

# IMPACT OF ULTRA-BRIEF MINDFULNESS PRACTICE ON EMPATHY IN ENTREPRENEURIAL COURSES

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## ABSTRACT

*Mindfulness is being incorporated into various arenas, resulting in improved learning, less stress, and more creativity. Revolving around mindfulness in entrepreneurship training, the current project aimed to assess whether and how mindfulness improves the empathy of classroom participants. The research offered an intervention of mindfulness to six sections of college students who were studying entrepreneurship. The project used assessments before and after the research to measure empathy. Empathy was assessed through five dimensions: perspective taking, online simulation, emotion contagion, peripheral responsiveness, proximal responsiveness, cognitive empathy, and affective empathy. There were significant high empathy outcomes in the mindfulness treatment group compared to the nontreatment group. The current project contributes to mindfulness research within education and offers implications for empathy. The research contributes to shaping a new perspective on mindfulness in the context of teaching entrepreneurial courses that advance empathy. Thus, the purpose of this paper is twofold: to contribute to the pedagogy for entrepreneurship, by explaining the meaning and significance of mindfulness in teaching entrepreneurship and by describing an ultra-brief mindfulness educational approach that facilitates its development.*

**Keywords:** Empathy, Entrepreneurship Education, Mindfulness, Ultra-Brief Mindfulness.

## INTRODUCTION

Entrepreneurship education has become a feature in higher education—increasingly across many different disciplines. A common goal of entrepreneurship education is encouraging and structuring an entrepreneurial mindset in students. Furthermore, a key capability of an entrepreneurial mindset is the ability to empathize with others. Empathy is a cognitive and affective process including the capability of appreciating the feelings and experiences of others. Since entrepreneurship is about building new businesses for a specific community, having a keen understanding and appreciation of the needs and desires of community members is an important skill. This research provides evidence that mindfulness in conjunction with business education improves empathy outcomes.

Empathy and entrepreneurship education is an area of growing interest in entrepreneurship literature (Korte, 2018). From the teaching of empathy to entrepreneurs directly (Neck & Greene, 2011) to indirectly teaching empathy through newer methods like design thinking (Daniel, 2016), empathy has been embraced by some entrepreneurship educators. Effective empathy education has its challenges. These include connecting the student to self, assessing context with some objectivity without dispassion, and patience with the communication process (Batt-Rawden et al., 2013). Some entrepreneurship education research proposes that empathy is of paramount importance to effective product development, finding an

initial customer segment, and the on-going development of the business (Khalid & Sekiguchi, 2018; Korte, 2018).

Building on the efforts of other educators, this study revealed that mindfulness in conjunction with business concepts study and practice offered improved empathy outcomes for students. There have been other studies which examine mindfulness and empathy. One study examined the predictive relationship between mindfulness and counseling, self-efficacy and the potential mediating effects of attention and empathy (Greason & Cashwell, 2009). Mindfulness was an important variable affecting empathy outcomes. However, the current approach to entrepreneurship education does not necessarily meditate problems related to learning how to find a valid idea, then organize a business around the innovation. One challenge of entrepreneurship students - finding their target customers - can be moderated by improving empathy skills (Khalid & Sekiguchi, 2018; Korte, 2018).

First, the research heeds recent calls for entrepreneurship education to build on prior effort by educators (Valerio et al., 2014). Second, by examining the specific dimensions of empathy we can see areas where business education could be improved by mindful interventions (Brown et al., 2010). The objective of the research was to assess empathy of college students after incorporating mindfulness interventions into marketing and entrepreneurship courses. The research proposed to affect the empathy dimensions of entrepreneurial mindset.

The variables examined include perspective taking, online simulation, emotion contagion, peripheral responsivity, proximal responsivity, cognitive empathy, and affective empathy using the Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers et al., 2011). The pre-class and post-class assessment strategy occurring in a 16 week timeframe.

