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## **Preparing Future Leaders for Immediate Response to Emergencies through Mindfulness Education**

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### **Abstract**

Leadership preparedness is essential for immediate response to emergencies to reduce losses and save lives. This study adopted a mixed-method approach to study the effects of a customized intervention program, an elective course entitled Mindful Leadership, on college students' leadership preparedness for immediate emergency responses. A pre-post study design was implemented among the targeted group of 41 undergraduates. Mixed results were produced after sixteen weeks of intervention. The quantitative data presented significant pre-post difference in self-awareness, but no significant differences in other sub-variables of leadership preparedness. However, the qualitative data were more encouraging and provided deeper insights, indicating that mindfulness education was beneficial to the development of the participants' leadership preparedness. Hence, this study evidenced that a mixed-method approach enables a better understanding of the research questions, especially when the participants are not mature enough for a survey alone to detect their changes after an intervention.

Keywords: emergency, emotional resilience, empathy, leadership, mindfulness, self-awareness, stress management

### **Introduction**

An emergency is an unexpected dangerous situation that calls for immediate action. When an emergency happens, a responsible voice and corresponding actions of an emergent leader are first required. Such leadership is often made rather than born. That means, leadership for emergency settings can and should be prepared through training.

China attaches great importance to emergency leadership training. Currently, two ways are adopted to prepare emergency leaders: One is to provide training courses for emergency managers, the other is to prepare leadership in universities through the curriculum of emergency management majors. The former is for the professionals in the form of online courses and offline lectures. For example, there are over 300 courses in the Emergency Management E-Learning Academy for Leadership. However, among them, only one course is about mental preparedness (Emergency Management E-Learning Academy for Leadership,

(n.d.). As can be seen, there is a lack of training in leadership preparedness from the psychological perspective. While the latter training for emergency management majors aims to cultivate future professionals. As for preparing leadership to be immediate responders in the critical silent gap (Ashkenazi & Hunt, 2019) before well-trained professionals arrive, no research or practice has been conducted. Therefore, this study intended to bring about changes to emergency leadership preparedness for immediate response from the psychological perspective with college students as participants through an Organization Development Intervention (ODI) program.

### **Research Objectives**

a. To determine the ODI program to prepare leadership among college students for immediate response to emergencies.

b. To determine the effectiveness of the ODI program in improving participants' leadership preparedness for emergencies.

#### **Research Questions**

RQ1: What is the ODI program to prepare leadership among college students for immediate response to emergencies?

RQ2: How effective is the ODI program in improving participants' leadership preparedness for emergencies?

### **Research Hypotheses**

H0: There is no significant difference between pre-ODI and post-ODI on participants' leadership preparedness reflected in empathy, stress management, emotional resilience, and self-awareness.

H1: There is significant difference between pre-ODI and post-ODI on participants' leadership preparedness reflected in empathy, stress management, emotional resilience, and self-awareness.

### **Significance of the Study**

This study provides significant contributions to the academic body of leadership research by providing more empirical evidence concerning the impact of mindfulness education on leadership preparedness for emergency settings among undergraduate samples. Meanwhile, this study offers a mindful leadership training model which can be applied in any university in the form of an elective course. It is a pioneering attempt to conduct an OD intervention to prepare college students to be leaders in immediate emergency responses.

## **Literature Review**

The literature review includes theories and practice of mindfulness, leadership, emergency settings, empathy of leaders, stress management of leaders, emotional resilience of leaders, and self-awareness of leaders (Han, 2023). It is to justify the rationale of implementing a mindfulness-based intervention on college students' leadership preparedness for emergency settings.

## **Mindfulness**

Mindfulness has been accepted as a state of being aware and receptive of the current events and experience (Kabat-Zinn, 1982). Originally translated from the ancient Pāli word “sati” (Stanley, 2015), a Buddhist concept on gaining the ability to focus on the present without being distracted (Nilsson & Kazemi, 2016), it has been studied as a secular discipline. Dane (2011) identified three shared features of definitions in current literature: (a) Mindfulness is a mindful state of consciousness; (b) mindfulness is the attention to the present; and (c) mindfulness involves an individual’s interactions with inward and outward environments. Even though mindfulness is often considered as a trait, it is also a state that can be developed through practice. In this study, mindfulness refers to a developing process of attention and awareness which directs both inward and outward environments of an individual with an open attitude, opposite to mindlessness which features automaticity and judgments (Han, 2023).

Relevant mindfulness frameworks consist of self-regulation framework presented by Glomb et al. (2011), dual process models of self-regulation provided by Strack and Deutsch (2004), and self-regulation—self-exploration—self-liberation model advanced by Shapiro (1992). The first one, self-regulation framework, reveals the internal self-regulation process resulted from mindfulness practice related to self-awareness, emotions, and empathy, which are treated as sub-variables of leadership preparedness to be tested before and after the ODI. While dual process models of self-regulation include two parallel processes: impulsive and reflective. It reveals the automaticity of an individual’s emotions, thoughts, and behaviors, and the role mindfulness can play in raising awareness of it, hence regulating behaviors. This theory can explain what happens to people in an emergency setting: impulsive reaction and then reflective regulation. The latter process is essential for a leader to be clear-minded and make correct decisions. The third model goes beyond self-regulation to self-exploration and self-liberation, providing insights into the wisdom mindfulness can bring about. All these frameworks suggest possible changes that mindfulness intervention can make, thus becoming theoretical foundations for the action research in this study.

## **Leadership**

Leadership is both a trait and a process (Northouse, 2016). Scholars and practitioners have defined leadership in various ways, but there has not been a universal definition due to the complexity caused by social, political, and cultural elements among others. However, some components are essential to leadership (Northouse, 2016): (a) Leadership is an interactive event between leaders and followers. (b) Leadership affects followers. (c) Leadership occurs in groups for common goals. These components of leadership align with this study where leadership is defined as individual influence emerging in emergency response among a group of people (Han, 2023).

There are numerous leadership theories. This study adopted two leadership theories as the theoretical foundation: leadership-as-practice paradigm (L-A-P) (Raelin, 2020) and emergent leadership theory. Since leaders responding immediately to an emergency need to first make sense of internal and external environments, then convey the right information to others and help them understand the situation, and finally motivate them to act, such leadership emerges from practice, and from bottom-up. Emergent leaders may not have

legitimate authority, but they assume leadership responsibilities in an emergency setting before professionals arrive. This study deals with such leadership which is treated as a state of preparedness.

