HHS Public Access

Author manuscript

J Adolesc. Author manuscript; available in PMC 2018 June 01.

Published in final edited form as:

J Adolesc. 2017 June ; 57: 108–118. doi:10.1016/j.adolescence.2017.04.001.

Response to a Mindful Self-Compassion Intervention in Teens: A Within-person Association of Mindfulness, Self-Compassion, and Emotional Well-Being Outcomes

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Abstract

As adolescence can be a stressful developmental stage, the purpose of this study was to determine if a novel mindful self-compassion program would decrease stress, depressive symptoms, and anxiety and increase resilience, gratitude, and curiosity/exploration (positive risk-taking), and to ascertain if mindfulness and self-compassion co-varied with these outcomes over time. Forty-seven adolescents in the southeast U.S. enrolled in an 8-week mindful self-compassion course in five cohorts. Measures were assessed at pre-intervention, post-intervention, and 6-week follow-up. Multilevel growth analyses revealed main effects of time on perceived stress, resilience, curiosity/exploration and gratitude. Additionally, both mindfulness and self-compassion co-varied with perceived stress and depressive symptoms; mindfulness also co-varied with anxiety and self-compassion co-varied with resilience and curiosity/exploration. Implications of these findings are that this program has potential in decreasing stress and increasing resilience and positive risk-taking. Future studies with a control group need to be conducted to confirm these findings.

Introduction

The adolescent period can be very stressful due to the many physiological and environmental changes taking place during this developmental stage. The onset of puberty (Susman & Dorn, 2009) and resulting physiological changes including maturation of the brain (Giedd, 2008) are responsible in part for promoting more sophisticated and complex concepts of self. These changes influence the way in which an adolescent reasons and relates to others; most importantly, relationships to family and peers shift, resulting in an unfolding of one's identity (Erikson, 1968) and redefinition of one's role within the family and among peers.

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Furthermore, environmental changes such as school transitions and academic pressure and for many adolescents, financial strain and the need to find employment while attending school contribute to adolescents' mounting stress. In fact, school itself is cited as the number one stressor for most teens (American Psychological Association, 2014). As a result of these changes, stress among adolescents is high: 40% report neglecting responsibilities at home and 21% report neglecting responsibilities at school due to stress, 29% report procrastinating due to stress, and despite the fact that 78% report peer relationships to be of paramount importance to them, 17% report canceling social plans in the last month due to stress (American Psychological Association, 2014).

There is extensive literature linking stress with both internalizing and externalizing problems in adolescence (Grant et al., 2003; Kushner, 2015; McMahon, Grant, Compas, Thurm, & Ey, 2003; Moksnes, Espnes, & Haugan, 2014; Sheidow, Henry, Tolan, & Strachan, 2014). Indeed, 14.3% of adolescents aged 13–18 have a diagnosed mood disorder (i.e., major depressive disorder or bipolar disorder), 31.9% have an anxiety disorder (e.g., social phobia), 19.6% have a behavior disorder (e.g., ADHD) and 11.4% have a substance abuse disorder (Merikangas et al., 2010). Importantly, up to 60% of adolescents remain untreated when faced with symptoms of anxiety and depression (Behavioral Health Barometer: United States, 2013).

However, not all youth exposed to stressors develop problems in adolescence, and the diathesis-stress model purports that the development of these problems are determined by the interaction of psychological traits and exposure to stressors (Monroe & Cummings, 2015). Further, Lazarus and Folkman (1984) defined stress as a transactional relationship between a specific event in the environment and the individual who is experiencing the event. The degree to which the individual appraises the event as stressful, rather than an inspiring challenge, for example, depends on one's goals, values and inner resources. According to Lazarus and Folkman's model, an adolescent's internal and external resources can ameliorate or protect against the stress that is experienced. If one's external resources include a stable and supportive family, for example, the adolescent is likely to experience less stress (Ge, Lorenz, Conger, Elder, & Simons, 1994; Skrove, Romundstad, & Indredavik, 2013). Also, if the adolescent has significant inner resources such as the ability to bounce back from difficulties, gratitude for the positive aspects of life, and a sense of mastery and desire to take on new challenges, the adolescent is also likely to experience less stress, as stress and well-being are not merely the absence of negative symptoms but also the presence of positive ones (Seligman & Csikszentmihalyi, 2014). Thus, an adolescent's inner resources contribute to the ability to respond to challenging external events with greater ease and resilience, lessening the potential of experiencing stress, increasing the possibility to experience positive emotional states, and subsequently reducing the chance of developing psychopathological or behavioral problems.

