ABSTRACT
Relatively little research has addressed the positive outcomes of everyday creative achievements. Based on the Honing Theory of Creativity, the present research aimed to analyze the relation between artistic achievements and low emotion dysregulation. The second aim was to examine the mediating and moderating role of self-compassion in this relation, as a factor which has previously been associated both with creativity and low emotion dysregulation. A cross-sectional research was conducted among 168 participants, who were recruited in academic and non-academic settings. The participants mostly presented everyday levels of creative achievements. They completed questionnaires about their creative achievements in the arts, along with their difficulties in emotion regulation and their levels of self-compassion. The results showed that artistic achievements were negatively associated with emotion dysregulation, and positively associated with self-compassion. Mediation analyses showed that the significant relation between high artistic achievements and low emotion dysregulation was mediated by self-compassion. Moderation analyses indicated that individuals with the lowest-to-moderate levels of self-compassion reported the highest associations between high artistic achievements and low emotion dysregulation. No significant moderation effect was found for individuals with high levels of self-compassion. Overall, this research found positive associations between artistic creativity and indices of positive psychological functioning.

What do we know about the positive effects of creativity? What do we know about how and when creativity relates to other factors associated with positive mental health? According to Forgear and Kaufman’s (2016) systematic review, more research is needed in this domain to answer these questions. Their results indicated that about 70% of relevant articles had studied innovation, imagination, and creativity as outcome variables, about 20% had studied these variables as predictors, while the other studies had treated them as neither outcome nor predictor variables (e.g., Forgear & Kaufman, 2016; see Table 2). Hence, most of the prior research studies reported results on the factors which may lead to higher creative thinking; few expanded the knowledge in the field about the positive effects of creativity. The present study therefore aimed to measure the extent to which everyday creative achievements in the arts are related to two factors associated with good psychological functioning: low levels of emotion dysregulation, and high levels of self-compassion (e.g., Fancourt, Garnett, Spiro, West, & Müllensiefen, 2019; Neff, Rude, & Kirkpatrick, 2007; Vettese, Dyer, Li, & Wekerle, 2011).

Research conducted in art therapy has conveyed the idea that creative endeavors may have positive effects in terms of mental health and well-being promotion (e.g., Darewych & Riedel Bowers, 2018; Potash, Hy Ho, Chan, Lu Wang, & Cheng, 2014). Previous work has provided evidence about how creativity may exert positive effects on the mind. The implementation of visual arts in clinical settings, for instance, has been shown to relieve negative symptoms among patients with schizophrenia diagnoses (Richardson, Jones, Evans, Stevens, & Rowe, 2007). It has also been suggested that writing poetry can be helpful for individuals by encouraging them to reprocess and express painful emotions (Carroll, 2005). Similarly, writing about emotional experiences appears to be effective in improving physical and mental health (Pennebaker, 1997). More recent evidence has shown that everyday creativity can contribute to higher levels of positive emotions and flourishing (Conner, Deyoung, & Silvia, 2016).

Researchers have proposed multiple definitions of creativity (e.g., Amabile, 1982; Runco & Jaeger, 2012). Among them, one working definition refers to “an interaction among aptitude, process, and environment by which an individual or group produces a perceptible
product that is both novel and useful as defined within a social context” (Plucker, Beghetto, & Dow, 2004, p. 90 [italics added]). Based on this definition, the four-c model of creativity structures creativity along an ordered continuum that enables it to be studied on four different levels: mini-c, little-c, Pro-c, and Big-C (Kaufman & Beghetto, 2009). Here, mini-c (for mini-creativity) refers to a level of creativity inherent to the learning process, and to the personal insights individuals gain from constructing new knowledge. Little-c refers to individuals who engage in everyday creative actions; for example, people who take painting classes in layperson associations, act in school plays, or even just make up jokes to amuse their relatives. The third level of the model, Pro-c, relates to the professional expertise of creativity among individuals who are professional creators, such as nationally recognized head chefs, dance choreographers, or associate professors, but who have not yet or may never reached full creative eminence. The fourth, and last, level of the model, Big-C, refers to creative geniuses who have made a widely recognized, distinguished, and long-standing contribution in their field; examples might include Albert Einstein, Virginia Woolf, or Friedrich Nietzsche, to name but a few.

