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Teaching Mindfulness to Undergraduates: A Survey and Photovoice Study

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Abstract

How do emerging adults experience mindfulness and compassion? The goals of this study were to (1) evaluate the effectiveness of a mindfulness curricular intervention and (2) examine how students interpreted their experience. We delivered a mindfulness curriculum to 24 college students who meditated twice a week for 7 weeks. Students completed a survey at the beginning and end of the course where they self-reported information about their mental health, compassion, and creativity. Results showed that, over the course of the semester, students demonstrated improvements in measures of creativity, self-compassion, compassion toward others, mental health, and emotional regulation. To gain a more nuanced understanding of students' interpretations of and experiences with the course material, we used interpretive phenomenological analysis (IPA) to analyze student photovoice projects (wherein they collected and analyzed images to represent mindfulness concepts). Findings illustrate how students typically understood *self-compassion* as *self-acceptance*, *self-reflection*, or *self-care* and understood *compassion toward others* as *active alleviation*, *familial affection/affinity*, *interdependence*, and *mortality*. Triangulating survey and IPA results demonstrate how contemplative practices such as mindfulness can help students cope with stressors associated with emerging adulthood. Integrating

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mindfulness practices in higher education is important for students' transformative learning and holistic development. Further, our research suggests that contemplative education can benefit from using mixed methods (e.g., surveys and photovoice) to help students understand mindfulness and its connections with personal outcomes (e.g., learning, creativity, and well-being).

Keywords
mindfulness, meditation, compassion, contemplative education, photovoice, mental health

Recent research on mindfulness suggests that mindful awareness, our capacity to be in the present, enhances creativity and fosters compassion toward the self and others (Gilbert, 2009; Neff, 2003). Khong (2009) describes mindfulness as the cultivation of attention to "feelings (experiences, thoughts, beliefs, etc.) and [the ability to] experience them as they are (*letting it be*) without needing to change" (p. 131, emphasis in original). Several researchers have called for the need to integrate contemplative practices (including mindfulness) in higher education to facilitate holistic learning (e.g., Roeser & Peck, 2009; Sarath, 2006). In a review of contemplative practices for transformative curriculum, Ergas (2013) argued that greater integration of contemplative practices into higher education is essential for "mind-altering" pedagogies (Eisner, 1993) that transform students' thinking. In a review of the history of contemplative education, Morgan (2015) argues that integrating contemplative practices into curricula, such as mindfulness and yoga, fosters deeper and more reflective learning as well as creativity among students (Baas, Nevicka, & Ten-Velden, 2014).

According to Morgan (2015), there is an inextricable link between transformative and contemplative education. Scholarship suggests growing interest in the connection between contemplative practices and transformational education (e.g., Kaufman, 2017; Morgan, 2015; Robinson, 2004; Sarath, 2006; Zajonc, 2006). As Zajonc (2006) describes, "[o]nly a profoundly contemplative and transformative education has the power to nurture the vibrant, diverse civilization that should be our global future" (p. 3). Similarly, Robinson (2004) describes contemplative practices as a gateway to "higher dimensions of learning" (p. 107) in the context of transformative education.

Kaufman (2017), drawing from transformational education theory (e.g., Freire, 2000; Hooks, 1994), argues that integrating mindfulness in higher education will promote an awareness of interdependence and privilege, thereby raising critical consciousness. Thus, a mindfulness curriculum rooted in critical pedagogy has the potential to increase intrasectional awareness (e.g., acknowledging the impermanent nature of thoughts/emotions) as well as *intersectional* awareness (e.g., recognizing how identities are fluid, situational, and interconnected; Atewologun & Mahalingam, in press).

In psychology, mindfulness research has focused on improving well-being and typically has relied on quantitative measures to track changes in mental health (see Baer, Walsh, & Lykins, 2009). However, limited research has attended to the ways social context (e.g., developmental stage) shapes experiences with contemplative education, including mindfulness-based practices. Further, several mindfulness researchers have called for the need to understand the *phenomenology* of mindfulness practices from a Buddhist perspective (see Khong, 2009, for a review), which quantitative measures cannot capture. One of the core tenets of Buddhism is the importance of realizing the interdependent and interconnected nature of our existence, nurturing compassion toward the self and others, and promoting social harmony. Therefore, understanding mindfulness as a phenomenological experience is essential to examining the deeper impact of mindfulness practices on making meaning about the nature of our lives. According to Griffin and May (2012), phenomenological analysis "places people's lived experience as the starting point for investigation and meaning-making" (p. 448). Although research has demonstrated the benefits of mindfulness for students' well-being, very few studies have examined the phenomenological basis of *how* college students *experience* and *come to* this awareness of reality. Our study is examining this process, in addition to mirroring the extant literature by tracking pre-/postimprovement data. Very few studies on mindfulness in contemplative education have combined quantitative and phenomenological approaches to study the effectiveness of mindfulness practices in higher education. Our research addresses this gap in the literature. Our research also explores the usefulness of mindfulness in expanding one's sense of awareness at the *intersectional* level (e.g., Atewologun & Mahalingam, in press) as well as a phenomenological understanding of compassion towards self and others.