One possible way in which adolescents can strengthen inner resources is through practicing the skills of mindfulness and self-compassion. Mindfulness, described as the practice of bringing attention and awareness to one's momentary experience with a sense of acceptance and non-judgment (Kabat-Zinn, 1994), and self-compassion, defined as in times of struggle, being open and in touch with one's suffering and treating oneself with kindness (Neff, 2003)

have been identified as protective factors buffering against negative mental states such as stress, depression, and anxiety in adolescents (XXX; Játiva & Cerezo, 2014) and adults (Westphal et al., 2015). Specifically, self-compassion, defined as encompassing three interrelated constructs: self-kindness, or treating oneself with care and compassion when experiencing challenges; common humanity, or understanding that our struggles are part of the human experience; and mindfulness, or maintaining a balanced perspective when faced with difficulties (Neff, 2003) has been articulated as *social support turned inwards* (XXX; Breines et al., 2014). For example, when adolescents are able to offer themselves the same beneficial support that they receive from their friends, as they do when they are exercising self-compassion, they experience greater positive outcomes (XXX; Barry, Loflin, & Doucette, 2015; 2015; Cunha, Xavier, & Castilho, 2016; Galla, 2016; Játiva & Cerezo, 2014).

Both mindfulness and self-compassion have been linked to better psychological adjustment in both adults (Khoury, Lecomte, Fortin, et al., 2013; MacBeth & Gumley, 2012; Neff & McGehee, 2010) and adolescents (XXX, Neff & McGehee, 2010; Zessin, Dickhäuser, & Garbade, 2015; Zoogman, Goldberg, Hoyt, & Miller, 2014). Programs to develop and cultivate mindfulness skills have reported improvements in emotional health among adults (see reviews: Khoury, Lecomte, Comtois, & Nicole, 2013) and youth (see reviews: Zenner, Herrnleben-Kurz, & Walach, 2014; Zoogman et al., 2014). Meta-analyses of mindfulness intervention studies with youth have reported effect sizes in clinical samples three times that of non-clinical samples, effect sizes for psychopathology almost twice that of overall outcomes (i.e., social skills, well-being, attention, psychophysiological measures), and improved cognitive performance and increased resilience. These findings support the beneficial effect of mindfulness interventions for clinical populations and for those with psychological symptoms (see reviews: Zenner et al., 2014; Zoogman et al., 2014).

More recently, self-compassion has also been shown to be a modifiable trait which can be strengthened through learning and practicing self-compassion skills both in youth (XXX) and in adults (Neff & Germer, 2013). Empirical studies on interventions which focus on cultivating self-compassion have demonstrated improvements in optimism, self-efficacy, life satisfaction, compassion for others, and body appreciation and greater decreases in rumination, depression, anxiety, and stress in adult samples (Albertson, Neff, & Dill-Shackleford, 2015; Kelly & Carter, 2015; Neff & Germer, 2013; Smeets, Neff, Alberts, & Peters, 2014). Mindful Self-Compassion, an 8-week course for adults, was designed to cultivate self-compassion through the introduction and practice of guided meditations, experiential exercises, and discussion (Neff & Germer, 2013). Findings from a randomized controlled trial implementing this intervention reported decreases in depression, anxiety, and stress and increases in life satisfaction, and compassion for others; most notably, these findings were maintained at one year follow-up. This course has also been adapted for adolescents, and initial findings of a previous iteration of this intervention with adolescents aged 14–17 showed promise; reported results show greater decreases in depression, trends towards greater decreases in anxiety, and greater increases in life satisfaction when compared to a waitlist controlled group (XXX).

As mindfulness and self-compassion have been linked to positive mental health outcomes in adults and adolescents, the purpose of the current study was to investigate outcomes of an 8-week mindful self-compassion program for adolescents, *Making Friends with Yourself: A Mindful Self-Compassion Program for Teens.* Examining within-person covariaton of mindfulness and self-compassion with outcomes during the course of the intervention provided insight into how these variables change together over time. We hypothesized that 1) participants would increase in positive well-being outcomes (i.e., resilience, gratitude, positive risk-taking) and decrease in negative well-being measures (i.e., depression, anxiety, perceived stress) from pre-intervention to post-intervention, and that these outcomes would be maintained at a six-week follow-up; 2) mindfulness and self-compassion would co-vary with outcomes. Also, we conducted an exploratory investigation to determine if any demographic factors influenced any of the outcomes.

Method

Participants

Participants were recruited from those who were enrolled in an 8-week mindful self-compassion course in the southeast U.S. Advertising for the course took place through the school district via electronic flyers sent to parents of students at the local middle and high schools, a university mindfulness listserv, and a local radio station. In general, adolescents were enrolled in the course at the suggestion of a parent or recommendation of a therapist. Eligibility was determined by enrollment in the course for the first time, ability to speak and read English, and access to an internet-enabled device. Six students were enrolled in the course for the second time and were therefore not eligible. Of the 49 remaining that were eligible, 47 adolescents (96%) consented to be in the study. Of the two that did not participate, one did not participate because she enrolled in the course on the first day of class which would have made it difficult for her to be consented and take the survey. The reason the second student did not participate in the study is unknown. In all, five cohorts (classes) of students participated over 18 months. Of the five cohorts, two were high school only (age 14–17), two were middle school only (age 11–13), and one was mixed middle and high school (age 11–17). Fifty-one percent were female, and 92% were white (see Table 1 for complete demographic data).