As leadership preparedness among college students in China is not optimistic and leadership education is scarce (Chen et al., 2017), this study intended to tackle this issue through mindful leadership intervention. Mindful leadership is attention to and awareness of the present-moment external as well as the internal environment that can lead to stress management, emotional resilience, and empathetic behaviors in leading (Han, 2023). As scholars (Jha et al., 2014; Navarrete et al., 2022) have provided solid evidence that mindful leadership intervention is effective in promoting leadership in high stress professions, this study assumed it applicable to leadership preparedness of college students for emergencies.

### **Emergency Settings**

Settings can affect leadership process. Vroom and Jago (2007) identified three roles of settings in the leadership process: (a) Situational factors may affect organizational effectiveness beyond leader control. (b) Settings shape leader behavior. And (c) situations affect the outcomes of leader behavior. That is, a leadership style effective in one setting may be ineffective in another setting. These are especially true for emergency leadership. Emergencies can be devastating disasters or dangerous daily events, which requires flexible and resilient leaders. Yet emergency response leaders work in stressful settings. With physical and emotional exhaustion, these leaders need a clear mind for decision making. Thus, leadership preparedness for emergency settings is a field worthy of exploration.

### **Empathy of Leaders**

Empathy means being mindful of another (Cooper et al., 2020). It is emotional response to another's difficulty (Davis, 1980), namely empathy concern, and cognitive procedure towards the psychological state of another (Trötschel et al., 2011), namely perspective taking. Empathy is considered as a factor of leadership preparedness. For example, students showing higher empathy levels tend to be regarded as leaders by their peers (Kellett et al., 2002); while managers with stronger empathy are considered more effective (Sadri et al., 2011). Therefore, interventions at both individual and organizational levels have been proposed to enhance leaders' empathy (Nowack & Zak, 2020). This study treats empathy as a sub-variable of leadership preparedness for emergencies.

### **Stress Management of Leaders**

Stress is one's reaction to daily pressures (Hathaisaard et al., 2022). In this study, stress management means what leaders do to adaptively respond to stresses caused by natural or man-made emergencies to avoid harms (Han, 2023). It is treated as a component of leadership preparedness. In Weisaeth et al.'s (2002) study on crises, a leakage of hazardous solvent and Chernobyl nuclear fallout, the finding was that the problems were related to the lack of preparedness to manage crises under severe stress. This finding reinforces the significance of stress management in critical situations. As this study aimed to prepare leadership for emergencies, stress management was integrated into the leadership intervention program as a sub-variable to be examined.

### **Emotional Resilience of Leaders**

Emotions are transient but intense reactions to people, events, or entities (Gooty et al., 2010). Emotional resilience means the ability to regulate emotions towards a positive direction both intrinsically and extrinsically in a dynamic process (Han, 2023). To prepare leadership, emotional resilience training is important, as leaders' emotions may affect followers through contagion (Bono & Ilies, 2006) and may be interpreted as feedback which consequently affect the followers' behaviors (Gaddis et al., 2004). Studies (Glasø & Einarsen, 2008; Madera & Smith, 2009) have highlighted the challenges faced by leaders concerning emotional resilience. Therefore, emotional resilience is critical for leadership preparedness. This study treated it as a sub-variable of leadership preparedness for intervention.

### **Self-Awareness of Leaders**

Self-awareness is knowledge of one's own internal states, intuitions, preferences, and resources (Goleman, 1995). In this study, self-awareness is the knowledge of oneself concerning the internal processes such as emotions and cognition, and external processes such as relationship with others and the environment (Han, 2023). In a survey conducted by the Stanford Business School Business Advisory Council, self-awareness was rated as the most important leader capability (George et al., 2007). Moreover, self-awareness is an inner compass for leaders to perform to their potential in a world of complexities (Showry & Manasa, 2014) and makes them better prepared for challenges (Goleman, 1998). Therefore, in this study, self-awareness was treated as a sub-variable of leadership preparedness to be tested.

### **Mindfulness-Based Intervention in This Study**

In current literature, scholars (Hougaard et al., 2016; Hyland et al., 2015) have argued that mindfulness is beneficial for leadership development, as it can improve self-awareness and empathy towards others, resulting in effective leadership of self and others. Therefore, mindfulness-based intervention can be used for better leadership preparedness.

To fulfill the task of preparing leadership for emergencies, action research was needed, because on one hand, leadership is an ongoing collective effort that requires practice in a specific social setting (Raelin, 2020); on the other hand, it can bring about changes by involving the participants in experiential learning.

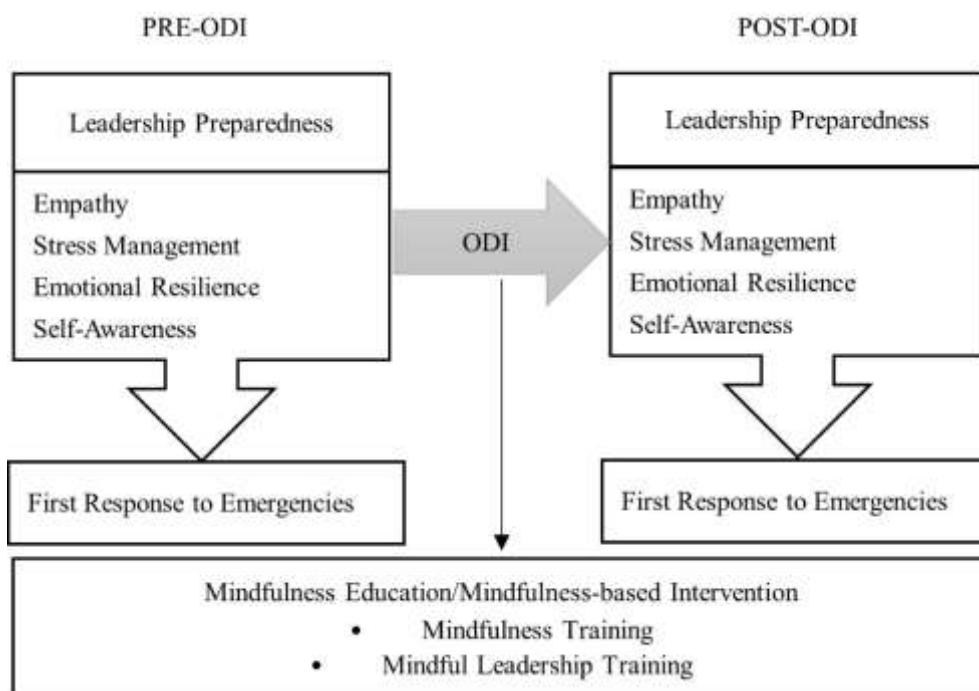
Accordingly, the action research in this study had mindfulness-based intervention as its ODI, which included 8-week mindfulness training using Mindfulness X package developed by PositivePsychology.com team to lay the foundation and 8-week mindful leadership training adapted from Google's Search Inside Yourself (SIY) program. The process involved knowledge impartation and mindfulness practices.