In the remainder of this article, I examine what links mindfulness theory has to altering perceptions. I discuss the importance of empathy and entrepreneurship, followed by our proposed research model. I detail the methodology and results, based on unique data collected on a sample of 72 college students. There is a conclusion with a discussion of findings, and of contributions and implications for entrepreneurship education, practice, and pedagogy, as well as the avenues that this study generates for future research.

## LITERATURE REVIEW

Research on teaching entrepreneurship has been ongoing for decades. Examining the literature, several methods of teaching entrepreneurship have been proven by assessing improvements in two theoretical perspectives, which argue that entrepreneurship education is positively related to empathy. This literature review presents theories of mindfulness, entrepreneurship education, and empathy, which is the foundation for the study of entrepreneurial intentions. The researcher assumes a theoretical framework of entrepreneurship/business education context at the center surrounded by a circle representing the empathy state of students which is encircled by mindfulness intervention. The practice of mindfulness would therefore affect empathy which in turn will affect the educational environment and outcomes. Lastly, the literature review presents mindfulness practice theories, which serve as the foundation of the intervention administered in this study.

## Empathy

Definitions of empathy are consistent in that they refer to the identifying and sharing of feelings of one person by another. Lamm et al., (2007) defined empathy in three parts, as:

1. An effective response to another being, which some believe entails sharing that individual's emotional state
2. A cognitive ability to take the perspective of the other person
3. Some monitoring mechanisms that keep track of the origin (self-vs. other) of the expected feelings.

By developing empathy early as entrepreneurial thinkers, future entrepreneurs can take advantage of these benefits. This research on empathy considers nine propositions that relate empathy to entrepreneurship. Entrepreneurs with high empathetic scores tend to

1. Be emotionally resilient when facing difficulties
2. Be more effective at handling emotions when working with those closest to them, and
3. Work more efficiently with the ecosystem of business people on a daily basis, and they are considered better leaders by their employees. These entrepreneurs have
4. A lead in developing new products and services, and
5. are in negotiation with investors, vendors and suppliers, distributors and retailers, and with their employees. Entrepreneurs high on empathy are more effective at
6. Encouraging and leading their teams, and
7. Helping their teams cope with workplace stresses. They are
8. More attuned to their customers' desires and have higher customer fulfillment, and
9. More groundbreaking (Humphrey, 2013; Kellett et al., 2006).

## Mindfulness Theory

Mindfulness theory addresses awareness of context in the present moment. It stems from comparing experiences that stretch the understanding of a situation by keeping an open mind to alternative perspectives and categories (Carson & Langer, 2006). For instance, mindlessness, habitual or automatic behavior, and operating from a singular perspective could make it difficult to see the whole situation and therefore impact performance and relationships (Burgoon et al., 2000). Mindfulness, however, allows people to be sensitive to an environment, supporting clearer thoughts and behaviors (Demick, 2000) as well as better performance, decision-making, and reduction of stress (Ritchhart & Perkins, 2000; Sternberg, 2000). Furthermore, awareness, mindfulness, and context can affect decision-making (Langer & Moldoveanu, 2000). More precisely, mindfulness theory “*refers to an individual's sensitivity to context*” through assembling an awareness of features and differences, “*challenging the limits of strict categories, and considering alternative perspectives*” (Langer, 2004). On the other side, mindfulness allows people to be sensitive to an environment that supports clearer thoughts and behaviors (Langer, 2004), thus supporting better decision-making and reducing stress (Demick, 2000).