Procedure

After university IRB approval, adolescents who were enrolled in a program called "*Making Friends with Yourself: A Mindful Self-Compassion Program for Teens",* were invited to participate in the research study. A week prior to the first class, parents and adolescents met with the course instructors and a member of the research team for an orientation in which an overview of the course was presented and the study procedure was explained. Parents and adolescents who were interested in participating in the study signed consent and assent forms. Within 48 hours of the orientation, adolescents were sent a link via email to an online survey comprised of the study measures and were instructed to complete the survey prior to the first class. The email was sent to both parent/guardians' and adolescents' email addresses because a number of adolescents indicated that they did not check their email regularly (adults were clearly informed that adolescents were to complete the survey). Within 24 hours

following the last class, an email link to a post-survey was sent to participants. Finally, a follow-up survey was sent to participants via email six weeks after the end of the class. Adolescents were compensated with a $25 gift card for each survey which they completed.

Measures

Mindfulness—The Children and Adolescent Mindfulness Measure (CAMM; Greco, Baer, & Smith, 2011) assessed moment-to-moment attention and acceptance of internal experiences. Participants indicated their responses to each of 10 items using a 5-point Likert scale ranging from 0 (*never true)* to 4 (*always true),* e.g.*, It's hard for me to pay attention to only one thing at a time*. Reliability for this study is α = .87 (pre), .84 (post) and .88 (follow-up).

Self-Compassion—The Self-Compassion Scale, short form (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011) is comprised of 12 items, e.g. *I try to be understanding and patient towards those aspects of my personality I don't like*. Participants indicated responses using a 5-point scale ranging from 1 (*Almost Never)* to 5 (*Almost Always)*. Reliability for the sample in this study is α = .77 (pre), .80 (post) and .79 (follow-up).

Perceived Stress—The 10-item Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) assessed the degree to which respondents find their lives "unpredictable, uncontrollable, and overloading" (Cohen et al., 1983, p. 387), e.g., *In the last month, how often have you felt that you were on top of things?* Participants indicated their responses using a 5-point Likert scale ranging from 0 (*never*) to 4 (*very often*). Cronbach's alpha for this study is α = .83 (pre), .88 (post), and .87 (follow-up).

Anxiety—The Spielberger State-Trait Anxiety Inventory (STAI) 6-item short form (Marteau & Bekker, 1992) was used to assess anxiety; e.g., "*I feel tense".* Responses are indicated with a 4-point Likert scale of 1 (*Not at all*) to 4 (*Very much*). Cronbach's alpha for this study was α = .88 (pre), .84 (post), .88 (follow-up).

Depressive symptoms—The Short Mood and Feelings Questionnaire (SMFQ; Angold, Costello, & Messer, 1995) is a 13-item self-report scale that assessed youth depressive symptoms. Participants respond to items using a 3-point Likert scale ranging from 0 (*not true*) to 2 (*true*); e.g., *I felt miserable or unhappy*. Reliability for the sample of this study is α = .92 (pre), .89 (post), and .91 (follow-up).

Resilience—The 6-item Brief Resilience Scale (BRS; Smith et al., 2008) is defined as the ability to bounce back or recover from stress, e.g., *I tend to bounce back quickly after hard times.* Respondents indicated responses using a 5-point Likert scale ranging from 1 (strongly agree) to 5 (strongly disagree). Cronbach's alpha for this study is α = .85 (pre), .78 (post), and .91 (follow-up).

Curiosity and Exploration—The curiosity and exploration inventory II (CEI II; Kashdan et al., 2009) assessed the degree to which participants are "recognizing, embracing, and seeking out knowledge and new experiences" (Kashdan et al., 2009, p. 988); this can also be referred to as *positive risk-taking*. Participants responded to items on a 5-point Likert scale

ranging from 1 (very slightly or not at all) to 5 (extremely); e.g., *I actively seek as much information.* Cronbach's alpha for this study is .85 (pre), .89 (post), .88 (follow-up).

Gratitude—The youth version of the Gratitude Questionnaire (GQ-youth; Froh, Fan, et al., 2011) was used to assess gratitude. This 5-item scale uses a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Cronbach's alpha for this study is .83 (pre), .72 (post), and .91 (follow-up).

In addition, baseline demographics for all participants were collected which included information pertaining to age, sex, race/ethnicity, and level of parents' education.

Intervention

This intervention, *Making Friends with Yourself: A Mindful Self-Compassion Program for Teens*, is adapted from the adult Mindful Self-Compassion course created by Neff and Germer (2013), and modified for adolescents. Each of the 8 weekly 1.5 hour sessions include art and movement activities, and sessions are outlined with the following themes:

Session 1: Discovering Mindful Self-Compassion: Definitions of mindfulness and self-compassion are introduced, and a hands-on activity is incorporated that familiarizes students with the concept that we treat ourselves more harshly than we treat our friends in times of difficulty. A guided meditation promotes the understanding that we all have within us the capacity to be kinder to ourselves.

Session 2: Paying Attention On Purpose. Mindfulness practice is the focus of this session and is introduced through a sound meditation, eating meditation, and attention to physical sensation meditation (i.e., body scan).

Session 3: Lovingkindness. A lesson on the changes which take place in the adolescent brain is presented, and lovingkindness meditation is introduced as a way to give oneself kindness for the multitude of changes taking place during adolescence.