### **Conceptual Framework**

To test if mindfulness education is effective in preparing leadership for emergencies among college students, mindfulness-based intervention was used as action research in this study, with mindfulness training and mindful leadership training as components. The key variable is leadership preparedness with empathy, stress management, emotional resilience, and self-awareness as its sub-variables. The conceptual framework is illustrated in Figure 1.

**Figure 1**

*Conceptual Framework (Han, 2023)*



### Research Methods and Materials

This section presents research design, research sampling, research instruments, data collection and analysis.

#### Research Design

This is a mixed methods study aimed to examine the impact of mindfulness-based intervention on leadership preparedness for emergency settings among college students. Forty-one undergraduate students participated in the intervention program. The quantitative study was conducted through pre- and post-ODI surveys with the same items on the four sub-variables of leadership preparedness: empathy, stress management, emotional resilience, and self-awareness. While the qualitative study was conducted through pre- and post-ODI interviews for eight randomly selected participants from the forty-one students.

#### Research Sampling

The research adopted purposeful sampling approach. Forty-one full-time undergraduates from the Institute of Disaster Prevention (IDP) located in Hebei Province, China voluntarily chose to study in the Mindful Leadership course as an ODI program specifically designed for this study. Therefore, these students became the target group. The demographic profile of the focus group is presented in Table 1.

**Table 1***Demographic Profile of the Focus Group (Han, 2023)*

<b>Class size</b>	<b>41</b>
Male to female ratio	2:1
Age	19-24
Basics to psychology	17%
Formal mindfulness training	2%

## Research Instruments

The research instruments in this study consisted of four scales and one interview instrument. The scales included *Perspective Taking and Empathy Concern Scale (PTECS)* (Davis, 1980), *Perceived Stress Scale (PSS)* (Cohen et al., 1983), *Difficulties in Emotion Regulation Scale Short Form (DERS-SF)* (Kaufman et al., 2016), and *The Mindful Attention Awareness Scale (MAAS)* (Brown & Ryan, 2003); while the interview instrument involved six questions for pre- and post-ODI tests. All surveys and interview questions were in both Chinese and English for the clarification of the meanings. The translations of the instruments were double-checked by two professionals. Detailed information is presented below.

### ***Perspective Taking and Empathy Concern Scale (PTECS)***

Perspective Taking and Empathy Concern Scale (PTECS) was from Davis's The Interpersonal Reactivity Index (1980, 1983). It has 14 items, with 7 on perspective taking and 7 on empathy concern. Each item is measured on a five-point Likert scale ranging from 1 (Does not describe me well) to 5 (Describes me very well). Related studies (Davis, 1980, 1983; O'Brien et al., 2013) proved its reliability (.70-.82) and validity. Yet this study used thirteen items as a result of the pilot study, with 7 on perspective taking and 6 on empathy concern.

### ***Perceived Stress Scale (PSS)***

Perceived Stress Scale (PSS) was designed by Cohen et al. (1983). The 10-item scale asks participants about their stressful situations over the last month with a five-point Likert scale ranging from 1 (never) to 5 (very often), where higher scores mean greater perceived stress. Cohen and Williamson (1988) proved its reliability (.84-.86) and validity among college students and community samples. In this study, nine items were used after the pilot study.

### ***Difficulties in Emotion Regulation Scale Short Form (DERS-SF)***

Difficulties in Emotion Regulation Scale Short Form (DERS-SF) was designed by Kaufman et al. (2016). It is a shortened version of the Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer, 2004) with 3 items in each of the 6 sub-scales: emotion regulation strategies, nonacceptance of emotional responses, impulse control difficulties, difficulties engaging in goal-directed behavior, lack of emotional awareness, and lack of emotional clarity. A five-point Likert scale was used ranging from 1 (almost never) to 5 (almost always). The authors tested the reliability (.91-.89) and validity of the scale among adolescent and college student samples.



**The Mindful Attention Awareness Scale (MAAS)**

The Mindful Attention Awareness Scale (MAAS) was designed by Brown and Ryan (2003). It is a 15-item scale used to measure one’s awareness of and attention to the present. Studies with college, community, and cancer patient samples (Brown & Ryan, 2003) proved its reliability (.81-.87) and validity.

To make all survey scales in the same format, this study adopted a five-point Likert scale based on the original six-point scale: 1=almost always, 2=very frequently, 3=somewhat frequently, 4=very infrequently, and 5=almost never. Besides, one item was removed according to the result of the Index of Item-Objective Congruence (IOC) test.

**Interview Instrument**

The interview instrument for the qualitative study consists of 6 questions. The first 4 questions respectively target at testing the four sub-variables of leadership preparedness—empathy, stress management, emotional resilience, and self-awareness. Question 5 (Q5) is a comprehensive one, aiming to find out the interviewees’ leadership preparedness for an emergency setting in a simulated context. While Question 6 (Q6) is the ending question, which varies in the pre- and post-ODI tests. Q6a intends to find out the expectations of the interviewees before the ODI and Q6b aims to learn about whether the expectations are met after the ODI. Q5 and Q6 were designed to provide further support to the effects of the ODI on the four dimensions of leadership preparedness for emergencies.

**Reliability and Validity of the Instruments**

To ensure the reliability and validity of the scales and interview questions in this study, pilot studies were conducted. The scales intended for the quantitative study were piloted with a class of 37 English majors. The reliability was acceptable after one item was removed from PTECS and another one removed from PSS. After that, five scholars with doctorate degrees were invited to fill in the IOC form to further ensure the validity and reliability of the surveys. As a result, an item was removed from MAAS. Thus, the final surveys contain 54 items, with 13 items for PTECS, 9 items for PSS, 18 items for DERS-SF, and 14 items for MAAS. In the final implementation, the reliability of each survey was evaluated with pre- and post-test data. The results are illustrated in Table 2.

