first quarantine in Israel (May 2020) and to evaluate the extent to which pre-school teachers experienced COVID-19 related concerns, emotional distress, work engagement during the first quarantine in Israel. (2) To explore the differences between teachers who participated in C2C-IT intervention before the COVID-19 outbreak and teachers who did not participate in the intervention, in measures of emotional distress, work engagement, and ER tendencies during the pandemic. (3) To examine if ER strategies mediated the link between participation in CTC-IT intervention and emotional distress and work engagement. The hypotheses of this study are as follows. (1) Preschool teachers will report increased emotional distress symptoms, and reduced work engagement. (2) Preschool teachers who participated in the intervention will report higher work engagement, enhanced use of ER strategies, and less symptoms of emotional distress, compared to teachers who did not participate in the intervention program. (3) ER strategies will mediate the link between participating in C2C-IT intervention and emotional distress and work engagement.

## **2. Materials and Methods**

### *Procedure*

Cross-sectional data were collected online through Google forms, during April - May 2020. At the time, Israel experienced a surge in the number of daily new cases. The ongoing rise in the numbers of diagnosed cases affected the public's estimations of the severity and controllability of the virus [55], and led to emergency regulations. These regulations, which were issued to curb the spread of COVID-19 in Israel by minimizing social contact, included restrictions on movement and group congregation. Since March 12th, all early educational frameworks were closed and discussion about when and under which conditions to reopen the education systems were held within the government and Ministry of Education. Finally, the early educational institutes reopened on May 10th. The questionnaires were distributed to the Ministry of Education's kindergarten teachers, through the Ministry's supervisors. The study was approved by the ethics committee of the chief scientist of the Ministry of Education. Participation in this study was voluntary and anonymous. The C2C-IT intervention is one of the social emotional training interventions the Ministry of Education offers to Teachers as part of their professional development. Teachers can choose to attend this intervention as part of their credit or qualifications. The C2C-IT includes 8 sessions working on receiving care, self-care and extending care [56]. The intervention was first administered during May- June 2019, 6 months prior to the pandemic.

### *Participants*

The current study included 165 females' preschool teachers (mean age = 43.3 years, age range = 25-64, SD = 9.03), including 41 teachers that has undergone the C2C-IT group and 124 teachers in the control group. Participants in the C2C group chose to take part in the intervention as part of a credit for careers education offered by the Teaching Development Centre of the Ministry of Education. Any kindergarten teacher in Israel could participate in the program. The participants had an average of 15.9 years of seniority, and most of them work in general education (79%). In terms of level of religiosity, 46% of the participants were secular, 27% were traditional, 24% were religious and 3% were ultra-Orthodox. As shown in Table 1, comparing the C2C group to and comparison group, no differences were found regarding participants' number of kids, education level, education system, religiosity and COVID-19 level of exposure. Yet, the group differ in terms of age, years of seniority and marital status. That is, the participants in the C2C group were significantly younger, had less years of seniority and differ in their marital status. The intervention group was on average slightly younger, had less work experience compared to the control group.

### *Instruments*

The survey questionnaire used in this study included items on participants' demographic information, COVID-19 level of exposure, COVID-19 related concerns, ER strategies, work engagement and psychological distress.

*Demographic questionnaire.* The demographic questionnaire aimed at examining background variables such as age, gender, family status and education. We also included questions concerning direct exposure to COVID-19 (e.g., "Are you in quarantine due to an exposure to patients with COVID-19?"; "Is one of the most important people in your life diagnosed with COVID-19?"). We further asked participants to indicate what the last five digits of their ID card were, and cross references it with participants in the C2C-IT intervention.