Session 4: Self-Compassion: Definition of self-compassion is presented in detail through guided meditations and exercises; music meditation is introduced.

Session 5: Self-Esteem/Self-Compassion: The similarity and differences of these two ways of relating to oneself are presented; the concept of common humanity is emphasized.

Session 6: Living Deeply: Articulating one's core values through an art and writing activity is introduced, as well as how to treat oneself when one strays from their core values.

Session 7: Working with Difficult Emotions: Guided meditations and informal practices specifically tailored to deal with particularly emotionally challenging situations are presented.

Session 8: Embracing Your Life with Gratitude: Gratitude and self-appreciation are the focus of this session, and informal practices are introduced that facilitate awareness of that which we can be grateful.

Analytic Plan

Analyses were carried out in SAS PROC MIXED to account for the nested structure of the data (observations nested within participant). First, two-level regression models evaluated the simple influence of time as a categorical variable (pre vs. post, pre vs. follow-up) on each outcome. This categorical coding scheme was selected over linear effects of time for theoretical reasons, since changes occurring during treatment were expected to be driven by different processes than changes occurring after treatment. Next, we fit identical multilevel growth models predicting outcomes from covariates and time, adding in person-centered values (the score at this time point minus the person mean) for mindfulness and self-compassion as repeated measures predictors. Mirroring Galla et al. (2016), these analyses begin to identify which outcomes co-vary with mindfulness and self-compassion most strongly across repeated measures within a given person, and can also suggest the relative importance of mindfulness and self-compassion in accounting for change over time. As an exploratory follow-up, we also examined demographic factors (sample-standardized age, school status, attending during the spring vs. the fall, and sample-standardized values for maternal and paternal education) as moderators of the effects of time on outcomes using similar two-level regression models evaluating the influence of demographic factors on the trajectories of change in outcomes over the two time periods.

All models controlled for basic demographic factors, including cohort, sex, school status, and sample-standardized age, maternal education, and paternal education. Demographic factors were controlled due to their established influence on stress and psychopathology in adolescents. In each model, random effects were specified for the intercept only. Intraclass correlations (ICCs) were calculated for each repeated measures variable (ICC = .58 for CAMM, .47 for SCS, .66 for PSS, .62 for SMQ-SF, .61 for STAI, .64 for GQ, .74 for BRS, and .77 for CEI). These ICCs indicate that a significant percentage of the variance in each outcome was due to within-person fluctuations (% of variance attributable to within-person factors: 42% for CAMM, 53% for SCS, 34% for PSS, 38% for SMQ-SF, 39% for STAI, 36% for GQ, 26% for BRS, and 23% for CEI).

Results

Preliminary Descriptives

Forty-seven students age 11–17 enrolled in the study; 96% (n=45) completed the post-intervention surveys, and 83% (n=39) completed the six week follow-up survey. Demographics of the sample are included in Table 1.

Change in Outcomes over Time During and After the Intervention

Simple effects of time on outcomes revealed that positive outcomes, including mindfulness, self-compassion, gratitude, resilience, and curiosity/exploration generally increased from pre-to-post and pre- to follow-up in the full sample (see Table 2 for specific results for each outcome). Among the negative outcomes, only perceived stress showed a significant decrease across the full sample, with depressive symptoms and anxiety failing to show significant reductions in the full sample.

Within-Person Covariation of Mindfulness, Self-Compassion, and Outcomes

Results examining the unique within-person associations of mindfulness and self-compassion with each outcome are presented in Table 3. Both mindfulness and self-compassion uniquely co-varied with perceived stress over time, and the main effects of time on perceived stress were no longer significant after accounting for these time-varying covariates. That is, when mindfulness or self-compassion were higher than usual for a given participant, perceived stress was lower than usual for that participant. Although there were no main effects of time on depressive symptoms or anxiety (see Table 2), both mindfulness and self-compassion co-varied inversely with depressive symptoms, and mindfulness co-varied inversely with anxiety. With regard to positive outcomes, there were no within-person associations with mindfulness. However, self-compassion co-varied positively with both resilience and curiosity/exploration, and the significant main effects of time (as described in Table 2) on these outcomes were no longer significant after including this covariate (see Table 3). That is, when self-compassion was higher than usual for a given participant, both resilience and curiosity/exploration were also higher than usual for that participant. Neither mindfulness nor self-compassion co-varied with gratitude, and the main effect of time on increased gratitude remained significant.

In summary, results indicated that *mindfulness* co-varied with perceived stress, depressive symptoms, and anxiety across the observation period, whereas *self-compassion* covaried with perceived stress, depressive symptoms, resilience, and curiosity/exploration. Further, inclusion of these time-varying covariates appeared to account for the previously-established effects of time on perceived stress, resilience, and curiosity/exploration across the intervention timeframe.