In the current study, we used a mixed-methods approach to explore students' understanding of mindfulness using two different modalities: textual (traditional survey) and visual (photovoice). The main goals of this article are to examine how participating in a semester-long undergraduate mindfulness course is associated with (1) changes in well-being and creativity and (2) phenomenological understandings of compassion. For the first goal, we administered a survey at the beginning and end of the semester to assess changes in students' well-being (depression, emotional regulation) and creativity. For the second goal, we used photovoice to examine students' lived experiences of compassion toward the self and others. Photovoice is typically used to gather visual metaphors about a particular construct, issue, or aspect of one's life or communities (Wang & Burris, 1994). It is also used as a research tool to empower members of marginalized communities so that they document, express, and articulate the issues that are salient to them (Mahalingam & Rabelo, 2013).

In the following sections, we describe the curricular intervention in a mindfulness class administered by the first author (RM). RM has been practicing meditation for more than two decades and has been teaching a mindfulness seminar for undergraduates for the past 5 years. Second, we present quantitative and qualitative research findings. Third, we discuss the implications of our findings for contemplative education and emerging adulthood.

Method

Description of the Mindfulness Curricular Intervention

The mindfulness class met 14 times during the semester. The class design included lectures, small-group discussions, and interactive activities. The curriculum provided an overview of various approaches to studying mindfulness (e.g., quantitative, phenomenological) and the effectiveness of mindfulness on different psychological constructs (e.g., well-being, creativity, leadership, memory, social justice). Additionally, during each class meeting, students participated in one of the six different mindfulness practices (Salzberg, 2010): (1) breath meditation, (2) emotion meditation, (3) walking meditation, (4) eating meditation, (5) loving kindness meditation, and (6) body scan meditation. Each practice was approximately 15–20 minutes long. RM either used a guided meditation recording (Salzberg, 2010) or led the meditation himself.

Each class began with the mindfulness meditation. After experiencing all six different mindfulness practices, students were then permitted to decide as a group which meditation to practice. Students were also encouraged to meditate outside the class. The class met twice per week, so at a minimum, students experienced 14 meditations over a 7-week period. After completing each in-class meditation, students were invited to ask the instructor (RM) any questions about the particular mindfulness meditation technique. Students were also encouraged to discuss their experiences with the meditation.

At the beginning of the semester (and before learning anything about mindfulness), students completed a questionnaire. At the end of the term, students completed the same questionnaire. Students also completed a final project (photovoice and reflection paper) on compassion. We used the pre- and posttest data for the quantitative analyses and photovoice images and reflection papers for our interpretive phenomenological analysis (IPA; Griffin & May, 2012).

Participants

Participants included 24 undergraduates (17 women, 7 men, $M_{\text{age}} = 21.92$, standard deviation [*SD*] $= 2.17$) at a large public U.S. university enrolled in an upper-level class entitled “Psychology of Mindfulness.” Twelve students identified as White, six identified as African American, two identified as Asian American, one identified as Latino, and three students did not share this information.

Procedure

Part 1: Pre- and postsurvey. Students completed a pretest survey on the first day of class. Students then completed an identical version of this survey on the final day of class, 6 weeks later. Results are based upon comparisons between the pre- and postclass survey.

Part 2: Photovoice. For the final course assignment, students completed a photovoice-based reflection assignment. Students were instructed to gather images to visually describe what *self-compassion* and *compassion toward others* meant to them. All participants were given the option of using a camera, cell phone camera, or web search to gather images. Students were then asked to analyze the photos, identify themes and metaphors, and submit a written report about their experiences with photovoice and their mindfulness practice more generally.

Measures

Participants completed the following measures on the first day of class as well as the final day of class, 6 weeks later. The two surveys were identical and were administered on paper.

Self-compassion ($\alpha_{pre} = .55$, $\alpha_{post} = .79$). We created a 3-item measure of self-compassion. Participants were asked to rate their agreement with the following three statements on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*): "I am compassionate to myself when I am not living up to my own expectations," "Extending kindness toward myself when I have harmed someone will help me to become a compassionate person," and "I am compassionate toward myself when someone has harmed me." Responses to these items were then averaged, so that higher scale scores reflected greater self-compassion.