**Table 2**

*Reliability Statistics of the surveys (Han, 2023)*

	PTECS		PSS		DERS-SF		MASS	
	Pre-ODI	Post-ODI	Pre-ODI	Post-ODI	Pre-ODI	Post-ODI	Pre-ODI	Post-ODI
<b>Cronbach’s α</b>	.637	.744	.764	.807	.928	.808	.861	.906
<b>N of items</b>	13	13	9	9	18	18	14	14
<b>Valid Cases</b>	31	31	32	32	31	31	33	33

As for the interview questions, they were developed following the four-phase interview protocol framework (Castillo-Montoya, 2016): (a) align interview questions with research questions; (b) construct an inquiry-based conversation; (c) seek feedback on the interview protocol; and (d) pilot the interview. Once the interview questions were ready, the

researcher sought feedback from two teachers with the same background to evaluate the reliability guided by Castillo-Montoya's (2016) Activity Checklist for Close Reading of Interview Protocol. After that, the researcher piloted the interview protocol with two same level students as the participants. Based on the notes taken during the pilot, the researcher refined the interview questions.

### ***Data Collection and Analysis***

The researcher collected both quantitative and qualitative data from the surveys and interviews before and after the ODI. To compare the participants' pre- and post-ODI leadership preparedness levels, the researcher first conducted descriptive analyses and paired samples t-tests on the surveys data. Following that, the qualitative data were analyzed. The researcher used content analysis to code the transcribed interviews. To avoid bias, two coders were invited to code the interviews together with the researcher following the method proposed by Graneheim and Lundman (2004). First, they identified the phrases relevant to leadership preparedness sub-variables, namely empathy, stress management, emotional resilience, and self-awareness. Then, they summarized the data into meaning categories and sub-categories. After that, they reorganized the categories and abstracted themes from them for further interpretation.

## **Results and Discussion**

Results presentation began with quantitative analyses of data from the pre- and post-ODI surveys, followed by the qualitative analyses of the 16 interviews. Then the results were summarized and discussed.

### **Quantitative Data Analyses Results**

The researcher first conducted descriptive analyses of the quantitative data to find out the pre-post differences of leadership preparedness levels. Table 3 shows the results.

**Table 3**

*Changes Pre-Post in Leadership Preparedness Following the Intervention (Han, 2023)*

<b>Leadership Preparedness Sub-variables</b>	<b>Number of Participants</b>	<b>Pre Mean <math>\pm</math> SD</b>	<b>Post Mean <math>\pm</math> SD</b>	<b>P-Value</b>
Empathy	31	42.52 $\pm$ 5.046	42.48 $\pm$ 5.983	.973
Stress Management	32	25.28 $\pm$ 5.378	23.41 $\pm$ 4.257	.083
Emotional Resilience	31	2.296 $\pm$ .700	2.125 $\pm$ .428	.088
Self-awareness	33	3.416 $\pm$ .581	3.619 $\pm$ .517	.007

Meanwhile, paired samples t-tests were conducted to determine the within-subjects differences. Table 4 shows the results.

**Table 4**

*Paired Samples T-Test Results of Data from Surveys (Han, 2023)*

Pair	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 (PTECS) posttest-pretest	-.032	5.238	.941	-1.953	1.889	-.034	30	.973
Pair 2 (PSS) posttest-pretest	-1.875	5.928	1.048	-4.012	.262	-1.789	31	.083
Pair 3 (DERS-SF) posttest-pretest	-.170	.538	.097	-.367	.027	-1.763	30	.088
Pair 4 (MAAS) posttest-pretest	.203	.404	.070	.060	.347	2.892	32	.007

H0: There is no significant difference between pre-ODI and post-ODI on participants’ leadership preparedness reflected in empathy, stress management, emotional resilience, and self-awareness.

H1: There is significant difference between pre-ODI and post-ODI on participants’ leadership preparedness reflected in empathy, stress management, emotional resilience, and self-awareness.

As illustrated in Table 3 and 4, there is significant pre-post difference in the sub-variable self-awareness, but not in the other three sub-variables. Hence, H0 cannot be rejected.

**Qualitative Data Analyses Results**

Once the quantitative analyses were completed, the qualitative data from the sixteen pre- and post-ODI one-on-one interviews were analyzed to further answer the research questions. Table 5 shows the coding results.

**Table 5**

*Themes from Interviews (Han, 2023)*

Interview Questions (IQ)	Themes	
	Pre-ODI Interviews	Post-ODI Interviews
IQ1: Tell me about the last time a friend came to you with a problem. Briefly tell what was his or her problem and what you did.	a1: Self-orientation	
	a2: Perspective-taking	b1: Perspective-taking
	a3: Empathic concern	b2: Empathic concern
IQ2: Tell me about a time you were in a high-pressure situation. How did you get through it?	a4: Adaptation	b3: Little stress
	a5: External support	b4: Self-motivation
	a6: Positive thinking	b5: Mindset change
	a7: Attention shift	b6: Attention shift
IQ3: When was the last time you lost control of your emotions? Please tell me in detail about your experience.	a8: Difficult control	
	a9: Attention shift	
	a10: Emotional regulation	b7: Emotional regulation

Interview Questions (IQ)	Themes	
	Pre-ODI Interviews	Post-ODI Interviews
IQ4: In the Analects of Confucius, there are such words by Zeng zi, "Every day I examine myself on these three points: in acting on behalf of others, have I always been loyal to their interests? In intercourse with my friends, have I always been true to my word? Have I practiced what I was taught?" How do you like these words? How often do you examine yourself? What specific areas do you focus on?	a11: Rare self-reflection	
	a12: Occasional self-reflection	b8: Occasional self-reflection
	a13: Frequent self-reflection	b9: Frequent self-reflection
IQ5: Imagine you were a leader of a group of people on the 10th floor of a high building with 50 employees and a catastrophic earthquake happened, what would you do?	a14: Stress management	b10: Stress management
	a15: Self-awareness	b11: Self-awareness
	a16: Empathy	b12: Empathy
IQ6a (Ending question for pre-ODI): Before we end this interview, could you please tell me about your expectations for this course? IQ6b (Ending question for post-ODI): Before we end this interview, is there anything about your experience in this course that you think influences you greatly that we have not yet had a chance to deal with?	a17: Self-improvement	b13: Self-awareness
	a18: Curiosity	b14: Empathy
	a19: Getting credits	b15: Emotional resilience
		b16: Stress management
		b17: Meeting people

As demonstrated in Table 5, three themes emerged in the answers to IQ1 on empathy before the intervention, namely self-orientation, perspective-taking, and empathic concern. While in the post-ODI interviews, there are two themes on empathy: perspective-taking and empathic concern. Compared to the pre-ODI themes, the theme self-orientation could no longer be found.