## Ultra-Brief Mindfulness

The ultra-brief mindfulness methodology is not clinically defined as a specific amount of time except relative to other styles of mindfulness practice. There are three dimensions of mindfulness practice - duration of practice, frequency of practice, and the period during which these two occur. The general period of non-ultra-brief mindfulness practice in clinical trials can be 30-minute to 60-minute durations of practice occurring weekly for 4 weeks up to several months. Ultra-brief techniques have documented practice frequency of as little as one time (Chad-Friedman, Talaei-Khoei, Ring, & Vranceanu 2017) up to several months. The duration of the practice tends to be under 15 minutes if it is to be considered an ultra-brief mindfulness-based intervention (UMBI). To date, these UMBI are practiced mostly in healthcare environments with success in recorded studies reducing distress and anxiety (Cavanagh et al., 2018); and reducing pain intensity, anxiety, depression and anger (Chad-Friedman et al., 2017).

In this literature review, a multiple framework approach was introduced, combining mindfulness and empathy constructs to provide a theoretical underpinning for the study of mindfulness and entrepreneurship education. The mindfulness theory

## METHODS

### Study Overview

The impact of ultra-brief mindfulness intervention (UMBI) on entrepreneurship education was examined. Through the duration of a semester, 16 weeks, students completed a pre-test and post-test to assess the impact of mindfulness activities in the classroom regarding empathy. I addressed the research hypotheses listed below.

### Research Hypotheses

- Deliberate practice of mindfulness increases empathy in students.
- Certain variables of empathy are more influenced than others by the ultra-brief mindfulness intervention.
- Non-entrepreneurship courses such as marketing have improved empathy with ultra-brief mindfulness intervention.

This study investigates the potential of ultra-brief mindfulness-based interventions (UMBI) to impact education outcomes. Disruptive thinking patterns such as rumination and worry are key components of depression and anxiety which can affect education outcomes (Beauchemin et al., 2008). UMBIs may be useful in the treatment or reduction of these unhelpful thinking styles (Querstret & Cropley, 2013). There is some evidence that brief group mindfulness meditation training is associated with reductions in rumination in comparison to a control group (Jain et al., 2007) but to date, studies of briefer online UMBIs have not considered the effects of these interventions on unhelpful thinking styles. This study measures changes in empathetic thinking in the context of UMBI. Furthermore, our component analysis design allows us to test the proposal that experiential learning through formal UMBI practice impacts empathy outcomes.

## Research Method and Approach

The descriptive study used a quasi-experimental design. It was quantitative (Gay et al., 2009) in nature and sought to establish relationships between numeric variables, using both inferential and descriptive statistics (Coladarci, et al., 2010; Creswell & Clark, 2017) to measure the impact of mindful exercises - serving as the treatment - on student empathy.

Specifically, I employed a survey (Creswell & Clark, 2017) approach to address the research questions. The questionnaires centered on attitudinal changes after an intervention and collected demographic data to enable measuring their effect on attitude.

## Survey Design

The survey assessed empathy. The follow empathy questionnaire was used in the study: the Questionnaire of Cognitive and Affective Empathy (Reniers et al., 2011). The assessments used a 10-point Likert scale to provide more variability and accuracy (Cummins & Gullone, 2000).

Once per class session, ultra-brief mindfulness treatments were administered to undergraduate students in college entrepreneurship and marketing courses. Each session consisted of a brief mindfulness intervention with encouragement to work outside of class. To date, the ultra-brief methodology is practiced mostly in healthcare environments with success in recorded studies (Cavanagh et al., 2018; Chad-Friedman et al., 2017; Hwa & Jun, 2016; Jenkins & Tapper, 2014; Kamboj et al., 2017).

It is important to note that I facilitated the set of treatment exercises. I am a mindfulness practitioner and trainer with 14 years of experience, business facilitator with 27 years of experience, and entrepreneurship educator with five years of experience.

This study took place in courses offered at a city-funded institution of higher education. The Business Management Department included several business majors, such as business management with a focus on marketing, management, small business entrepreneurship, or hotel and tourism. The entrepreneurship degree program was established in 2005. The major had 166 students enrolled either part time or full time.