Compassion toward others ($\alpha_{pre} = .47$, $\alpha_{post} = .77$). We created a 4-item measure of compassion toward others. Participants were asked to rate their agreement with the following three statements on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*): "I accept the shortcomings of others," "I strive to be compassionate to the sufferings of those who are not related to me," "Being compassionate toward all human beings is an important life goal for me," and "Extending kindness toward those who have harmed me will help me to become a better person." Responses to these items were then averaged, so that higher scale scores reflected greater compassion toward others.

Emotion regulation ($\alpha_{pre\text{-}CR} = .82$, $\alpha_{post\text{-}CR} = .74$; $\alpha_{pre\text{-}ES} = .82$, $\alpha_{post\text{-}ES} = .92$). To assess emotional regulation, we utilized the Emotion Regulation Questionnaire (Gross & John, 2003). Participants were asked to assess their endorsement of various statements, six of which measured *cognitive reappraisals* (CRs; e.g., "When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about") and four of which measured *emotional suppression* (ES; e.g., "I keep my emotions to myself"). Response items ranged from 1 (*strongly disagree*) to 7 (*strongly agree*).

Depressive symptoms ($\alpha_{pre} = .93$, $\alpha_{post} = .88$). To assess depressive symptoms, we utilized the Center for Epidemiologic Studies Depression Scale–Revised (Eaton, 2001). Participants were asked to provide the frequency with which they experienced a series of events over the past week (e.g., “I felt that everything I did was an effort”). Response options ranged from 1 (*rarely or none of the time* [*less than once a day*]) to 4 (*most of the time* [*5–7 times a day*]), such that higher scores indicated greater levels of self-reported depression symptoms. Participants’ scores across the 20 items were summed and thus ranged from 20 through 80.

Creativity. We utilized three timed, generative measures of creativity based upon the Abbreviated Torrance Test for Adults (Goff & Torrance, 2002). For each activity, participants were allocated 3 minutes to generate as many responses as possible to each prompt.

Activity 1: Transport problems. Participants read the following instructions: “Just suppose you could walk on air or fly without being in an airplane or similar vehicle. What problems might this create? List as many as you can.” We created a sum of the total number of unique problems students identified.

Activity 2: Unusual drawings. Participants read the following instructions: “Use the incomplete figures below to make some pictures. Try to make your pictures unusual. Your pictures should communicate as interesting and as complete a story as possible. Be sure to give each picture a title.” We counted and summed the number of distinct drawings participants completed.

Activity 3: Triangle drawings. Participants viewed a grid with several interlocking lines and were instructed to “See how many objects or pictures you can make from the triangles below, just as you did with the incomplete figures. Remember to create titles for your pictures.” We counted and calculated the sum of the number of distinct drawings participants completed.

Survey Results

With respect to the precourse survey and postcourse survey, we expected students to demonstrate improvements in their perceptions of various aspects of well-being: self-compassion, compassion towards others, CRs, and creativity (across three domains). Additionally, we expected students to demonstrate significant reductions in their levels of ES and depressive symptoms. We conducted a series of pairwise comparisons and found overall significant support for our predictions (see Table 1 for all means, *SD*s, and effect sizes for each pair of outcome measures).

Participation in the mindfulness course was associated with improvements in students’ self-compassion, $t(23) = 5.59$, $p < .001$, Cohen’s $d = 1.25$, as well as compassion toward others, $t(23) = 3.75$, $p = .001$, Cohen’s $d = 0.62$. There was a marginal (and negative) association between course participation and ES,

Table 1. Outcomes of 6-Week Mindfulness Course.

	Pretest		Posttest		Pretest Versus Posttest			Effect Size
Outcomes	*M*	*SD*	*M*	*SD*	*df*	*t*	*p*	*d*
Self-compassion	2.82	0.77	3.85	0.87	23	5.59	.000	1.25
Compassion toward others	4.02	0.57	4.38	0.57	23	3.75	.001	0.62
Cognitive reappraisals	5.27	0.90	5.49	0.75	23	1.18	.249	
Emotional suppression	3.57	1.41	3.16	1.73	23	1.96	.063	0.26
Depressive symptoms	38.00	12.26	33.00	9.82	23	2.06	.051	0.45
Creativity: Transport problems	5.09	2.11	7.13	3.44	22	3.28	.003	0.71
Creativity: Unusual drawings	4.63	0.77	4.96	0.20	23	2.00	.057	0.59
Creativity: Triangle drawings	4.92	2.21	6.29	2.18	23	2.91	.008	0.63

Note. Self-compassion and *compassion towards others* were measured on a 1–5 scale. *Cognitive reappraisals* and *emotional suppression* were measured on a 1–7 scale. *Depression* was measured on a 20–80 scale. The three *creativity tasks* were generative (i.e., participants were instructed to supply as many responses as possible), so there is no corresponding scale range. Across these outcomes, higher scores indicate greater levels of the construct. Effect sizes refer to Cohen's *d* and are only listed for statistically significant and marginally significant pairwise comparisons. *M* = mean; *SD* = standard deviation.