Then in the answers to IQ2 on stress management, four themes—adaptation, external support, positive thinking, and attention shift—emerged. Compared with the pre-ODI themes, besides the shared theme—attention shift, the post-ODI themes showed changes: little stress, self-motivation, and mindset changes.

Next, answers to IQ3 presented three pre-ODI themes: difficult control, attention shift, and emotional regulation. While there was only one post-ODI theme—emotional regulation, and it was shared by the pre-ODI interviews. The other two themes in the pre-ODI interviews cannot be found in the post-ODI data.

Then in the answers to IQ4, there were three themes: rare self-reflection, occasional self-reflection, and frequent self-reflection. While in the post-ODI interviews, only occasional self-reflection and frequent self-reflection occurred, and the theme rare reflection was not found.

IQ5 is a comprehensive question aimed to find out the effectiveness on the participants' leadership preparedness in general. The pre- and post-ODI interviews shared three themes: stress management, self-awareness, and empathy. Yet a close observation of the data found difference in the numbers of cases concerning the latter two themes: three showed self-awareness and one expressed empathy in the pre-ODI period, while four suggested self-awareness and two indicated empathy in the post-ODI period. That means, more self-awareness

and empathy seemed to have occurred after the intervention.

While answers to the ending question IQ6 presented three themes on the interviewees' expectations (IQ6a) for the intervention program: self-improvement, curiosity, and getting credits, and five themes on the expectation's fulfillment: self-awareness, empathy, emotional resilience, stress management, and meeting people. As can be noted, the four sub-variables of leadership preparedness all occurred in the answers to the ending question. Moreover, some interviewees also benefited from meeting each other.

### **Summary of Data Analyses Results**

As illustrated above, the quantitative data showed significant pre-post differences in self-awareness, but no statistically significant differences in empathy, stress management, and emotional resilience. However, the qualitative data seemed to indicate changes in all four dimensions after the intervention.

### **Discussion of Quantitative Data Analyses Results**

As the four separate surveys were designed to test each of the sub-variables of leadership preparedness, the following discussion of the quantitative data analyses results will focus on each sub-variable respectively.

#### **Empathy**

The quantitative data analyses showed no statistically significant differences in empathy between pre- and post-ODI. That means, the intervention effect was not detected by the survey. One reason could be that the participants were not fully engaged in the study, which could be evidenced in an assignment on challenging themselves by doing after-class mindfulness practice for 28 days. The record showed a declining trend of participation and only 4 of them completed the whole 28 days of practice. The reasons might be a busy schedule, the lack of interest, or the impact of the COVID-19 pandemic, but the effect of the training decreased due to insufficient mindfulness practice. Importantly, mindfulness practice can foster empathy (Shapiro & Izett, 2008), which indicates that the empathy level may not improve without enough practice. Therefore, lack of engagement could have contributed to the pre-post non-significant differences in empathy. Another explanation could be the impact of the COVID-19 pandemic, as the pandemic increased loneliness and decreased empathy (Spitzer, 2021). The action research of this study was conducted in the third year of the pandemic when the participants experienced the lockdown of the campus followed by a sudden epidemic outbreak on campus. Consequently, students felt isolated and sensitive to their safety. Although the intervention dealt with this issue, the limited time allocated to empathy might not be enough to make significant changes to such overwhelming experiences.

To conclude, lack of engagement and negative impact of COVID-19 pandemic, contributed to non-significant pre-post differences in empathy.

#### **Stress Management**

The survey data analyses presented no significant pre-post differences in participants' stress management levels. The possible reasons for non-significant differences in empathy above are also applicable to stress management. The first reason could be lack of engagement.

As mindfulness interventions are effective on stress management (Xu et al., 2022), lack of engagement may cause decrease in effect size, because time spent in mindfulness practice is positively related to improvements in psychological functioning (Carmody & Baer, 2008). Another reason, COVID-19 pandemic, provides further justification for the non-significance, because the pandemic-induced anxiety may restrict the students to practice mindfulness (Alo et al., 2023), which might have weakened the intervention effects. Additionally, similar pre- and post-ODI stressors could be another reason, for exams are always key stressors for students. This is consistent with Annie and Michael's (2013) argument that similar pre-post stressors explained no significant differences in stress management after a mindfulness intervention in their study.

Therefore, lack of engagement, COVID-19 pandemic, and similar pre-post stressors might explain the non-significant differences in stress management.

### **Emotional Resilience**

The survey result of no significant pre-post differences in participants' emotional resilience can also be explained by lack of engagement and COVID-19 pandemic. First, lack of engagement may negatively affect improvements in psychological functioning (Carmody & Baer, 2008), which includes emotions (Preedy & Watson, 2010). Another reason, COVID-19 pandemic, can be justified by Pahwa and Khan's (2022) finding that negative emotions affect one's ability to think logically and result in the weakening of resilience. During the pandemic, negative emotions spread with the changing external environment. Consequently, the participants' emotional resilience was negatively affected.

In summary, lack of engagement and COVID-19 pandemic contributed to non-significant pre-post differences in emotional resilience.

### **Self-Awareness**

The quantitative data analyses presented significant differences in the participants' self-awareness from pretest to posttest. It suggests the effectiveness of the ODI program on enhancing the participants' self-awareness. One justification could be that mindfulness had been the key concept in the intervention and mindfulness practice the key practice. As the core of mindfulness is awareness (Kabat-Zinn, 2003), and mindfulness practice enhances self-awareness (Pearson, 2019), self-awareness improvement was probable. Moreover, college is the time for self-awareness (Conley, 2007), and this intervention met the students' needs of getting better adapted to college life by enhancing their self-awareness.

To summarize, mindfulness-focused intervention and college being the time for self-awareness contributed to pre-post significant differences in the participants' self-awareness.