The population for this study included students enrolled in four entrepreneurship courses and two marketing courses in the United States. As of 2016, there were nearly 27,000 students enrolled at the college where the study took place, with 68% attending full time and 32% part time. The college-wide demographics included 40% Hispanic, 30% African American/non-Hispanic, 13% Asian, 9% Caucasian, and 6% international students. There were more than 6,000 students in the business majors. Demographic factors, such as age, class rank, ethnicity, gender, entrepreneurship educational experiences, and academic major, were collected using a self-report survey method.

A convenience sampling approach (Gelo et al., 2008) was used based on access to professors, institution, and undergraduate entrepreneurship and marketing courses. Data were collected from 72 students among four undergraduate entrepreneurship and two marketing courses within one college. Thus, the study used a clustering method (Creswell, 2014) by deploying a quasi-experiment in each course as the sample was not random.

All data were collected during the summer and fall of the 2018 academic semesters. Students in marketing and entrepreneurship courses participated in the treatment described in the study overview as part of required class activities for each course. The data were collected using a self-report survey method (Goodman et al., 1998) via Google Forms, an online survey tool.

The instrument related to this article included the QCAE (Reniers et al., 2011). The surveys were distributed at the beginning and end of each semester to evaluate the changes in the class.

### Data Analysis Procedures

Linear mixed modeling (LMM) was performed to assess the association of various factors or independent variables (IVs) such as time (pre-test vs. post-test), group (marketing vs. entrepreneurship), subscales for a respective survey and intervention (yes vs. no) with the scores for various scales (surveys). Time and subscales were included as within-subject variables, while class and intervention were included as between-subjects variables. The main effects and the interaction between various main effects were examined. LMM was used since the scores for various subscales can take a value from 1 to 10 and thus can be considered continuous. The advantage of using LMM is that it allows both fixed and random effects. Thus, they are useful when there is non-independence of data, for example, when participants have more than one response, because independent responses from the same participant generate erroneous results. I examined the association of various IVs with the overall score for the scale as well as the scores for each subscale. Model fit was assessed using residual plots (Quantile plot and residuals histogram). Fitted values were also plotted against the residuals.

The significance of the fixed effects ( $p$  values) was assessed using the Kenwood-Roger (KR) approximation. Multilevel models like KR are considered an extension of repeated-measures analysis of variance models that can cope with missing outcomes and time-varying covariates, and can relax the sphericity assumption of conventional repeated-measures analysis of variance. They can also deal with other, less well known, problems such as having stimuli that are random factor. Last, multilevel generalized linear models allow analyses to have discrete and bounded outcomes.

Type III sum of squares test was used. Type III tests were obtained by comparing a model in which only the tested effect was excluded with the full model (containing all effects). The primary objective was to examine the two-way interaction between time (pre-intervention vs. post-intervention) and group (intervention vs. non-intervention) and their effect on the overall mean score of the scale. Secondary outcomes included:

- a. The two-way interaction between time and intervention,
- b. The three-way interaction between class, time and intervention,
- c. The four-way interaction between time, group, class, and subscale.

Estimated marginal means (EMMs) were visualized to facilitate the interpretation of results of LMM. EMMs were based on the results of the mixed model, and they were the means after adjusting for various covariates. Using EMM is better than using the actual mean when covariates are present in the mixed model, since it produces the mean response for each factor, adjusted for any other variables in the model. Posthoc pairwise comparisons with correction for false discovery rate were performed when needed to assess

1. Whether the change in the dependent variable (score) was different across time within each group,
2. Whether the change in the dependent variable was different between groups within each time.

The mean pre-intervention scores were compared across various baseline demographic characteristics using unpaired  $t$  test. Unpaired  $t$  test was used due to the continuous nature of the

average scores for various questionnaires as well as the average scores for various scales. Spearman's correlation enabled assessment of the association of age and interest with the overall scores for various questionnaires, as well as the scales for each questionnaire. Hypothesis testing was performed at 0.05 significance level.