Prediction of Change over Time by Demographic Factors

The trajectory of self-compassion changes over time were influenced somewhat by demographic factors. High school (vs. middle-school) participants reported more robust increases in self-compassion from pre- to post-treatment (HS X Time Estimate: .43, $SE = .17$, $t(67) = 2.54$, $p = .013$). There was also a marginally significant influence of sex on self-compassion over time, in which girls showed more robust increases in self-compassion over time from pre-treatment to post-treatment (Sex X Time Estimate: .31, $SE = .16$, $t(67) = 1.88$, $p = .061$).

The trajectory of negative outcomes over time was also moderated by some demographic factors. Participants taking the class in the spring reported less robust pre- to post-intervention reductions in perceived stress (Spring X Time Estimate: 4.72, $SE = 1.94$, $t(67) = 2.42$, $p = .018$), and less robust pre-intervention to follow-up reductions in anxiety (Spring X Time Estimate: 12.10, $SE = 5.08$, $t(67) = 2.38$, $p = .020$). Participants in high school (vs. middle school) also reported more robust declines in depressive symptoms from pre-treatment to post-treatment (HS X Time Estimate: −5.86, $SE = 1.88$, $t(67) = -3.11$, $p = .002$); however, this was not significant after controlling for the higher baseline depressive symptoms found in the high school participants. Demographic factors did not influence the trajectory of positive outcomes over time.

Discussion

Characterized by a multitude of biological and environmental changes and transitions, adolescence can be a stressful developmental stage for many youth. As stress has been linked to depression and anxiety (Ge et al., 1994; Grant et al., 2003; Kushner, 2015; Moksnes, Espnes, & Haugan, 2014; Sheidow, Henry, Tolan, & Strachan, 2014) and depression and anxiety in adolescence are often precursors to mental health challenges in adulthood (Naicker et al., 2013; Pine et al., 1999), it is important to intervene in adolescence to promote positive emotional well-being for adolescents as well as to prevent long-term mental health challenges.

As mindfulness and self-compassion have been associated with emotional well-being in youth, the purpose of the current study is to determine if the implementation of the program *Making Friends with Yourself: A Mindful Self-Compassion Program for Teens*, resulted in improved emotional well-being, with effect sizes indicating conventionally small-to-medium sized changes over time. Our second aim was to determine if self-compassion and mindfulness covaried with outcomes.

For the most part, our first hypothesis was confirmed; findings indicated that perceived stress generally decreased significantly and resilience, gratitude, and curiosity/exploration generally increased significantly during and after the intervention. Contrary to our hypothesis and previous research, there was not a significant decrease in depression and anxiety from pre- to post-intervention or from pre- to follow-up; however effect sizes indicated a small but meaningful effect from pre- to post- for depression, which then waned at follow-up. As the transactional model of stress (Lazarus & Folkman, 1984) explains, stress is experienced when one does not have adequate inner resources to cope with the stressor. It may be that the lack of a significant decrease in anxiety and depression evidenced in this study may be because adolescents need a greater or more prolonged “dose” of mindfulness or self-compassion to build their inner resources enough to demonstrate significant decreases in these constructs. Further, it may be that it takes longer for depression and anxiety to change; that is, the temporal order of the constructs may be such that perceived stress decreases first, and then with continued mindfulness and self-compassion practice (i.e., more time for resource building), depression and anxiety subsequently decrease.

Another possible explanation is illustrated by the diathesis-stress model. According to Monroe and Simons (1991), specific types and timing of stressors activate the diathesis resulting in the development of depression or anxiety. If participants had a diathesis or vulnerability to stress, it is possible that this diathesis had not become activated by the particular type or timing of the stressors that they experienced, and therefore they did not experience appreciable depression or anxiety at pre-intervention. Therefore, there was not much room for improvement. Of note, Galla (2016) found significant effects in depression among adolescents participating in an intensive mindfulness retreat; however, the adolescents in Galla’s (2016) study scored much higher at baseline on the same perceived stress scale as those in the current study. As perceived stress is related to depression and anxiety, it is likely that they may have been more depressed or anxious as well. Indeed, post-

hoc moderation by baseline depression indicated that adolescents with indices of greater risk at baseline (lower mindfulness or self-compassion) showed more robust reductions in depression over time (p's > .05 for pre-post interactions; see Figure 1); however, given the lack of a control group in the present sample, this cannot be confidently distinguished from regression to the mean and requires replication in a controlled trial.

Our second hypothesis that mindfulness and self-compassion would covary with constructs of emotional well-being was also partially supported. Similar to what was found in Galla (2016), findings indicated that both mindfulness and self-compassion covary with perceived stress and depression; mindfulness also covaries with anxiety while self-compassion covaries with resilience and curiosity/exploration. Neither mindfulness nor self-compassion covaries with gratitude. The finding that both mindfulness and self-compassion covary with these constructs supports our belief that mindfulness and self-compassion practices may be responsible in part for the changes that are evidenced in these outcomes over the course of the intervention. This would need to be tested further in a study with a control group; however, possible explanations for these covariations will be discussed below.