### **Discussion of Qualitative Data Analyses Results**

As demonstrated in Table 5, the qualitative data seemed to indicate effectiveness in all four dimensions of leadership preparedness after the intervention. The justifications and insights are provided according to the participants' answers to each interview question.

The analysis of the interviewees' answers to IQ1 indicated pre-post differences in participants' empathy levels, as two of the interviewees who once showed the tendency of self-orientation showed more concern about others after the intervention, consistent with Shapiro and Izett (2008) in that mindfulness intervention fosters empathy in a context where

participants try to understand other people. Although the quantitative data did not detect the changes, the qualitative data indicated indirect relationship of mindfulness intervention to empathy (Annie & Michael, 2013). Therefore, the changes implied in the interview data can be considered as encouragement for further studies on this relationship, as learning seemed to have occurred to some participants.

Regarding the answers to IQ2, the interviewees' stress management showed pre-post differences, as the participants seemed to be able to change their mindsets and shift their attention. This is consistent with Annie and Michael's (2013) findings in a similar study. There were no statistically significant changes in stress management in their participants, but their interviews presented various changes in the ways the participants responded to stress. The similar results could be justified by Annie and Michael (2013): The participants' responses to stress could change, but the stress levels they experienced did not.

Next, the qualitative analyses results concerning IQ3 indicated pre-post differences in participants' leadership preparedness reflected in emotional resilience. The explanation could be that the intervention made the participants more aware of their emotions, which led to their emotional regulation. This agrees with the finding of Kraemer et al. (2020) that the participants became sensitive to uncomfortable emotions after mindfulness intervention. Furthermore, also found that mindfulness training made it easier for the participants to identify and modulate their emotions. Therefore, it seems possible that those who were engaged in the intervention made improvements in their emotional resilience.

Then, the themes from the answers to IQ4 showed pre-post differences in self-awareness, supporting the quantitative analysis result of statistically significant differences before and after the ODI. This is in consistency with the findings of some previous studies. For example, Hölzel et al. (2011) found that mindfulness training could raise participants' awareness of their physical and mental processes. While Vago and Silbersweig (2012) found mindfulness intervention could lead to self-regulation and self-transcendence through self-awareness improvement. Furthermore, Ouliaris (2019) found that mindfulness can be students' tool of raising self-awareness so that they can face challenges in stressful times. To conclude, mindful intervention has made a positive difference to the participants' self-awareness, a component of leadership preparedness.

As for analyses of the answers to IQ5, self-awareness and empathy levels seemed to be higher after the intervention. This result aligns with the analyses results on IQ1 and IQ4. That means, this result further supports the findings about the tendency towards positive changes this ODI program might have brought to the participants. Yet the theme of stress management seemed to indicate no pre-post differences, which suggested that the same emergency setting could result in similar stress levels for the participants, providing further support to the assumption that similar pre-post stressors and stress levels might be the reason for the non-significant differences in the survey data.

Finally, the themes on IQ6 showed all four sub-variables of leadership preparedness were reported in the interviewees' impressive improvements through this intervention. This finding seems to further support the argument that the intervention has showed a promising trend towards changes in leadership preparedness for emergencies. Although the interviewees are only 20% of the participants, they are representative in presenting the possible improvements brought by the intervention.

### Summary of Discussion

Although the quantitative data showed statistical significance in self-awareness, only one sub-variable of leadership preparedness, the qualitative data seemed to have suggested pre-post changes in all sub-variables, namely empathy, stress management, emotional resilience, and self-awareness. The reason for the different results could be that the participants were actively engaged in the meaning construction in the in-depth one-on-one interviews (Holstein & Gubrium, 2006), which was almost impossible when they answered the surveys. Moreover, participants might lack adequate knowledge for the surveys so that the results of the surveys did not fully reflect the true situation of the participants' leadership preparedness. As a result, the qualitative data seemed to have been more insightful than the quantitative data, hence presenting a more promising picture of the ODI effects.

### Conclusions and Recommendations

The researcher designed an ODI program to improve leadership preparedness for emergencies among college student samples. The findings confirmed the promising prospect of the effectiveness of mindfulness education on leadership preparedness. Although the quantitative study only presented significant differences in self-awareness, the qualitative section seemed more encouraging in bringing about changes in all four leadership sub-variables, namely empathy, stress management, emotional resilience, and self-awareness. Therefore, more qualitative studies are suggested in the future.

Although the study was well prepared and carefully conducted, it has limitations. First, the samples were unbalanced in terms of disciplines because of the COVID-19 control policy, that is, only students on one campus (science and engineering majors) could select this course. Second, four separate surveys being conducted online might have left the participants more freedom not to complete them. Third, non-significant pre-post differences were found in three out of four dimensions of leadership preparedness, which was not an ideal result. And fifth, more interviewees in the qualitative study might have provided more insights about the pre-post changes, although the eight of them have been representative to a certain degree.

To make up for the limitations and conduct better studies, this research provides recommendations as follows.

a. Regarding research method, more qualitative studies are suggested before any quantitative studies are implemented, as the qualitative data indicated better results. If a mixed-method study is conducted, senior emergency management majors are prioritized as participants, as they now have had the training and may be better prepared for the knowledge required by the quantitative study. Another choice could be a larger sample size with a balanced discipline background, which will complement for the limitation of this study in sampling. Additionally, surveys conducted in a physical room with time limit are strongly recommended.

b. For instructors, an ODI in the form of a selective course has its strength and weakness. The strength is in the flexibility of sampling, while the weakness is the motivation of students, as some chose the course only for credits, so instructors need to explore ways of motivating participants. Moreover, the instructors need to be emergency ready and play a model role in leadership preparedness.

To summarize, this research presented a well-designed leadership intervention program through mindfulness education. It has contributed to university education, to leadership study, to mindful leadership training, and to OD field, a first step in OD application to the training of leadership preparedness for immediate emergency response among college student samples. Although the quantitative study showed significant differences in only one out of four sub-



variables, the qualitative study indicated a more promising future for research in this field. Therefore, more relevant studies are strongly recommended to further evidence the findings of this research.