**Table 1.** Demographic variables (N=165)

	<b>C2C group (n=41)</b>	<b>Control group (n=124)</b>	<b>Total (n=165)</b>	<b>Statistics</b>
Age [M (SD)]	40.2 (8.79)	44.3 (8.91)	43.3 (9.03)	$t(163) = 2.57^{**}$
Number of children [M (SD)]	2.5 (1.38)	3.0 (2.39)	2.9 (2.18)	$t(163) = 1.24$
Years of seniority [M (SD)]	12.8 (7.85)	16.9 (8.92)	15.9 (8.82)	$t(163) = 2.62^{**}$
Education (%)				$\chi^2(2) = 4.19$
High school	3 (7%)	2 (2%)	5 (3%)	
Bachelor's degree	27 (66%)	77 (62%)	104 (63%)	
Master's degree or higher	11 (27%)	45 (36%)	56 (34%)	
Marital status (%)				$\chi^2(4) = 10.88^*$
Single	5 (12%)	10 (8%)	15 (9%)	
In a relationship	9 (22%)	7 (6%)	16 (10%)	
Married	26 (63%)	101 (82%)	127 (77%)	
Divorced	1 (2%)	5 (4%)	6 (4%)	
Widower	0 (0%)	1 (1%)	1 (1%)	
Education system (%)				$\chi^2(3) = 4.09$
Special Education	1 (2%)	5 (4%)	6 (4%)	
State-Religious Education	5 (12%)	23 (19%)	28 (17%)	
Religious Education	1 (2%)	0 (0%)	1 (1%)	
General Education	34 (83%)	96 (77%)	130 (79%)	
Religiosity (%)				$\chi^2(3) = 6.29$
Secular	25 (61%)	51 (41%)	76 (46%)	
Traditional	7 (17%)	37 (30%)	44 (27%)	
Religious	7 (17%)	33 (27%)	40 (24%)	
Orthodox	2 (5%)	3 (2%)	5 (3%)	

Note:  $p < .05^*$ ,  $p < .01^{**}$

*COVID-19 concerns questionnaire.* Aimed at assessing the level of concerns arising from the COVID-19 pandemic (e.g., "I am worried about my future financial situation"). Participants responded to this questionnaire on a 5-point scale ranging from 1 (not at all) to 5 (very much).



*Cognitive Emotion Regulation Questionnaire- short form (CERQ)* [40]. The CERQ-SF is an 18-item self-report measure of nine cognitive ER strategies (self-blame, acceptance, rumination, positive refocusing, refocus on planning, positive reappraisal, putting into perspective, catastrophizing, and other-blame), each of which involve two items. Participants are asked to rate how they cope with negative events using a 5-point Likert-type scale ranging from 1 (almost never) to 5 (almost always). High score reflects a primary use of a CERQ strategy. Cronbach alphas of the different strategies varied from .61 to .90.

*Utrecht Work Engagement Scale (UWES)* [57]. The UWES is a nine items questionnaire which reflects the levels of work engagement. The scale consists of three subscales; absorption (e.g., "I am immersed in my work"), vigor (e.g., "At my job I feel strong and vigorous"), and dedication (e.g., "My job inspires me"). High scores on all three dimensions indicate high work engagement. Items were scored on a scale ranging from (0) "never" to (6) "always". The Cronbach's alpha reliability coefficient of the UWES overall scale was .92.

*Depression, anxiety and stress scale (DASS-21)* [58]. The DASS-21 was used to assess psychological problems. It is a 21-item self-report scale with three different categories: Depression, Stress and Anxiety consisting of 7 items on each domain. Participants were asked to rate the frequency of experiencing negative emotions over the previous week on a 4-point Likert scale (0 = did not apply to me at all; 3 = applied to me very much, or most of the time). The Cronbach's alpha reliability coefficients of the DASS domains assessed in the current study were .89 for depression, .88 for anxiety, .90 for stress, and .96 for the overall scale.