$t(23) = 1.96$, $p = .06$, $d = 0.26$, and depressive symptoms, $t(23) = 2.06$, $p = .05$, $d = 0.45$. There was no significant change in CRs over the course of the class, $t(23) = 1.18$, $p = .25$ (although means were in the expected directions).

In general, participation in the mindfulness course was also associated with improved creativity. For Activity 1, the transport problems task, participants reported a significant increase in creativity, $t(22) = 3.28$, $p = .003$, Cohen's $d = 0.71$. For Activity 2, the unusual drawings task, students demonstrated a marginal increase in creativity over the course of the semester, $t(23) = 2.00$, $p = .057$, $d = 0.59$. Finally, for Activity 3, students were able to generate significantly more drawings and titles based on triangular figures later in the course as contrasted with the onset of the course, $t(23) = 2.91$, $p = .008$, Cohen's $d = 0.63$.

IPA of Photovoice

Phenomenology, in contrast to positivism and pragmaticism (Allport, 1943; James, 1976), uses everyday individual experiences as the object of analysis (Orbe, 2000). We advocate for what James (1976) termed "radical empiricism" or an epistemology that acknowledges people's subjectivity, plurality of perspectives, and continuous meaning-making (see also Allport, 1943). Echoing the importance of radical empiricism, Mahalingam and Rabelo (2013) advise that researchers combine quantitative and critical qualitative methods in an effort to understand people's lived, embodied experiences. Mahalingam and Rabelo also called for the need to give voice to participants in the research process. They argued that using methods such as photovoice offers participants the opportunity to express their unique experiences—especially those that may not be captured by quantitative methods, which typically are shaped by the theoretical and methodological concerns of the researchers. Embracing the spirit of radical empiricism (James, 1976; Mahalingam & Rabelo, 2013), we selected photovoice as a research method to complement our quantitative analysis of the survey. Mindfulness practices are grounded in people's embodied experience and awareness, making phenomenological analysis an ideal tool to guide our interpretation of students' photovoice assignments.

We conducted an IPA of student papers using recommendations from Griffin and May (2012). According to Griffin and May, IPA is an inductive technique that seeks to understand the world from the perspective of the participant who is treated as an expert or "knower." We first read all 24 students' photovoice papers and images. We then conducted open coding to "tag" each student's visual representation of *self-compassion* and *compassion toward others*. Finally, these codes/tags were consolidated and distilled into themes; each image was classified into just one theme. We interpreted participants' images of *self-compassion* through the following themes: *self-acceptance*, *self-reflection*, and *self-care*. We interpreted their images of *compassion toward others* through the following themes: *active alleviation*, *familial affection/affinity*, *interdependence*, and *mortality*. We describe these in the following sections. At times, we have edited participant quotes for clarity, but not for meaning.

Self-Compassion

First, students were asked to gather images that reflected the concept of self-compassion. In the words of one young woman, "Being self-compassionate involves being aware of one's truest and deepest needs, and then taking the actions necessary to ensure one's happiness and well-being." We interpreted students' images through the lens of three major themes: self-acceptance (59%), self-reflection (27%), and self-care (14%).[1]

Self-Acceptance

More than half of students ($n = 13$; 59%) shared images of self-compassion that reflected *self-acceptance*. These images portrayed expressions of acceptance, forgiveness, love, and pride. For example, four students revealed concerns with body image and self-confidence. One male student shared: "I have struggled mightily with my body image and looks. For me, to be compassionate about my weight and body is the ultimate form of self-compassion." Another student took a "selfie" of herself first thing in the morning:

> It is about waking up and being happy and accepting of who I am - exactly as I am- without wearing any makeup. This picture is also about finding the beautify in the

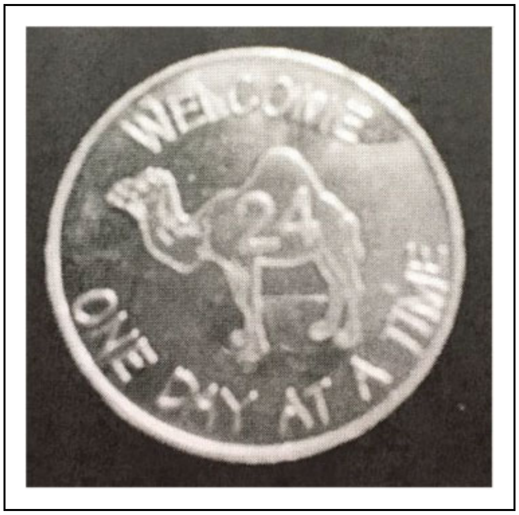

Figure 1. Surrender chip/24-hr token from a 12-step recovery program (example of *self-compassion*: *self-acceptance*).