### References

- Alo, O., Arslan, A., Tian, A., & Pereira, V. (2023). Exploring the limits of mindfulness during the COVID-19 pandemic: Qualitative evidence from the African context. *Journal of Managerial Psychology*, 1-31. <https://doi.org/10.1108/JMP-03-2022-0124>
- Annie, H., & Michael, P. (2013). Teaching mindfulness-based cognitive therapy to trainee psychologists: Qualitative and quantitative effects. *Counselling Psychology Quarterly*, 26(2), 115-130. <http://dx.doi.org/10.1080/09515070.2013.792998>
- Ashkenazi, I., & Hunt, R. C. (2019). You're It-You've Got to Save Someone: Immediate Responders, Not Bystanders. *Front. Public Health*, 7(361).  
doi: 10.3389/fpubh.2019.00361
- Bono, J. E., & Ilies, R. (2006). Charisma, positive emotions and mood contagion. *The Leadership Quarterly*, 17(4), 317-334. <https://doi.org/10.1016/j.leaqua.2006.04.008>
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: The role of mindfulness in psychological well-being. *Journal of Personality and Social Psychology*, 84(4), 822-848. <https://doi.org/10.1037/0022-3514.84.4.822>
- Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms, and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine*, 31(1), 23-33. <https://doi.org/10.1007/s10865-007-9130-7>
- Castillo-Montoya, M. (2016). Preparing for interview research: The interview protocol refinement framework. *The Qualitative Report*, 21(5), 811-831. <https://doi.org/10.46743/2160-3715/2016.2337>
- Chen, E. Y., Cacioppo, J., Fettich, K., Gallop, R., McCloskey, M. S., Olino, T., & Zeffiro, T. A. (2017). An adaptive randomized trial of dialectical behavior therapy and cognitive behavior therapy for binge-eating. *Psychological medicine*, 47(4), 703-717. <https://doi.org/10.1017/S0033291716002543>
- Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In Spacapan, S., & Oskamp, S. (Eds.), *The social psychology of health*. Sage.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 386-396. <https://doi.org/10.2307/2136404>
- Conley, D. T. (2007). The challenge of college readiness. *Educational Leadership*, 64(7), 23-29.
- Cooper, D., Yap, K., O'Brien, M., & Scott, I. (2020). Mindfulness and empathy among counseling and psychotherapy professionals: A systematic review and meta-analysis. *Mindfulness*, 11(10), 2243-2257. <https://doi.org/10.1007/s12671-020-01425-3>
- Dane, E. (2011). Paying attention to mindfulness and its effects on task performance in the workplace. *Journal of Management*, 37(4), 997-1018. <https://doi.org/10.1177/0149206310367948>

- Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *JSAS Catalog of Selected Documents in Psychology*, 10, 85.
- Emergency Management E-Learning Academy for Leadership. (n.d.). *Courses*.  
<https://yjgb.sset.org.cn/#/home>
- Gaddis, B., Connelly, S., & Mumford, M. D. (2004). Failure feedback as an affective event: Influences of leader affect on subordinate attitudes and performance. *The Leadership Quarterly*, 15(5), 663-686. <https://doi.org/10.1016/j.leaqua.2004.05.011>
- George, B., Sims, P., McLea, A. N., & Mayer, D. (2007). Discovering your authentic leadership. *Harvard Business Review*, 85(2), 129-138.
- Glasø, L., & Einarsen, S. (2008). Emotion regulation in leader–follower relationships. *European Journal of Work and Organizational Psychology*, 17(4), 482-500. <https://doi.org/10.1080/13594320801994960>
- Glomb, T. M., Duffy, M. K., Bono, J. E., & Yang, T. (2011). Mindfulness at work. *Research in Personnel and Human Resources Management*, 30, 115-157.
- Goleman, D. (1995). *Emotional intelligence*. Basic Book.
- Goleman, D. (1998). *Working with Emotional Intelligence*. Bloomsbury Publishing.
- Gooty, J., Connelly, S., Griffith, J., & Gupta, A. (2010). Leadership, affect and emotions A state of the science review. *Leadership Quarterly*, 21(6), 979-1004. <https://doi.org/10.1016/j.leaqua.2010.10.005>
- Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures, and measures to achieve trustworthiness. *Nurse Education Today*, 24(2), 105-112. <https://doi.org/10.1016/j.nedt.2003.10.001>
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41-54.
- Han, H. M. (2023). *Preparing Future Leaders for Immediate Response to Emergencies through Mindfulness Education* [Doctoral dissertation]. Graduate School of Business and Advanced Technology Management, Assumption University of Thailand.
- Hathaisaard, C., Wannarit, K., & Pattanaseri, K. (2022). Mindfulness-based interventions reducing and preventing stress and burnout in medical students: A systematic review and meta-analysis. *Asian Journal of Psychiatry*, 69(7), 102997. <https://doi.org/10.1016/j.ajp.2021.102997>
- Holstein, J. A., & Gubrium, J. F. (2006). *Postmodern interviewing*. Sage.
- Hölzel, B. K., Carmody, J., Vangel, M., Congleton, C., Yerramsetti, S. M., Gard, T., & Lazar, S. W. (2011). Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Research*, 191(1), 36-43.
- Hougaard, R., Carter, J., & Coutts, G. (2016). Mindful leadership: Achieving results by managing the mind. *Leader to Leader*, 2016(79), 49-56.
- Hyland, P. K., Lee, R. A., & Mills, M. J. (2015). Mindfulness at work: a new approach to improving individual and organizational performance. *Industrial and Organizational Psychology*, 8(4), 576-602. <https://doi.org/10.1017/iop.2015.41>