### *Analysis*

Descriptive statistics were calculated to get a clear picture of the extent of exposure to COVID-19, COVID-19 concerns, emotional distress, and work engagement among preschool teachers in Israel during the first quarantine. To examine the unique contribution of the risk and protective factors, namely COVID-19 related concerns, emotion regulation strategies, participation in the C2C-IT intervention, to the prediction of emotional distress and work engagement two linear regression models were calculated. Emotional distress as predicted variable in the first model and work engagement as the predicted variable in the second model. To examine if participating in the C2C-IT intervention was a resilience factor independent T-tests were conducted comparing preschool teachers that participated in the C2C-IT intervention and the control group. All the analyses were prepared using SPSS.24 software. Finally, we employed the PROCESS mediation macro in SPSS (Model 4; [59]), to estimate the indirect effects of C2C-IT intervention on emotional distress and work engagement via emotion regulation strategies as the mediators. The specific indirect effects of the independent variable on the dependent variable through a mediator is the product of two paths (a, b) linking the independent variable to the dependent variable via mediator. When the confidence intervals of the indirect effect of a mediator do not include 0, it is considered statistically significant. Mediators were tested by calculating bias-corrected 95% CIs using bootstrapping with 5000 resamples via the Process procedure for SPSS. Demographic variables in which the groups differed significantly (i.e., age, seniority, and marital status) were included as control variables for analysis, to examine possible effects of these factors on observed mean difference.

### **3. Results**

To explore the differences between the C2C-IT group and control in measures of COVID-19 concerns, emotional distress, work engagement, and ER tendencies during the pandemic, independent samples t-tests and chi-square analysis were conducted (Table 2). The C2C group reported lower COVID-19 concerns [ $t(163) = 7.47, p < .01$ ], compared to the control group. The three top concerns rated by preschool teachers as the most worrying

were concerns about exposing themselves or members of their family to COVID-19, concerns regarding their family economic status, and concerns about regression in the emotional functioning of the children in kindergarten. The C2C group, compared to the control group, reported lower emotional distress [ $t(163) = 9.83, p < .01$ ], and higher levels of work engagement [ $t(163) = -8.27, p < .01$ ]. The groups also differed in their habitual use of all emotion regulation strategies. Specifically, the C2C-IT group used more reappraisal [ $t(163) = -2.54, p < .01$ ] and acceptance [ $t(163) = -6.73, p < .01$ ], and engaged to a lesser extent in rumination [ $t(163) = 3.73, p < .01$ ] and catastrophizing [ $t(163) = 6.31, p < .01$ ], when compared to the control group.

**Table 2.** Group differences in the research measures

	<b>C2C group (n=41)</b>	<b>Control group (n=124)</b>	<b>Total (N=165)</b>	<b>Statistics <i>t</i>(163)</b>
COVID-19 exposure [M (SD)]	.1 (.3)	.2 (.5)	.1 (.4)	.39
COVID-19 concerns [M (SD)]	29.2 (6.9)	40.2 (11.4)	37.5 (11.4)	7.47**
Acceptance [M (SD)]	4.6 (.9)	3.4 (1.0)	3.7 (1.1)	- 6.73**
Reappraisal [M (SD)]	4.5 (.6)	4.2 (.8)	4.3 (.8)	- 2.54*
Catastrophizing [M (SD)]	1.3 (.7)	2.2 (1.0)	2.0 (1.0)	6.31**
Rumination [M (SD)]	3.0 (.9)	3.6 (.9)	3.5 (.9)	3.73**
Emotional distress [M (SD)]	3.0 (3.4)	15.9 (13.4)	12.7 (13.0)	9.83**
Work engagement [M (SD)]	6.6 (.4)	5.6 (1.2)	5.9 (1.1)	- 8.27**
Stress [n (%)]				
Normal	40 (98%)	70 (57%)	110 (67%)	$\chi^2(2) = 23.5^{**}$
Mild-moderate	1 (2%)	26 (21%)	27 (16%)	
Severe- extremely severe	0 (0%)	28 (23%)	28 (17%)	
Anxiety [n (%)]				
Normal	40 (98%)	77 (62%)	117 (71%)	$\chi^2(2) = 19.0^{**}$
Mild-moderate	1 (2%)	17 (14%)	18 (11%)	
Severe- extremely severe	0 (0%)	30 (24%)	30 (18%)	
Depression [n (%)]				
Normal	38 (93%)	69 (56%)	107 (65%)	$\chi^2(2) = 19.1^{**}$
Mild-moderate	3 (7%)	31 (25%)	34 (21%)	
Severe- extremely severe	0 (0%)	24 (19%)	24 (15%)	