> flaws, for it's the first picture I have taken of myself, moreover the first picture I have allowed anyone to take of me where you can see my scar, since my surgery 8 years ago. Self-compassion is truly being accepting of your reflection, and learning to not self-hate and self-criticize.

These reflections illustrate the self-consciousness and self-criticism that many emerging adults face. In addition to poor body image, some students struggled with drug/alcohol dependence. Two women identified as members of the addiction recovery community. One of these students chose a picture of a shoreline with "Love Yourself" etched in the sand, and the other provided a photograph of her "surrender token" (also known as a "24-hr chip") from a 12-step addiction recovery program (Figure 1). She understood self-compassion as the ability

> to surrender and accept oneself emotionally, mentally, and physically . . . to take care of oneself when going through a hard time. Self-compassion requires acceptance of the good and the bad. [The chip] is representative of this same concept, as the chip represents the admission of acceptance of oneself as an alcoholic or addict. This is said to be the first step in recovery.

In this way, self-compassion allowed students to demonstrate self-forgiveness, an important element of the addiction recovery process. Participants also related self-acceptance to academic struggle. For instance, one student shared:

> It is difficult to deal with a bad grade in a class, especially when it can make or break your college Grade Point Average (which acts as a deciding point in whether or not you get into a graduate program or are hired for a particular job). However, mindfulness teaches us to be with the negative emotions without reacting to them in a way that will

> encourage us to move on and work towards a better outcome in the future rather than ruminating on it.

This woman's reflection speaks to the pressures that many millennials experience as well as the benefits of mindfulness as a coping mechanism for these pressures. Lastly, some participants who experienced self-compassion as self-acceptance discussed their identity development:

> I related self-compassion to something I have struggled with but now embrace, my racial identity. Growing up in an all-White area, I always felt somewhat ashamed of being Latino. However, now I accept and show compassion towards myself in this regard, so I chose a Latino pride painting.

Self-Reflection

Six students (27%) experienced self-compassion through the lens of self-reflection, including introspection and self-awareness. For instance, one student wrote:

> I will stare up at the sky and know that there are an endless amount of opportunities for me out there. I may fail here and there, but rather than criticizing myself and regretting the past, I will accept my failures and look up into the sky and know that the world still has not seen the best of me yet.

As illustrated in her reflection, photovoice enabled this student to identify a visual anchor for her mindfulness practice. Visualizing the sky facilitates her ability to adopt a nonjudgmental perspective on her life that is not hindered by rumination on past negativity.

Self-Care

Three students (14%) linked self-compassion to experiences with *self-care*, providing images that depicted rejuvenation and recognition of one's limits. These representations of self-compassion illustrate additional stressors that emerging adults experience.

One participant selected an image of a woman drinking tea, experiencing self-compassion as creating time for relaxing and enjoyable activities. She shared that she had recently established a daily ritual of preparing tea, as per her therapist's recommendation:

> It is not necessarily the tea that makes me feel better, but the process of boiling water, picking a tea, placing it into the teapot, and waiting for the water to complete its boil and then serve. Drinking tea has been my practice of slowing down and taking time to enjoy something.

Other students shared images that reflected personal experiences with self-care, such as taking the time to decorate and personalize a bedroom or preparing a healthy and fresh meal (Figure 2).

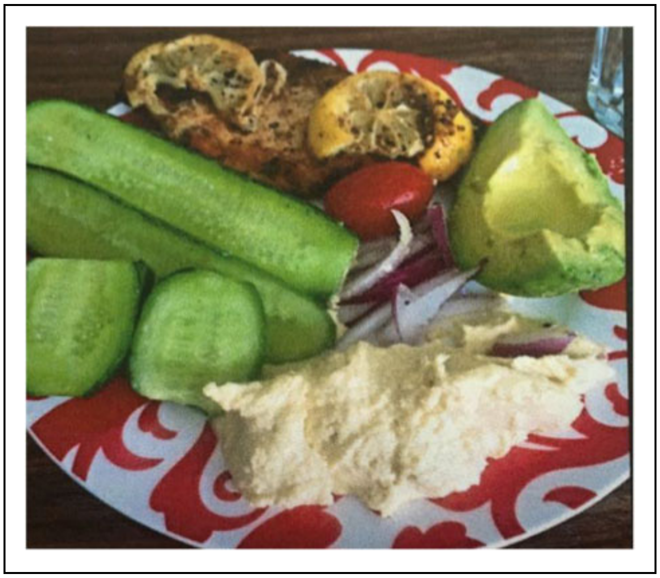

Figure 2. Healthy, homemade meal (example of *self-compassion*: *self-care*).