First, mindfulness practices emphasize letting go of thoughts and returning one's awareness and attention to the present moment through shifting attention to physical sensations. As thoughts arise, the practitioner notices the thoughts, and then returns attention to the breath. When thoughts are focused on worries about the future, for example, returning one's attention to the present moment through noticing the breath would facilitate "letting go" of the worrisome future-oriented thoughts, thereby resulting in a decrease in perceived stress and anxiety. Likewise, shifting one's attention to the present moment through noticing physical sensations, i.e., the breath, interrupts rumination, which has been associated with anxiety and depression (Nolen-Hoeksema, 2000; Rood, Roelofs, Bogels, Nolen-Hoeksema, & Schouten, 2009). Through this process, increases in mindfulness would be linked to decreases in perceived stress, anxiety and depression.

Second, self-compassion, or treating oneself kindly when faced with challenges, also covaries with perceived stress, depression, as well as resilience and curiosity/exploration, Often, adolescents feel isolated and alone in their struggles; Elkind's personal fable describes adolescents as believing that their experiences, including their personal struggles, insecurities, and failings are unique to them (Elkind, 1967). The common humanity component of self-compassion contradicts this concept and promotes the understanding that we are not alone in our struggles, and in fact, the struggles encountered as an adolescent are part of the developmental stage that all of us must pass through on the way to becoming fully integrated adults. This understanding, promoted through self-compassion practices, may have a direct effect on reducing stress and depression. Also, the self-kindness component which involves taking an active role in being kind to oneself through saying kind words or taking steps to take care of oneself behaviorally, may alleviate depression.

The pathway through which self-compassion influences positive emotional well-being outcomes may be different than that of the negative outcomes. For example, as one begins to treat oneself with greater kindness and compassion, one tends to fear failure less because one knows that despite the outcome, they will treat themselves kindly and will not be

berated (Neff, 2009; Neff, Hsieh, & Dejitterat, 2005), Thus, motivation increases, and taking on new and challenging tasks may become more likely. Also, as self-compassion increases, adolescents recognize that they can rely on themselves for support, lessening their dependence on others to convince them that they are acceptable, thereby increasing resilience. For example, one participant in the mindful self-compassion course exclaimed “I always feel that I have to have someone else to prove that I can do things. But I have myself, and that is someone!” (XXX). Thus, self-compassion offers the possibility of relying on oneself for the emotional support that is often sought from others.

Interestingly, although gratitude increased significantly pre- to post-intervention, it did not covary with either mindfulness or self-compassion. One possible explanation for this is that although gratitude was alluded to throughout the program, explicit gratitude practices were not introduced until the last class. Previous research has reported that in adolescent populations, gratitude has been linked with subjective well-being (Froh, Sefick, & Emmons, 2008), positive affect (Froh, Kashdan, Ozimkowski, & Miller, 2009), life satisfaction and reduced depression (Froh, Emmons, Card, Bono, & Wilson, 2011). Thus, another possible explanation for increases in gratitude are that it is related to other emotional health improvements. Yet another possibility is that there was a spurious factor that was not measured that influenced the increase of gratitude from pre- to post-intervention and then was maintained, albeit with a slight drop-off, at follow-up.

As an exploratory investigation, we also examined whether any demographic measures were associated with outcomes. High school students, as compared to middle school students, demonstrated greater increases in self-compassion. There was also a trend for females to show greater increases in self-compassion than males. This may be because high school females generally have been shown to have lower self-compassion than males or middle school adolescents, and therefore have more room to increase (XXX). Also, adolescents who participated in the spring term had significantly less of a decrease in perceived stress pre- to post-intervention and in anxiety pre- to follow-up. This may be due to the increase of external stressors that take place at the end of the school year. The post-test was taken in mid to late March, around the time when students are feeling the pressure of having to complete assignments before the end of the academic year, and the follow-up survey was administered in late April or early May, coinciding with finals. Replicating this study with a control group would determine if this dampened decrease is due to these external occurrences or some other factor.

This study has shed light on one way in which adolescents can be empowered to reduce stress. However, it also raises a number of new questions which can be pursued in subsequent research. For example, what is the temporal order of how these constructs change? Does stress need to be reduced prior to a decrease in depression and anxiety, or can these changes occur concurrently? What role does gratitude play in promoting well-being? In what way, if any, are the negative and positive well-being outcomes related? These questions should be explored in future studies.

This study had limitations as well. First, without a control group, our ability to determine whether findings were the result of the program itself or other factors is limited. Second, our

sample was relatively small, limiting our statistical power to detect small differences. Third, our follow-up period was limited; it would be advantageous to extend the follow-up period to at least three or six months. Fourth, there was a clear lack of diversity in race/ethnicity in our sample, and therefore generalizing findings to all adolescents is limited. Fifth, although the short-form of the self-compassion scale has a high correlation with the long form and the long form has been validated with adolescents, the short form itself has not yet been validated for the age group. Finally, our sample was self-selected; additional work will be needed to determine whether this program is useful for an unselected population of teens.

This study also has a number of strengths. First, it is one of the first studies that examined an intervention that focuses on teaching self-compassion skills. Second, it utilized within-person multilevel analysis, which is more nuanced as it allows participants scores to be compared to their own mean for a particular construct, rather than a mean of all participants. Third, it examined potential demographic factors that may influence outcomes, rather than assuming that such things as time of year that a program takes place has no effect.