Note:  $p < .05^*$ ,  $p < .01^{**}$

To determine whether ER strategies mediate the relationship between participation in C2C course and emotional distress, mediation models were conducted for each strategy separately (see Figure 1a). As the participants of the C2C-IT group differ from the participants in the control group in terms of age, marital status and seniority, these variables entered as covariates. The total effect of participating in C2C-IT intervention on emotional distress (i.e., the effect of participating in C2C-IT intervention on emotional distress while not controlling for the mediators) was statistically significant. Additionally, the direct effect of participating in C2C-IT intervention on emotional distress (i.e., the effect of the independent variable on the dependent variable while controlling the mediator) was significant for all the ER strategies. The mediation analysis revealed indirect effect (i.e., the effect of participating in C2C-IT intervention on emotional distress through a particular mediator) for reappraisal (indirect effect = 2.72, SE = .86,  $p < .05$ , 95%CI [-3.55, -.20]), catastrophizing (indirect effect = -3.13, SE = 1.11,  $p < .01$ , 95%CI [-5.67, -1.23]). However, the indirect



effect of group type and emotional distress via acceptance (indirect effect = -.21, SE=1.14,  $p = .42$  95%CI [-2.49, 2.03]) and rumination (indirect effect = -.69, SE=.64,  $p = .13$ , 95%CI [-2.13, .48]) was not significant, see Table 3.

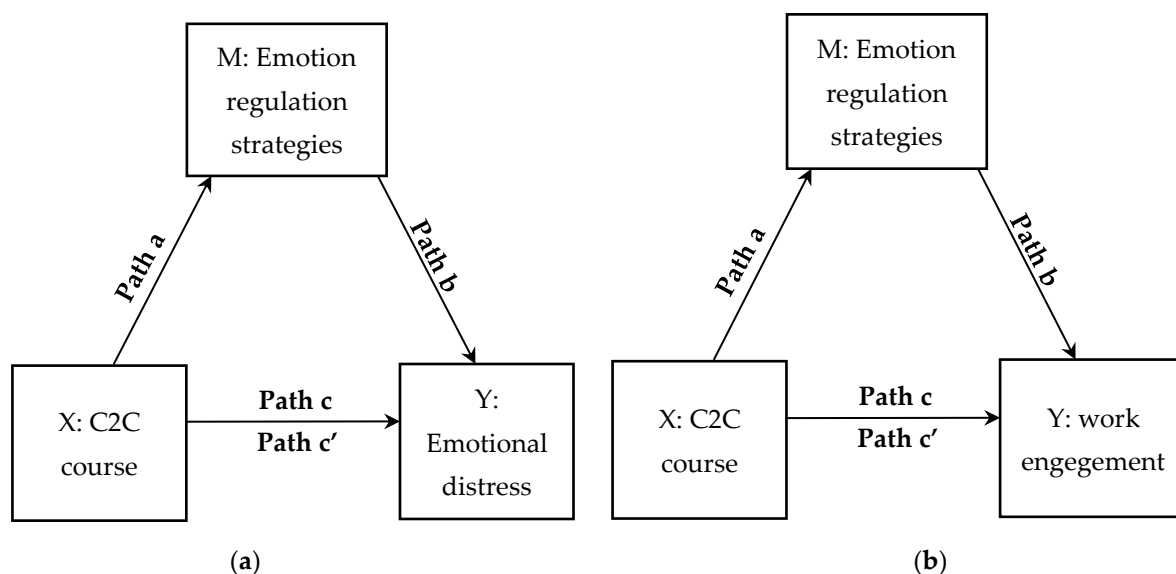
Mediation models were conducted for each strategy separately to test indirect effects of C2C intervention on work engagement through ER strategy, (see Figure 1b). The total effect of participating in C2C-IT intervention on work engagement was statistically significant. Additionally, the direct effect of participating in C2C-IT intervention on work engagement was significant for all four ER strategies examined. Results suggested that three emotion regulation strategies mediated this relation (see Table 3). We found significant indirect effects for reappraisal (indirect effect = .23, SE=.16,  $p < .05$ , 95%CI [-.04, .44]), catastrophizing (indirect effect = -.28, SE=.11,  $p < .01$ , 95%CI [.10, .51]). and acceptance (indirect effect = -.41, SE=.13,  $p < .01$ , 95%CI [.20, .71]) While the mediation effect of rumination was not significant (indirect effect = -.01, SE=.06,  $p = .46$ , 95%CI [-.13, 10]).