Compassion Toward Others

Students also were asked to select and analyze images to represent their understanding of *compassion toward others*. From our interpretation of participants' images, four major themes emerged: *active alleviation* (44%), *familial affection/affinity* (22%), *interdependence* (23%), and *mortality* (23%).[2]

Active Alleviation

Ten students' representations of compassion (44%) fell into the category of *active alleviation*. Students generally understood compassion as the process of noticing suffering and making an effort to alleviate pain (Dutton, Workman, & Hardin, 2014). Thus, many students provided images that portrayed *active alleviation* of pain (e.g., firefighters, religious iconography). Other representations of *compassion-active alleviation* were more personal (e.g., a lunch prepared for a busy friend). Another young woman shared the following:

> My picture of compassion towards others is of some flowers given to me by my boyfriend during a week where I was very stressed about school. He saw that I was suffering, he felt sympathy for me, and then went out and acted on it in a very compassionate act. As we learned in class, compassion is a verb, which requires action.

As illustrated, the photovoice exercise enabled emerging adults to document sources of stress and support that they notice and experience in the world around them.

Familial Affection/Affinity

Five students (22%) included photographs of family members who embodied their understanding of compassion toward others. By providing photographs of family members, participants conveyed that they seek compassionate role models in their social networks. Notably, four of these five images were of women, also revealing the gendered and feminized nature of compassion in the social imaginary. As one student shared,

> Motherhood entails reacting to the suffering of one's own child, and this is done even on a biological level, where breast milk adjusts to the needs of an infant. For this reason, I, too, I have thought of compassion toward others as being very motherly and necessitating action.

In addition to showing the gendered nature of compassion, this quote demonstrates the *essentialized* view of compassion that many millennials hold. For instance, two students included photographs of their grandmothers, with minimal explanations; these family members simply embodied compassion without need for further explanation. Another student included an image depicting "a traditional view of the mother in which she kisses boo-boos." Based on a shared social imagination, mothers and grandmothers embody exemplars of compassion toward others, without need for further explanation.

The fifth student in this category experienced compassion through his relationships with his siblings. This young man shared,

> . . . I took a picture of my brother and me. One of the things that I have always enjoyed about going home is seeing him and my other siblings, much like many other older brothers (and sisters) do. Much like other older siblings, I have to witness them in pain, crying, or in some form of distress . . . . This is a picture of him and me after I picked him up while he was crying and attempting to get him to feel better. I think I was mostly successful.

Interdependence

Four students (23%) shared images of compassion related to *interdependence*, including subthemes of unity, connectedness, and humanism. For instance, one student shared a photograph of a racially diverse group of people and discussed compassion as the capacity to be inclusive and accepting of others' differences. Another student included a photograph of a tollbooth worker to represent the following memory of her and her grandmother rushing in the car:

> I will never forget an experience I had with my Granny when I was young, in which we were in a rush, and yet she spent time engaging and laughing with the woman who worked in the tollbooth as we passed. We all giggled as we drove away, and my Granny responded by saying, "If you have the chance to make someone's day, why wouldn't

> you do it?" I bring this with me every single day, because she understands so profoundly that it does not need to be monetary . . . . everyone we meet is fighting a battle, and it is compassionate to simply give attention or even a smile to those who most people just pass by.

This story illustrates an effort to humanize and recognize the tollbooth worker, a "visibly invisible" low-wage employee. This act left a lasting mark on her granddaughter.

Mortality

Four students (23%) furnished images that dealt with the theme of *mortality*, such as illness and death. For instance, once student included a photograph of her employment site, a hospital ward for sick children. Another student included a pin she wears in honor of a friend with epilepsy. Two students directly engaged with the concept of death. One young woman shared:

> This little girl, my neighbor, lost her older sister a year and a half ago to cancer and has been helped through the coping and grief by her loyal dog. She and her dog have a very close relationship, and the compassion appears to be mutual between them. [This picture reminds] me to be compassionate, especially to those who are suffering, grieving, and even to people I do not know.

As these reflections indicate, the photovoice activity for compassion enabled emerging adults to not only more comfortably confront the idea of death but also use mortality as a springboard to more intentionally extend compassion to others.

General Discussion

The goals of our study were to (1) evaluate the effectiveness of a mindfulness curricular intervention for a group of emerging adults and (2) use photovoice to examine how they experienced and made sense of recently learned topics related to mindfulness. We expected that participation in an immersive mindfulness practice and experiential learning course would be associated with improved creativity, CRs, compassion toward self and others, and lower levels of depression and ES. We found support for all our predictions except for CRs. Although there was an increase in the CR scores, it was not significant. It is possible that a longer intervention, fuller range of mindfulness practices, and larger sample size might be needed to observe improvement in CRs. Otherwise, our significant effect sizes fell in the medium to large range. Considering our small sample size, a significant increase in measures of emotion regulation, creativity, compassion, and psychological well-being appears promising and robust.