Creative achievements can be defined as the creative productions that individuals have produced in the course of their lifetime. They can be reliably measured through self-reported questionnaires (Carson, Peterson, & Higgins, 2005; Silvia, Wigert, Reiter-Palmon, & Kaufman, 2012). Creative achievements may refer to the creation of a musical piece, a published written work, or a piece of dance choreography which has been recognized in a local publication (Carson et al., 2005). Usually, the scores on creative achievements questionnaires appear extremely skewed, as the respondents surveyed through these questionnaires are asked to report on creative achievements that are inherently discriminant from one individual to the other (e.g., Carson et al., 2005; Diedrich et al., 2018). This is the case because most individuals tend to meet only a few of the achievements listed, thus ending up with low scores. Few respondents are likely to have achieved highly creative productions, and thus to report high scores in their questionnaire (e.g., von Stumm, Chung, & Furnham, 2011).

**Creativity and emotion dysregulation: the honing theory of creativity**

A recent creativity theory, the Honing Theory (HT), posits that individuals create scientific or artistic outputs in order to regulate their inner balance of emotion-arousal states and to reduce their psychological entropy (Gabora, 2017). Psychological entropy is defined as "the amount of disorder and uncertainty within a system, as well as the efficiency with which that system can translate energy into useful work” (Hirsh, Mar, & Peterson, 2012, p. 12) [italics added]). A discussion about psychological entropy is beyond the scope of this article but interested readers may find parallels in Csikszentmihalyi’s work on optimal experience, and his theory of flow (Csikszentmihalyi, 1990). In short, the theory of flow proposes that deep engagement in meaningful activities, such as forms of artistic creativity, that optimally match the individual’s level of competency, fosters a reduction in “psychic entropy” and therefore relieves negative emotions and provides fulfillment (e.g., Doyle, 2017).

The Honing Theory of Creativity appears to be an interesting framework with which to study the likely benefits of creativity, in that it proposes a way to understand how creativity may exert positive effects on individuals’ mental health. The Honing Theory suggests that when individuals are involved in the scientific and artistic domains, their peers’ novel outputs produce gaps, uncertainties, or inconsistencies in their own worldview. These novel products foster psychological entropy in individuals. To reduce that entropy, scientists and artists engage in the process of creating their own novel outputs, in order to restructure their worldview and reduce the negative emotions associated with the states of entropy previously generated by their peers (Gabora, 2017, p. 29). In other words, according to the Honing Theory, creative thinking fosters cognitive restructuring through the production of creative outputs.

This theory can be further approached at two different levels: an intra-personal level and an inter-personal level. At the intra-personal level, individuals modify their cognitive structure through immersion in the creative process and production. In that sense, the Honing Theory predicts that a painter’s new artistic creation has the potential to foster new insights and modify their own worldview (e.g., Beghetto & Kaufman, 2007). This aspect of the theory is said to be intrapersonal because the insight that the creator acquires does not necessarily influence their peers’ worldview. This intrapersonal aspect of the theory reduces a single individual’s entropy states, but does not generate entropy in others unless the output is publicly shared. The Honing Theory predicts that, when disseminated, creative productions have the potential to foster cognitive restructuring from groups of individuals onwards to broader cultures. This reflects the inter-personal level of this theory. For instance, scientists can share deep insights and ideas with their peers which might revolutionize the field or modify the general worldview that is shared in a cultural context (e.g.,
Copernicus and Galileo’s model acted as a spark to change how individuals perceived themselves in the universe). In that sense, the intrapersonal level of the Honing Theory appears to be a necessary precursor of the inter-personal level: the product first helps to reduce the individual’s entropy, before its dissemination to an audience can modify other people’s worldview. The present research focuses on the *intra-*personal level of this theory, as applied to the arts.

Both at the inter- and intra-levels of the Honing Theory of Creativity, adaptation and restructuring of the artist’s worldview occur through the creation of novel outputs. As was indicated above, the theory claims that these creative outputs ultimately aim to reduce psychological entropy whenever the individual’s mind detects it through feelings of uncertainty. The Honing Theory states that this process of restructuring of entropic material occurs when considering the creative task in new contexts, until the entropic, emotion-arial state dissipates. For instance, the intra-personal level of this theory predicts that writers will revise their drafted work until they feel that their “product reaches an acceptable form” (Gabora, 2017, p. 12). The fact that writers eventually choose to stop revising their drafts indicates that their inner entropy has diminished. In that sense, the Honing Theory suggests that artists can reduce their inner state of uncertainty, along with its associated negative emotions and arousal. This is a mechanism occur as they perceive how their ideas could potentially be actualized into a tangible product (Gabora, 2017, p. 48). For instance, when considering the process of writing a drama plot, the Honing Theory posits that, throughout the creative process of writing, the artists engage in the task and explore multiple perspectives to advance toward the finalization of their product. The theory predicts that the creators gain an internal insight that their entropy has reached an acceptable level, which will then materialize in the final drama plot. According to this view, the production of tangible creative outputs indicates that artists have attained a state of arousal- provoking entropy that was sufficiently low for them to perceive their product as satisfactory.