- Jha, A. P., Rogers, S. L., & Morrison, A. B. (2014). Chapter 15-Mindfulness training in high stress professions: strengthening attention and resilience. In R. A. Baer (Ed.), *Mindfulness-Based Treatment Approaches* (pp. 347-366). Academic Press.
- Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry, 4*(1), 33-47.  
[https://doi.org/10.1016/0163-8343\(82\)90026-3](https://doi.org/10.1016/0163-8343(82)90026-3)
- Kabat-Zinn, J. (2003). Mindfulness-Based Interventions (MBI) in context: Past, present, and future. *Clinical Psychology: Science and Practice, 10*(2), 144-156.  
<https://doi.org/10.1093/clipsy.bpg016>
- Kaufman, E. A., Xia, M., Fosco, G., Yaptangco, M., Skidmore, C. R., & Crowell, S. E. (2016). The Difficulties in Emotion Regulation Scale Short Form (DERS-SF): Validation and replication in adolescent and adult samples. *Journal of Psychopathology and Behavioral Assessment, 38*(3), 443-455. <https://doi.org/10.1007/s10862-015-9529-3>
- Kellett, J. B., Humphrey, R. H., & Sleeth, R. G. (2002). Empathy and complex task performance: Two routes to leadership. *The Leadership Quarterly, 13*(5), 523-544.  
[https://doi.org/10.1016/S1048-9843\(02\)00142-X](https://doi.org/10.1016/S1048-9843(02)00142-X)
- Kraemer, M. U. G., Yang, B., Gutierrez, C. H., Wu, B., Klein, D. M., Pigott, J. S., & Brownstein, A. (2020). The effect of human mobility and control measures on the COVID-19 epidemic in China Science. *SCIENCE, 368*(6490), 493-497.
- Madera, J. M., & Smith, D. B. (2009). The effects of leader negative emotions on evaluations of leadership in a crisis situation: The role of anger and sadness. *The Leadership Quarterly, 20*(2), 103-114. <https://doi.org/10.1016/j.leaqua.2009.01.007>
- Navarrete, J., García-Salvador, M. Á., Cebolla, A., & Baños, R. (2022). Impact of mindfulness training on Spanish police officers' mental and emotional health: A non-randomized pilot study. *Mindfulness, 13*(3), 695-711. <https://doi.org/10.1007/s12671-022-01827-5>
- Nilsson, H., & Kazemi, A. (2016). From Buddhist sati to Western mindfulness practice: A contextual analysis. *Journal of Religion & Spirituality in Social Work: Social Thought, 35*(1-2), 7-23. <https://doi.org/10.1080/15426432.2015.1067582>
- Northouse, P. G. (2016). *Leadership Theory and Practice*. SAGE Publications.
- Nowack, K., & Zak, P. (2020). Empathy enhancing antidotes for interpersonally toxic leaders. *Consulting Psychology Journal: Practice and Research, 72*(2), 119-133.  
<https://doi.org/10.1037/cpb0000164>
- O'Brien, E. D., Konrath, S. H., Gröhn, D., & Hagen, A. L. (2013). Empathic concern and perspective taking linear and quadratic effects of age across the adult life span. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 68*(2), 168-175. <https://doi.org/10.1093/geronb/gbs055>
- Ouliaris, C. (2019). The importance of self-awareness: Musings of a medical student. *Australasian Psychiatry, 27*(3), 267-269. [10.1177/1039856219839479](https://doi.org/10.1177/1039856219839479)
- Pahwa, S., & Khan, N. (2022). Factors affecting emotional resilience in adults. *Management and Labour Studies, 47*(2), 216-232. <https://doi.org/10.1177/0258042X211072935>
- Pearson, M. (2019). Counselling intern self-awareness and readiness for practice: Reports from a mindfulness challenge. *Asia Pacific Journal of Counselling and Psychotherapy, 11*(1), 23-33. <https://doi.org/10.1080/21507686.2019.1703772>

- Preedy, V. R., & Watson, R. R. (2010). *Handbook of Disease Burdens and Quality of Life Measures*. Springer. [https://doi.org/10.1007/978-0-387-78665-0\\_6467](https://doi.org/10.1007/978-0-387-78665-0_6467)
- Raelin, J. A. (2020). Toward a methodology for studying leadership-as-practice. *Leadership, 16*(4), 480-508. <https://doi.org/10.1177/1742715019882831>
- Sadri, G., Weber, T. J., & Gentry, W. A. (2011). Empathic emotion and leadership performance: An empirical analysis across 38 countries. *The Leadership Quarterly, 22*(5), 818-830. <https://doi.org/10.1016/j.leaqua.2011.07.005>
- Shapiro, D. H. (1992). A preliminary study of long-term meditators: Goals, effects, religious orientation, cognitions. *Journal of Transpersonal Psychology, 24*(1), 23-39.
- Shapiro, S. L., & Izett, C. D. (2008). Meditation: A universal tool for cultivating empathy. In S. Hick & T. Bien (Eds.), *Mindfulness and the therapeutic relationship* (pp. 161–175). Guilford Press.
- Showry, M., & Manasa, K. V. (2014). Self-Awareness – Key to Effective Leadership. *The IUP Journal of Soft Skills, 8*(1), 15-26.
- Spitzer, M. (2021). Open schools! Weighing the effects of viruses and lockdowns on children. *Trends in neuroscience and education, 22*, 100151. <https://doi.org/10.1016/j.tine.2021.100151>
- Stanley, S. (2015). Sīla and sati: An exploration of ethics and mindfulness in Pāli Buddhism and their implications for secular mindfulness-based applications. In E. Shonin, W. Van Gordon, & N. N. Singh (Eds.), *Buddhist foundations of mindfulness* (pp. 89–113). Springer International Publishing. [https://doi.org/10.1007/978-3-319-18591-0\\_6](https://doi.org/10.1007/978-3-319-18591-0_6)
- Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behavior. *Personality and Social Psychology Review, 8*(3), 220-247.
- Trötschel, R., Hüffmeier, J., Loschelder, D. D., Schwartz, K., & Gollwitzer, P. M. (2011). Perspective taking as a means to overcome motivational barriers in negotiations: When putting oneself into the opponent's shoes helps to walk toward agreements. *Journal of Personality and Social Psychology, 101*(4), 771-790. <https://doi.org/10.1037/a0023801>
- Vago, D. R., & Silbersweig, D. A. (2012). Self-awareness, self-regulation, and selftranscendence (S-ART): a framework for understanding the neurobiological mechanisms of mindfulness. *Frontiers in human neuroscience, 6*, 1-30.
- Vroom, V. H., & Jago, A. G. (2007). The role of the situation in leadership. *American Psychologist, 62*(1), 17-24. <https://doi.org/10.1037/0003-066X.62.1.17>
- Weisaeth, L., Knudsen, Ø., & Tønnessen, A. (2002). Technological disasters, crisis management and leadership stress. *Journal of hazardous materials, 93*(1), 33-45. [https://doi.org/10.1016/s0304-3894\(02\)00036-5](https://doi.org/10.1016/s0304-3894(02)00036-5)
- Xu, J., Jo, H., Noorbhai, L., Patel, A., & Li, A. (2022). Virtual mindfulness interventions to promote well-being in adults: A mixed-methods systematic review. *Journal of Affective Disorders, 300*, 571-585. <https://doi.org/10.1016/j.jad.2022.01.027>