Conclusion

Due to the numerous external and biological changes taking place during adolescence, the stress level in adolescents today is high, and adolescents are limited in their ability to cope with stress (American Psychological Association, 2014). This study reports the findings of an 8-week mindful self-compassion intervention which demonstrated a significant decrease in stress pre- to post-intervention, and significant increases in resilience, curiosity/exploration, and gratitude pre- to post-intervention. This preliminary evidence implies that interventions which cultivate and foster mindfulness and self-compassion have the potential for providing adolescents with tools that they can use to decrease stress, increase resilience, and foster ways that they can appreciate themselves and their daily experiences, and allow them to engage in new experiences in a productive and healthy way.

Acknowledgments

Funding

This work was supported by grant funding from the National Institute of Mental Health (T32MH093315) and the National Center for Complementary and Integrative Health (T32AT003378-04).

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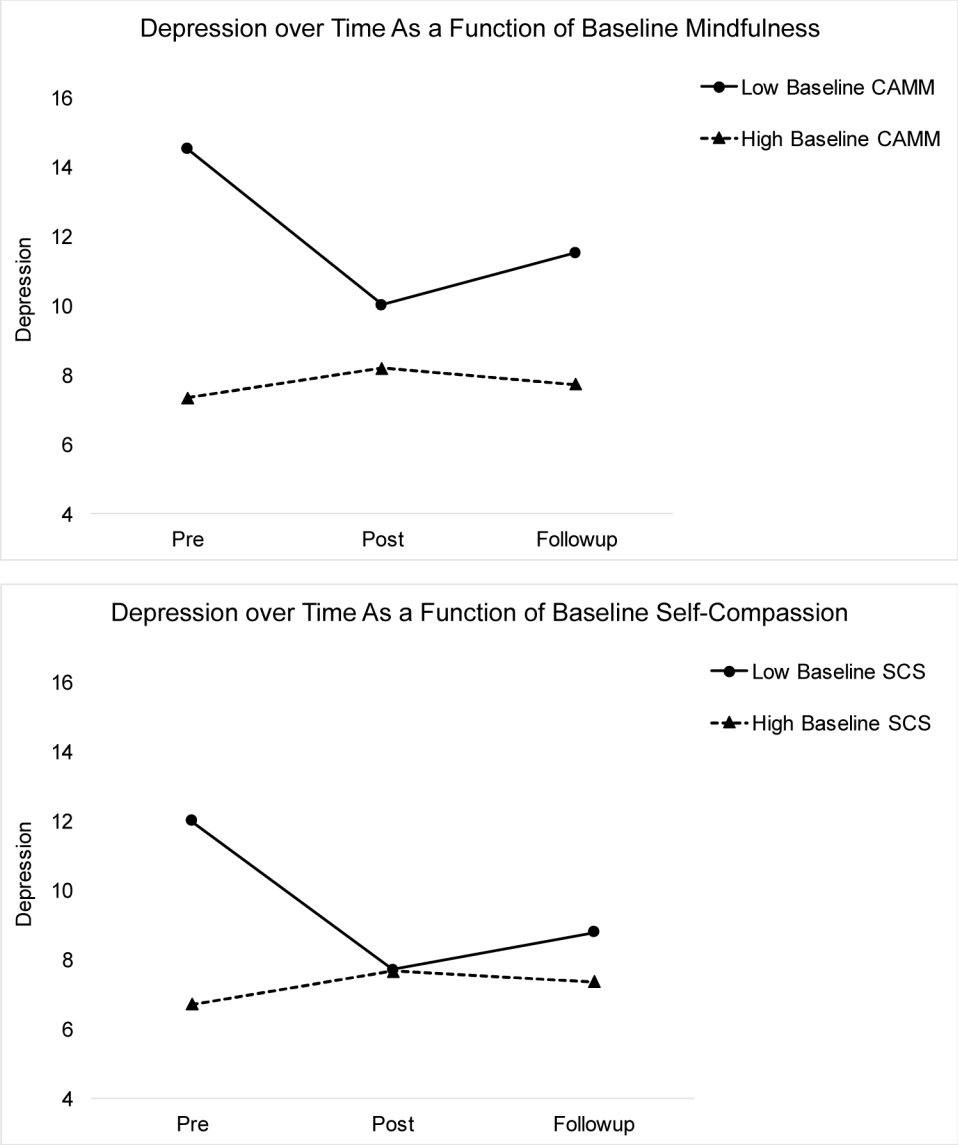

Figure 1.

Influence of baseline mindfulness (top) and baseline self-compassion (bottom) on the trajectory of depression over time. CAMM= Child and Adolescent Mindfulness Measure; SCS=Self-Compassion scale

Table 1

Participants' Demographics (N = 44).