**Table 4.** Mediation of the effect of C2C intervention (IV) on the dependents variables (DV) through ER strategies (N=165)

Mediating variable (M)	Effect of IV on M (a)	Effect of M on DV (b)	Direct effects (c')	Indirect effect (ab)	95 % CI		R <sup>2</sup>	F
					Boot LLCI	Boot ULCI		
<b>Emotional distress (DV), Total effect (c)= -12.42**</b>								
Reappraisal	.29*	-5.31**	-10.87**	-1.56*	-3.55	-.20	.29	12.79**
Acceptance	1.17**	-.18	-12.21**	-.21	-2.49	2.03	.19	7.54**
Catastrophizing	-.81**	3.90**	-9.30**	-3.13**	-5.67	-1.23	.27	11.74**
Rumination	-.55**	1.26	-11.74**	-.69	-2.13	.48	.20	7.90**
<b>Work engagement (DV), Total effect (c)= 1.12 **</b>								
Reappraisal	.29*	.78**	.89**	.23**	.04	.44	.46	26.57**
Acceptance	1.17**	.35**	.71**	.41**	.20	.71	.29	12.71**
Catastrophizing	-.81**	-.35**	.84**	.28**	.10	.51	.27	11.81**
Rumination	-.55**	.01	1.12**	-.01	-.13	.10	.19	7.58**

Note: age, seniority, and marital status as covariates.  $p < .05^*$ ,  $p < .01^{**}$

**Figure 1.** Conceptual model of the research mediation model for emotion regulation strategies as a mediator between C2C intervention and emotional distress and work engagement.



#### 4. Discussion

The present study set out to evaluate preschool teachers' exposure to COVID-19 and their psychological state during the pandemic, to examine the protective role of participating in MBI on teachers' distress and work engagement and to test the potential mediating roles of ER strategies on this link. In terms of the first objective, we found that during the first lockdown in Israel, there was low actual exposure to the virus among teachers, but great uncertainty and concern. The most worrying concern reported by preschool teachers was the concern regarding becoming infected or infecting family members. This finding is consistent with other studies that have found that fear of infection is one of the most significant causes of anxiety among teachers, a fear that probably stems from the close interaction that teachers have with children daily [7,60]. Moreover, the stress, anxiety, and depression symptomatology rates of preschool teachers in the current study are somewhat high in comparison with those reported in other studies conducted during that time among the general population in Israel [61-62]. That is, while the mean total score on the DASS among teacher is 12.7, in other studies conducted among the general population in Israel the mean total score range between 10.72 to 12.03. This suggests that in workplaces that involve physical contact, such as schools, hospitals and physiotherapy institutes, employees experience high emotional distress following the pandemic outbreak [63-66].

The most significant finding in the current study is the positive and long-lasting impact of the C2C-IT intervention on distress during crisis. It has previously been observed that MBIs have effective outcomes on teachers' mental health during routine (see for review; [36]) and during the COVID-19 outbreak [37]. Yet, the long-lasting effect of participating in mindfulness training on emotional distress and work engagement in times of crisis remain unknown. The results of the current study indicate that teachers that participated in the C2C-IT intervention 6 months prior to the pandemic, demonstrated improved ER skills, higher work engagement, and lower emotional distress. These results are highly relevant in Israel, as the Israeli population is subject to additional stressors

originating from political violence. Additionally, Israel is a country with a level of density in classes that is among the highest in the world, with about 26.5 students per class on average and a maximum of 34 students per class from the age of 3, compared to average of 21.1 students in other OECD countries [67].