Reinforcing and expanding upon the quantitative findings, the IPA of students' lived experiences of self-compassion and compassion toward others revealed how the course (including photovoice) encouraged students to reflect upon the meaning and condition of human suffering. Self-compassion research examines the maladaptive nature of self-criticism and its ability to undermine our capacity for self-compassion and, by extension, flourishing (e.g., Gilbert, 2009). We found some converging evidence for this claim in our quantitative and qualitative analyses. The closed-ended measures assessed aspects of mental health (including depression and self-compassion), whereas the photovoice project allowed students to provide more detailed and personal information about their daily experiences. Indeed, many students were forthcoming about sharing personal struggles, such as mental illness, grief, poor body image, and substance abuse. Mindfulness is a beneficial practice to help cultivate a deeper awareness of thoughts and emotions, whether positive or negative. Much research points to the benefits of candidly acknowledging, rather than suppressing or ignoring, negative ideation (e.g., Niederhoffer & Pennebaker, 2009). The quantitative results demonstrated the benefits of mindfulness for reducing ES. Students' written assignments reflect these research findings, and many students spoke directly to the benefits of the mindfulness course for their well-being. Most students said that they plan on continuing with mindfulness practice beyond the conclusion of the course. For instance, one student shared that "Mindfulness is now a part of my life that wasn't present before and I plan to utilize the skill to the fullest every chance I get." Further, many students spoke to the difficulties that come with self-acceptance and self-confidence during adolescence. As one student explained, "It has always been second nature to me to have compassion toward others, but compassion for myself has always seemed a distant goal." In this way, using mixed methods also allowed us to examine the overlap (or lack thereof) between self-compassion and compassion toward others.

Students also shared how the course—including the photovoice activity—strengthened their personal relationships. For instance, one student shared that

> . . . this project showed me something that I did not expect it to, and that is how much I appreciate my grandparents. I noticed, after completing my Photovoice, that both my Granny and Grandpa were a part of my visual definitions of compassion and loving-kindness. Grandparents are such a special part of life, and we often only have them for a short amount of time, so it is important to cherish and learn from them what we can. Mindfulness itself helped me to see this, because it reminds us that everything is fleeting, including life, and to appreciate everything that you have in each moment.

The above quote illustrates the students' emerging understanding of the interdependent nature of our lives as well as the benefits of using phenomenological methods to better understand participants' experiences above and beyond closed-ended scale measures.

Our IPA also revealed the multidimensional nature of self-compassion. In addition to self-acceptance, self-reflection and self-care emerged as important themes. These themes reflect young adults' observations about their identities and increasingly complex lives: the transient nature of the self, with all its shortcomings, as well as an awareness of the need to care for oneself. Our findings suggest that self-compassion is an ongoing process of mindfully engaging the self in relation to one's context, where self-acceptance, self-reflection, and self-care together constitute the practice of self-compassion.

Similarly, our IPA illustrated a set of interrelated themes that go beyond the traditional definition of compassion as the alleviation of someone's suffering (Dutton et al., 2014). In addition to ameliorating the suffering of someone by taking deliberate action, our participants identified interdependence, familial affection, and mortality as features of compassion. Emerging adults' phenomenological understanding of compassion included a keen awareness of social context, the interdependent nature of our lives, and awareness of our own mortality.

Our findings contribute to a growing body of research that documents the benefits of mindfulness in educational settings (Kaufman, 2017; Morgan, 2015; Sarath, 2006). One of the main goals of RM's course was to teach students a variety of mindfulness practices so that they could cultivate a mindful awareness about their emotions, identities, and interactions as they navigate emerging adulthood. Greater cultivation of mindfulness helped students to cultivate compassion toward themselves and others, while also recognizing the ongoing nature of this developmental process. The converging evidence from our quantitative and phenomenological analyses revealed that practicing mindfulness is associated with improvements in students' well-being and capacity for a deeper understanding of compassion toward themselves and others.

Reflections on Photovoice

Most students concluded their written assignments by expressing gratitude for the opportunity to participate in a photovoice activity. One participant shared that "Collecting these photos was a form of meditation and awareness. It is your own self-awareness, your own ideas that make the picture what it is." Similarly, students expressed that participating in photovoice was a useful experience to help enhance their personal mindfulness journeys: "Because of Photovoice, I am able to find people, animals, places, and so on, that will serve as constant reminders to me to be mindful." Another student shared that "I would suggest a Photovoice project to anyone, as it fosters a realization of the true interdependence within one's life and how that can create social change." Many participants viewed the photovoice process as an exercise in mindfulness in and of itself. Our participants were able to extend and apply their mindful awareness to their projects. Such engagement with learning is an illustration of "mind-altering" pedagogies that transform student learning and engagement (Eisner, 1993).