## RESULTS

This research examined whether entrepreneurial education - specifically including ultra-brief mindfulness exercises - leads to increased mindfulness, and empathy in students. The study sought to predict a relationship between a change in empathy and ultra-brief mindfulness.

### Descriptive Data Analysis

The initial data included 265 responses. After removing incomplete responses, the data included 236 responses. Of these, 72 participants completed both pre-test and post-test surveys (N=72). Thus, the final dataset included the 72 participants who completed both surveys. Table 1 shows the descriptive statistics for the study sample. The sample for the current research project included 72 participants; 44 (61.1%) students were from the marketing class and 28 (38.9%) from the entrepreneurship class. Students who enrolled in the fall semester represented the majority of the sample (n=68, 94.4%). Intervention was received by 44 students (61%) while the remaining students represented the control group (n=28, 38.9%). Some students reported participation in entrepreneurial extracurricular (EC) activity (n=20, 27.8%) or receiving one or more courses in entrepreneurship (n=17, 23.6%).

	Marketing		Entrepreneurship	
	Pre	Post	Pre	Post
N	17	17	16	16
Perspective taking	7.36 (1.24)	6.68 (1.14)	6.82 (1.29)	6.44 (1.64)
Online simulation	6.43 (0.84)	6.22 (0.84)	6.11 (1.07)	6.33 (1.38)
Emotion contagion	4.36 (1.86)	4.09 (1.76)	4.87 (1.33)	5.22 (1.21)
No Peripheral responsivity	4.32 (1.26)	4.53 (1.02)	4.47 (1.44)	5.04 (1.20)
Proximal responsivity	4.73 (1.37)	4.81 (1.19)	5.43 (1.36)	5.81 (1.28)
Cognitive empathy	6.89 (0.91)	6.45 (0.88)	6.47 (1.13)	6.38 (1.44)
Affective empathy	4.47 (1.07)	4.47 (1.18)	5.03 (0.95)	5.36 (1.10)
Total	5.44 (0.71)	5.27 (0.68)	5.59 (0.99)	5.77 (1.17)
N	23	23	8	8
Perspective taking	6.85 (1.21)	6.92 (1.14)	6.73 (2.56)	7.00 (2.06)
Online simulation	6.27 (1.00)	6.34 (1.04)	6.45 (2.41)	7.06 (1.62)
Emotion contagion	5.11 (1.52)	5.23 (1.70)	3.40 (1.81)	4.88 (1.58)
Intervention Peripheral responsivity	5.00 (1.01)	4.80 (1.03)	3.75 (0.98)	4.78 (1.35)
Proximal responsivity	5.25 (1.25)	5.47 (1.55)	5.12 (1.85)	5.53 (1.55)

Cognitive empathy	6.56 (0.98)	6.63 (1.02)	6.59 (2.45)	7.03 (1.77)
Affective empathy	5.12 (0.99)	5.17 (1.13)	4.09 (1.33)	5.06 (1.36)
Total	5.71 (0.83)	5.75 (0.89)	5.09 (1.50)	5.85 (1.33)

## Questionnaire for Cognitive and Affective Empathy

### Descriptive Statistics for the QCAE

The parts of empathy were examined using description statistics to provide an overview (Table 1). The seven structures of empathy defined by extensive psychological research include perspective taking, online simulation, emotion contagion, peripheral responsiveness, proximal responsiveness, cognitive empathy, and affective empathy.

The scores for various QCAE scales did not change significantly within the marketing group that did not receive the intervention. Only peripheral and peripheral responsiveness showed a slight increase within the marketing group that did not receive the intervention. The highest change in scores was observed within the entrepreneurship group that received the intervention.

The overall empathy score revealed the highest change within the entrepreneurship group that received the intervention. The score did not change to the same extent within the remaining groups.

### Mixed Model Analysis for the QCAE

LMM provides a more detailed review of the impact on specific empathy components. The multiple dimensions of empathy can therefore be examined individually and in relation to each other.