In the present research, we were most specifically interested in the difficult emotions which may reflect arousal-related entropy levels. Early research has postulated that abnormal levels of emotional arousal, such as those found in psychological entropy, are associated with emotion dysregulation or difficulties in appropriately coping with emotions (Gross, 1998). Conversely, researchers have suggested creativity as a useful way to regulate difficult emotions. Studies have shown that several aspects of creativity are positively correlated with emotion regulation (Caddy, Crawford, & Page, 2012; Hoffmann & Russ, 2012). More recent work has reported that individuals who display higher forms of verbal creativity tend to use maladaptive cognitive emotion regulation strategies less frequently (Kopcsó & Láng, 2017). This data indicates some support for the Honing Theory of Creativity in showing that creative thinking is associated with a better ability to regulate negative emotions.

However, these previous studies mostly focused on the associations between divergent thinking and emotion regulation or emotion regulation strategies. Because the Honing Theory is fundamentally based on creative productions, these previous studies provide little empirical support for it, notably at its intra-personal level. It remains unclear whether artistic creative achievements such as visual arts, music, dance, creative writing, humor, theater/drama, and film (Carson et al., 2005)¹ can be said to correlate with low emotion dysregulation as a proxy for psychological entropy.

### Self-compassion as a potential mediator

To better understand how creative productions may be correlated with mental health through lower emotion dysregulation, and to test the validity of the Honing Theory, we aimed to analyze the mediating role of self-compassion. Self-compassion has been found to be positively correlated with creativity, and negatively correlated with emotion dysregulation (Diedrich, Grant, Hofmann, Hiller, & Berking, 2014; Vettese et al., 2011; Zabelina & Robinson, 2010). It is defined as an openness to one’s own suffering and feelings of caring and kindness toward oneself; taking an understanding, non-judgmental attitude toward one’s inadequacies and failures; and recognizing that one’s experience is part of a shared human experience (Neff, 2003a).

Although relatively little is known about the plausible link between creativity and self-compassion, recent research in art-therapy has proposed a model which could be used to tie together the creative process and self-compassion. The aim of Williams’ model was to propose how creativity and self-compassion may together reduce both clients’ self-criticism and their emotion dysregulation (Williams, 2018). This ‘ONEBird model’ proposes that engaging with art materials can reduce emotion dysregulation in that creative activities could promote “greater ease in expression and regulation of difficult emotions such as unworthiness, self-criticism and shame” (Williams, 2018, p. 30). More specifically, this model posits that individuals can engage in creative artmaking as a way to contrast their experiences of self-criticism with self-kindness. In that sense, Williams (2018, p. 28, Table 1) provides some examples...
of how this materializes concretely in clinical contexts. The table presented in this article summarizes how clients can engage in art as they “decorate a small stone with words/images as a reminder to treat the self like a good friend who is suffering, and to place the stone in the home as a visible cue for self-kindness.” Another example refers to “photograph[ing] their artworks for use on their phone screens, as an on-the-go reminder of self-acceptance.”

So far, only one published study has empirically documented an association between creativity and self-compassion. Zabelina and Robinson (2010) experimental design found positive associations between self-compassion and creative originality. More specifically, it showed that an experimental induction of self-compassion facilitated creative originality among highly self-judgmental individuals, but not among other participants. In that sense, experimental inductions of self-compassion only showed an interaction effect, with general tendencies toward critical self-judgment. Yet, the effect sizes of associations of creative thinking and low critical self-judgment were not reported in the article. Furthermore, Zabelina and Robinson (2010) study did relate more specifically to divergent thinking and not creative outputs as associated with self-compassion. Hence, the present study also contributes to advancing understanding of other aspects in this field.