There are many interventions that aim to empower and promote resilience among teachers (see for review; [68-69]), yet most of them have not examined what are the mechanisms through which the intervention achieves its goal. ER has been described as a mechanism of change in MBIs [38,47]. It has been suggested that MBI may facilitate a more positive and accepting stance towards emotions as opposed to becoming overwhelmed or ruminating over these experiences [45]. In accordance with this notion, we witnessed that teachers who have participated in the C2C-IT intervention tended to use more effective ER, such as acceptance and reappraisal, and showed lower tendency to use strategies that considered maladaptive, such as rumination and catastrophizing. That is, the C2C-IT decreases over-engagement with distressing thoughts and emotions (e.g., lower catastrophizing and rumination) and facilitates positive and non-judgmental appraisals of experience (e.g., higher reappraisal and acceptance).

Furthermore, when examining the mediating mechanisms of the C2C-IT intervention, indirect effects of the intervention on emotional distress and work engagement through reappraisal and catastrophizing was found. That is, participation in the C2C-IT intervention led to an increase in positive appraisal of the condition (i.e., reappraisal), and reduced negative assessment (i.e., catastrophizing), thus leading to reduced symptoms of emotional distress and higher work engagement. It appears that the salutary effects of mindfulness on emotional distress and work engagement are mediated by strengthening a positive cognitive-emotional process and by disrupting a negative one. However, the indirect effect of group type and emotional distress via acceptance and rumination was not significant. It is possible that in crisis situations, repetitive thinking in the form of rumination is somewhat natural and not necessarily an indicator of psychopathology.

Taken together, the findings of the current study demonstrate the positive long-lasting effect of the C2C-IT intervention on emotional distress and work engagement of preschool teachers, which is maintained even in high-intensity negative emotional situations, such as the COVID-19 outbreak. Moreover, the current findings suggest that through the practice of mindfulness, individuals develop an expanded, nonjudgmental state of present-moment awareness that facilitates positive reappraisal and acceptance of stressful life events, while reducing a tendency to catastrophize these events, which finally lead to reduced emotional distress and increased work engagement.

### *Limitations*

There are some limitations to acknowledge. Foremost, the study is a cross-sectional study of post-intervention implication. Although this method has been applied in other studies [70-71], it is not the classical before and after design, so causality cannot be inferred, and baseline levels are unknown. Yet groups were reasonably well matched at their demographic characterizes. Some of the differences that did exist (e.g., age, seniority, and marital status) were included in the analysis as control variables. Future studies should measure the variables before beginning the intervention program so that causality can be inferred. Furthermore, we assessed all constructs via self-report, which are susceptible to socially desirable responses, potentially yielding biased results. Future research may benefit from examining ER, work engagement and emotional distress using other types of assessment (e.g., behavioral, or physiological measurements, interviews, or experimental manipulation). Further, the sample size was relatively small and composed only of females, limiting the findings' generalizability. Finally, we collected the data in early stage of the COVID-19 outbreak in Israel. Consequently, the period of exposure to

the pandemic had been short, so our findings might not be generalizable to long-term emotional implication.

## 5. Conclusions

Teachers' work characteristics, which include physical contact with many children, with little ability to maintain hygiene and masks as recommended, may manifest as psychological distress, anxiety, and depression. Therefore, it is of utmost importance to find protective factors for the mental distress of this population. We have shown that teachers who have participated in a MBI six months before the pandemic outbreak showed lower symptomatology rates of emotional distress during the COVID-19 outbreak, compared to teachers that did not participate in the intervention. Our study provides preliminary evidence that MBI may contribute to personal resilience that can help teachers sustain psychological well-being, even during major crisis. Moreover, our results suggest that the MBI's links to psychological distress and work engagement are mediated by applying more adaptive ER strategies. The Ministry of Education and other labor organizations should consider mindfulness-based interventions as a practical approach to improving well-being and work engagement, even during stressful events such as the COVID-19 pandemic.

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**Data Availability Statement:** The data presented in this study are openly available in [https://osf.io/67ne4/?view\\_only=765250ff510748ae93bc216d622f4572](https://osf.io/67ne4/?view_only=765250ff510748ae93bc216d622f4572)

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