Two-way interaction between time and group, results summarized in Table 2 show that there was a statistically significant two-way interaction between time and intervention ( $F_{1, 530}=3.97, P<0.05$ ). This indicates that the change in the overall mean QCAE score across time was significantly different between the intervention and control groups. Inspecting the predicted mean QCAE scores (EMMs) showed that the increase in the predicted mean QCAE was higher in the intervention group compared to the control group.

**Table 2**  
**LMM RESULTS FOR THE QCAE INDICATED MINDFULNESS INTERVENTION IMPACTED EMPATHY OUTCOMES**

Effect	df	f	p-value
Subscale	4,525.77	90.63***	<0.0001
Intervention	1,59.48	0.1	0.75
Time	1,529.66	6.37*	0.01
Class	1,59.48	0	0.97
Subscale Intervention*	4,525.77	0.39	0.82
Subscale*Time	4,525.77	1.53	0.19
Intervention*Time*	1,529.66	4.49*	0.03
Subscale Class*	4,525.77	1.65	0.16
Intervention*Class*	1,59.48	1.66	0.2



Time * Class *	1,529.66	9.90**	0.002
Subscale Intervention * Time *	4,525.77	0.63	0.64
Subscale Intervention * Class *	4,525.77	5.82***	0.0001
Subscale Time * Class *	4,525.77	0.83	0.5
Intervention * Time * Class *	1,529.66	0.87	0.35
Subscale Intervention * Time * Class *	4,525.77	0.45	0.77
+P<0.1. * P<0.05., *** P<0.001.A19			

Examining the EMM within each group showed that the increase in the overall QCAE score was statistically significant within the intervention group only ( $\Delta=0.458$ ,  $P<0.05$ ). The change was not statistically significant within the control group ( $\Delta=0.04$ ,  $P>0.05$ ). This indicates that the intervention was associated with higher change in the overall QCAE score (Table 3).

**Table 3**  
**QCAE PAIRWISE COMPARISONS WITHIN INTERVENTION GROUP AND NONINTERVENTION GROUP**

Group	$\Delta$ QCAE Score	SE	df	t	P value
N	0.04	0.129	534	-0.3	0.756
Y	0.458	0.149	527	-3.064	0.005*
*Statistically significant. Note. $\Delta$ score represents Time 2 to Time 1.					

The three-way interaction between time, class, and intervention reported in Table 4 was not statistically significant ( $F(1, 530)=0.87$ ,  $P>0.05$ ). This indicates that the interaction between time and intervention was not significantly different between the marketing and entrepreneurship classes, and that the effect of the intervention was not significantly different between both classes. As previously mentioned, examining the EMM for the overall QCAE score was essential to assess the change within each group.

**Table 4**  
**INTERACTION BETWEEN GROUP AND TIME WITHIN MARKETING AND ENTREPRENEURSHIP CLASSES RECEIVING MINDFULNESS INTERVENTION**

Class	F	df	P value
Marketing	0.999	1, 531	0.318
Entrepreneurship	3.587	1, 530	0.06
Note: F=F statistic for the interaction between group and time.			

Interaction results within each group supported the research hypothesis as they confirmed that the interaction was not statistically significant within the marketing group ( $F(1, 531)=0.999$ ,  $P>0.05$ ) since the change across both groups within the marketing was slight. The interaction within the entrepreneurship groups was statistically significant at the 0.1 level ( $F(1, 530)=0.999$ ,  $P<0.1$ ).

Examining the change within each combination of group and class (Table 5) emphasized that the change in the mean predicted QCAE score was statistically significant only within the entrepreneurship group that received the intervention ( $\Delta=0.86$ ,  $P<0.05$ ). This indicates that the probability of the observed increase in the entrepreneurship group (that received intervention)

occurring by chance is <5%. The change in the remaining three groups was not statistically significant at the 0.05 level of significance.