Integration of Qualitative and Quantitative Findings

We used a mixed-methods approach for this project to explore students' experiences of mindfulness and well-being, using textual and visual measures. One of the main goals of the class is to help understand the interconnected nature of our lives. The textual mode elicited students' awareness of their well-being, emotions, and compassion toward themselves and others. These self-reported measures tap into students' awareness of their well-being and compassion. Our findings suggest that interconnectedness is realized at two levels: *intrasectional* and *intersectional*. The paper–pencil measures evaluate students' personal awareness of their well-being, emotions, and perceptions of their compassion to self and other at the intrasectional level. By contrast, the photovoice exercise captured students' phenomenological experience of the interconnected nature of their lives at the intersections of various social identities.

As a visual exercise, photovoice required students to look "outside." Realizing various kinds of connection to others—across various social identities and familial identities—was a recurring narrative in the photovoice pictures. A deeper phenomenological understanding of interconnectedness at the intersectional level helps students see how their lives depend on others. Another striking aspect of the images students gathered is the ways they noticed suffering (with a desire to alleviate pain) in themselves and others. Thus, our findings show that to understand interconnectedness at the intrasectional and intersectional levels of analysis (and to embrace radical empiricism; James, 1976), we must combine quantitative and qualitative research methods.

Limitations and Future Directions

Although our sample size was fairly small, we still observed medium effect sizes; even more robust effects are likely with a larger sample size. Additionally, since there was just one section of this course, we could not use an experimental design and instead used a repeated measures design. Although most mindfulness interventions rely on self-report data from participants (e.g., Bergomi, Tschacher, & Kupper, 2013), the self-reported nature of our outcome variables must be interpreted with caution. To try to mitigate the negative effects of self-reported data and social desirability, we included implicit measures (e.g., creativity) and collected survey data anonymously. Future researchers might consider collecting observational data and/or directly measuring social desirability. Another fruitful avenue for future research could examine students' level of mindful awareness as an outcome variable as well as isolate the impact of specific mindfulness techniques upon different outcomes.

Implications

Our research highlights the benefits of phenomenology for the study of identity development and meaning-making, as well as the cultivation of transformative learning experiences and well-being. Our findings offer practical implications for educators interested in incorporating contemplative practices to help promote personal and social transformation, particularly among emerging adults. Matsunobu (2011) describes a workshop where he taught emerging adults Shakuhachi (a traditional Japanese flute originally practiced by Buddhist monks). The goal of the workshop was to help students cultivate an awareness of the self as interconnected, by seeing themselves as an extension of their flutes. The participants cultivated an expansive sense of self where they felt connected to their immediate environment while playing the Shakuhachi. Cultivating an embodied and phenomenologically grounded interconnected notion of the self is critical for learning, self-integration, and creativity (see Bresler, 2006; Matsunobu, 2011). In a similar vein, our findings highlight the need to embrace a "radical empiricist" perspective (James, 1976) that integrates quantitative and phenomenological approaches to the study of positive youth development (Mahalingam & Rabelo, 2013).

Additionally, our participants' awareness of impermanence at the intrasectional level and their enhanced understanding of compassion and interdependence resonate with many goals of transformative learning outlined by Mezirow (2003):

> Transformative learning is learning that transforms problematic frames of reference—sets of fixed assumptions and expectations (habits of mind, meaning perspectives, mindsets)—to make them more inclusive, discriminating, open, reflective, and emotionally able to change. Such frames of reference are better than others because they are more likely to generate beliefs and opinions that will prove more true or justified to guide action. (p. 58)

Our participants developed a reflective understanding of the habits of their mind and a deepened awareness of impermanence and interdependence. Our study highlights the usefulness of combining contemplative practices and critical pedagogy in a holistic curriculum to foster self-reflection and a critical understanding of interdependence (Mezirow, 2003).

Conclusion

We found that practicing mindfulness in the classroom twice a week over a 7-week period was associated with improvements in creativity, self-compassion, compassion toward others, psychological well-being, and emotional regulation. Integrating mindfulness practices in higher education is critical to the holistic development of student learning and well-being. Mindfulness practices will help students cope with stressors uniquely associated with emerging adulthood, such as social comparison and disconnectedness. Further, photovoice can be used as a window to understand the phenomenological basis of compassion toward the self and others. Contemplative education can benefit from using a mixed-methods approach to study the effectiveness of contemplative education interventions on transformative learning as well as psychological well-being.

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Notes

1. Two students did not supply images for self-compassion, so percentages are based upon a subsample of 22 participants.
2. One student did not supply an image for compassion toward others, so percentages are based upon a subsample of 23 participants.

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