	Frequency (%)	
Sex		
Male	19 (40)	
Female	25 (53)	
Unsure at this time	3 (2)	
Age years		
11–12	20 (43)	
13–14	15 (32)	
15–17	12 (26)	
Highest education level of parents	Mother	Father
Less than high school graduate	0 (0)	1(2)
Some college or college graduate	14 (30)	15 (33)
Master's degree	13 (28)	14 (30)
Doctorate or professional degree	20 (43)	16 (35)
Missing	0 (0)	1 (2)
Race/Ethnicity		
White	43 (92)	
Black	1 (2)	
Other	3 (6)	

Table 2

Descriptive Information and Fixed Main Effects of Time on Outcomes

Outcome Descriptives			Average Changes in Outcome over Time During Study			
Outcome	***M* (*SD*)**	**Observed Range of Outcome**	**Baseline to Post-Treatment γ**	**Cohen's *d* 95% CI [LL, UL]**	**Baseline to Follow-Up γ**	**Cohen's *d* 95% CI [LL, UL]**
Process Outcomes						
Mindfulness	22.60 (7.24)	5–35	**3.00****(0.96)	−0.43 [−0.68, −0.19]	**3.04****(1.05)	−0.36 [−0.68, −0.03]
Self-Compassion	2.94 (0.66)	1.58–4.5	**0.49*****(.083)	−0.71 [−1.02, −0.39]	**0.50*****(.091)	−0.72 [−1.04, −0.40]
Negative Outcomes						
Perceived Stress	2.07 (.69)	.2–3.5	**−.27****(.09)	0.36 [0.10, 0.62]	**−.31****(.10)	0.41 [0.07, 0.74]
Depression	9.26 (6.52)	0–25	−1.55 (0.94)	0.20 [−0.09, 0.50]	−1.16 (1.03)	0.11 [−0.19, 0.41]
Anxiety	43.07 (15.24)	20–80	−2.53 (2.08)	0.16 [−0.14, 0.45]	−1.33 (2.28)	0.11 [−0.23, 0.46]
Positive Outcomes						
Gratitude	5.76 (1.09)	2.25–7	**0.53*****(0.13)	−0.51 [−0.72, −0.29]	**0.40****(0.14)	−0.33 [−0.62, −0.03]
Resilience	3.02 (0.75)	1.16–5	0.02 (0.08)	−0.03 [−0.21, 0.16]	**0.21***(0.08)	−0.25 [−0.47, −0.03]
Curiosity/Exploration	29.41 (7.63)	13–50	**1.67***(0.78)	−0.25 [−0.49, 0]	**3.49*****(0.91)	−0.44 [−0.72, −0.16]

Note.

* $p < .05$,

** $p < .01$,

*** $p < .001$.

CI = Confidence Interval. LL = Lower Limit of Confidence Interval. UL = Upper Limit of Confidence Interval. All models covary the influence of cohort group, age, spring (vs. fall), high school (vs. middle school) status, maternal education, and paternal education.

Table 3

Covariation of Time-Varying Mindfulness and Self-Compassion with Time-Varying Outcomes

	Outcome											
Predictor	**PSS**		**SMFQ**		**STAI**		**GQ**		**BRS**		**CEI**	
	γ	**SE**	**γ**	**SE**	**γ**	**SE**	**γ**	**SE**	**γ**	**SE**	**γ**	**SE**
Intercept	42.71	4.44	29.06	5.59	64.15	13.88	3.04	0.96	2.68	0.72	18.07	4.78
Covariates												
Female	0.18	1.13	−0.15	1.49	6.07	3.77	0.30	0.26	−0.24	0.21	−0.53	2.93
HS	3.19	3.53	0.59	4.65	7.49	11.73	1.23	0.81	−0.91	0.65	0.01	0.007
Age	−1.53	1.14	−0.81	1.51	0.16	3.80	−0.38	0.26	0.16	0.21	0.03	2.68
Mom Education	0.50	0.56	1.22	0.74	0.39	1.88	0.08	0.13	−0.10	0.10	1.17	1.36
Dad Education	−1.12	0.67	−1.22	0.87	0.35	2.20	−0.23	0.15	0.05	0.12	−1.18	1.57
Effects of Time												
Pre-vs-Post	0.45	0.84	1.05	0.93	1.17	2.19	**0.39** *	0.15	−0.13	0.09	−0.08	0.95
Pre-vs-FU	0.06	0.91	1.48	1.00	2.38	2.35	0.26	0.16	0.06	0.10	1.89	0.97
Time-Varying Effects of Mindfulness and Self-Compassion												
CAMM (Person-Centered Deviation)	**−0.34** ***	0.08	**−0.27** **	0.10	**−0.59** *	0.23	0.01	0.02	0.00	0.01	−0.08	0.10
SCS (Person-Centered Deviation)	**−4.09** ***	0.92	**−3.62** **	1.07	−4.02	2.58	0.23	0.18	**0.31** **	0.12	**3.69** **	1.12

Note.

* $p < .05$,

** $p < .01$,

*** $p < .001$.

HS = High School. FU = Follow-up. CAMM = Child and Adolescent Mindfulness Measure. SCS = Self-Compassion Scale. PSS = Perceived Stress Scale, SMFQ = Short Mood and Feelings Questionnaire (depression), STAI = Speilberger State-Trait Anxiety Scale, GQ = Gratitude. BRS = Brief Resilience Scale. CEI = Curiosity and Exploration Inventory.