<b>Class Group</b>	<b>Δ Score</b>	<b>SE</b>	<b>df</b>	<b>t</b>	<b>p value</b>
N	-0.18	0.18	534	0.996	0.64
Y	0.06	0.15	526	-0.368	0.71
Entrepreneurship N	0.26	0.19	534	-1.392	0.49
p Y	0.86	0.26	528	-3.331	0.004*

Note: Δ score represents post-test to pre-test. p values were adjusted for false discovery rate. \*Statistically significant.

Examining the EMM across various scales of the QCAE questionnaire confirmed a consistent increase within the group that received the intervention. The nonintervention group had inconsistent outcomes - sometimes increasing and sometimes decreasing. The increase however was not as significant in the nonintervention group.

## **DISCUSSION, LIMITATIONS, AND CONCLUSION**

### **Project Summary**

This study investigated the influence of ultra-brief mindfulness exercises on empathy in community college entrepreneurship and non-entrepreneurship courses. Throughout a semester, I administered mindfulness interventions in undergraduate entrepreneurship and marketing courses across three different sections. I am a trained and knowledgeable mindfulness facilitator and experienced entrepreneurship educator. I guided them through individual and team ultra-brief mindfulness processes. Students provided self-report information by completing empathy instruments via a pre-test and post-test survey method (Fowler, 2013).

The Questionnaire of Cognitive and Affective Empathy (Reniers et al., 2011) was utilized to assess the empathy outcome in the course. The adapted SPRINT assessment and credibility/expectancy questionnaire were not included in the analysis. All other instruments were combined in one survey.

The six class sections researched across the institution featured enrollment of 112 unique students. Of the 112 students, 72 participated in the entire semester, completing both the pretest and posttest. The study sample included 44 (61.1%) students from the marketing class and 28 (38.9%) from the entrepreneurship classes. Intervention was received by 44 (61%), while the remaining students represented the control group (n=28, 38.9%).

This study was quantitative in nature (Gay et al., 2009). Data were analyzed using descriptive and inferential statistics (Coladarci et al., 2010; Creswell & Clark, 2017). LMM was performed to assess the association of various factors or independent variables such as time (pre-test vs. post-test), group (marketing vs. entrepreneurship), subscales for a respective survey and intervention (yes vs. no) with the scores for various scales (surveys). Time and subscales were included as within-subject variables, while class and intervention were included as between-subjects variables. I examined the association of the intervention with the overall score for the scale as well as the scores for each subscale. Model fit was assessed using residual plots. Fitted values were also plotted against the residuals. The significance of the fixed effects (P values) was

assessed using the KR approximation. Type III sum of squares test was used. Results are discussed in the sections that follow.

### Empathy Summary

This research project reviewed the literature on empathy, interweaving it to entrepreneurial outcomes. Humphrey's (2013) work generated nine propositions that relate empathy to entrepreneurship. According to his research, entrepreneurs with better empathy competencies will

1. be more emotionally buoyant when facing obstacles,
2. be more successful at managing intense emotions when working with family members, and
3. Work more successfully with their personnel, customers, and other stakeholders, while receiving higher rates on leadership by their employees. High emotional intelligence will give entrepreneurs an advantage
4. in developing new products and services and
5. In negotiating with financial backers, vendors and suppliers, distributors and retailers, and with their employees. Entrepreneurs high on empathy will be more successful at
6. motivating and leading their employees and
7. Helping their employees cope with workplace stresses. They will be
8. more attuned to their customers' wants and ensure higher customer satisfaction and
9. Be more innovative.

As discussed, mindfulness' hypothesized benefits include objectivity, affect tolerance, enhanced flexibility, equanimity and empathy, emotional intelligence, and the ability to relate with kindness, acceptance, and compassion. There are direct connections to many of these dimensions and that the research associates to the impact of mindfulness on empathy.

These results are well positioned in the context of existing literature. Research has revealed that entrepreneurs can be developed, even made (e.g., Flora, 2006; Sanchez, 2013), and that entrepreneurship is a discipline that one can teach (Morris & Liguori, 2016). Despite these strong assertions, the effectiveness of entrepreneurial education to develop students as entrepreneurs is still in question (Fretschner & Weber, 2013; Rideout & Gray, 2013). Increasing the potential effectiveness of coursework, therefore, is important. One of the main barriers to ensuing entrepreneurial behavior among current and recent college students is a lack of empathy in the key cognitive talents needed to be a successful entrepreneur (Humphrey, 2013).

Based on the results, a correlation emerged between mindfulness and empathy. Such correlation is, however, in need of more investigation. While scholars in various education environments have found conclusive impact with mindfulness and early evidence of the effectiveness of ultra-brief mindfulness (Cavanagh et al., 2018; Chad-Friedman et al., 2017; Hwa & Jun, 2016; Jenkins & Tapper, 2014), it would be advantageous to supplement the evidence with empirical data supporting the relationship between other variables.

The cultural distinctiveness of entrepreneurship is something to consider when examining ultra-brief mindfulness in entrepreneurial education in the future. The cross-cultural particularity of mindfulness, entrepreneurial education, and empathy are robust areas to consider further study (de Pillis, 1997; McGrath et al., 1992; Thomas, 2006).

## PRACTICAL IMPLICATIONS

### Key Findings

The key findings of this study centered on the effectiveness of brief, yet intentional, mindfulness activities in significantly increasing empathy in students enrolled in undergraduate entrepreneurship and marketing courses. Results support a significant correlation between ultra-brief mindfulness interventions and empathy. This connection warrants further study. Other key findings included the following:

- The change in the entrepreneurship group that received the intervention was significantly higher compared to the change in the marketing group that received the intervention.
- The overall empathy score showed the highest change within the entrepreneurship group that received the intervention. The change was not statistically significant within the control group.
- The mean pre-intervention score for overall empathy was significantly higher in participants who had a current business compared to participants who did not run a business.

These results stress the effectiveness of mindfulness in entrepreneurship education and training in order to have a greater impact on empathy.

This study's unique positioning in the literature is that it examined the effect of an intentional, yet brief, set of mindfulness activities in community college courses. It measured the change in empathy - something that has not yet been reported at the undergraduate level in the existing literature. The study offered exploratory research on the link between mindfulness and empathy. The impact of exposure to mindfulness on entrepreneurship outcomes should unequivocally remind educators of the need to provide students with a supportive context for learning and self-exploration.

### Key Takeaways

While this study cannot wholly inform the practice of entrepreneurship training, noteworthy implications exist for entrepreneurship education educators, career centers, external partners, and practitioner mentors and coaches. Key takeaways of this study include the following:

- Highlights the opportunity in entrepreneurship education to develop mindfulness practices to improve entrepreneurial outcomes;
- Confirms that educators can advance entrepreneurial outcomes using mindfulness in the classroom with little impact on course time.

Based on the findings of this study, it appears entrepreneurship educators can help students to develop some of the most important skills in entrepreneurship by introducing mindfulness in the classroom. It is clear mindfulness can have an impact on empathy factors.

## CONCLUSION

Higher education entrepreneurial curricula and programs have an opportunity to integrate mindfulness in specific and effective ways. The fields of entrepreneurship and mindfulness have experienced unparalleled growth in a very short period (roughly three decades) and enjoy high popularity levels among students. However, while entrepreneurial education has much to offer to

colleges of all types, students, and society as a whole, it also faces inquiry in terms of effectiveness and workforce readiness training. Given the broad array of talents among students interested in entrepreneurship, and the potential of mindful entrepreneurial behavior to provide positive solutions to our most compelling challenges, persuasive entrepreneurial course design must increase its effectiveness.

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