Self-compassion as a potential moderator

Artistic achievements are often rooted in having one’s creative production socially judged (Carson et al., 2005). Social judgment can induce emotions that are difficult to manage for those who conceive creativity and creative production as part of their self-concept (that is, how the person usually perceives themselves; Karwowski & Lebuda, 2017; Shavelson, Hubner, & Stanton, 1976, p. 411), but who also have low self-compassion. Low self-compassionate individuals may be sensitive to external sources of feedback, due to an unclear self-concept, as has previously been suggested by Neff and Vonk (2009, p. 28; see also Leary, Tate, Adams, Batts Allen, Hancock, 2007). A lack of clarity in an individual’s self-concept has been associated with uncertainty, instability, and inconsistency in that self-concept (Campbell et al., 1996). Such uncertainty about one’s self-concept can translate as psychological entropy (Hirsh et al., 2012, p. 12). Social validation, on the other hand, is likely to help to reduce uncertainty among art creators who lack clarity or consistency in their creative self-concept (e.g., Schlenker & Leary, 1982). The feelings of doubt and uncertainty caused by an unclear and unstable self-concept may lead some individuals to experience emotions which are more difficult to regulate (e.g., Lear & Pepper, 2016; Ritchie, Sedikides, Wildschut, Arndt, & Gidron, 2011).

Conversely, individuals with high self-compassion may dismiss or ignore criticism and negative feedback because they feel more certain that their self-concept as a whole is not threatened by such social evaluation. This view has recently been supported by Ewert, Gaube, and Geisler (2018), who showed that highly self-compassionate individuals tend to perceive less stress and less shame immediately after having their performance evaluated. In addition, the authors reported that these individuals tend to reframe social threats more positively. Other recent work, by Long and Neff (2018), supports this view in finding an association between high levels of self-compassion and a lower fear of evaluation. Hence, overall, the past research suggests that self-compassion may act as a buffer against social evaluation and, in that regard, against the difficult emotions associated to social feedback. As such, we may expect highly self-compassionate artists to have a weaker association with emotion dysregulation.

Based on the above literature, this study hypothesized that creative achievements in the arts would be negatively associated with emotion dysregulation, as this would be consistent with the Honing Theory of Creativity (Gabara, 2017). It further hypothesized that self-compassion would mediate the relationship between high artistic achievements and low emotion dysregulation, reflecting the model proposed by Williams (2018). Furthermore, a moderation effect of self-compassion was predicted, where the participants with the lowest self-compassion would report the highest associations between high artistic achievements and low emotion dysregulation. This moderation hypothesis aligns with the literature from the perspective that a lack of self-compassion connects with sensitivity to social evaluation or the lack of a clear or consistent self-concept.

Materials and methods

Participants

The present sample consisted of 168 participants (137 females and 31 males). Participants were recruited in France from music therapy classes (n = 51), undergraduate psychology classes (n = 24), art-therapy associations (n = 48), and lay-person arts associations (n = 45). The mean age was 35.10 (SD = 13.82), with actual ages ranging from 18 to 68. Ten participants did not report
their age but were nonetheless included in the analyses. Most of the participants were students. As many participants as possible were recruited between January 2018 and the end of the academic year in June 2018. Participants were recruited via personal contact in universities classes. In the case of the lay-person art associations, participants were recruited from an advertisement displayed on the information wall of their art associations. Individuals were recruited from four different types of settings in order to collect data from a population reaching beyond academic settings. Questionnaires were distributed in paper format after participants individually contacted the first investigator and signed the informed consent. Participants were asked to complete the questionnaire at home before returning it to the researchers either by hand or via postmail at the university address. Given the count distribution of the predictor (Carson et al., 2005), it was expected that a convenience sample with the highest number of participants possible would increase the likelihood of recruiting people with high creative achievements in the arts.

The study specifically targeted individuals with presumed little-c (everyday) creativity levels (Kaufman & Beghetto, 2009). Although it was likely that some of the participants recruited from the general population might fit into the Pro-c level of creativity, it was presumed that people fitting the little-c level would constitute most of the sample. In fact, some individuals from the lay-person art associations may indeed have displayed expertise in a specific artistic domain. We assumed that those participants would be underrepresented in our sample. More precisely, we assumed that it was unlikely that students (who remained a large part of our sample) recruited from art-therapy, music therapy, or psychology courses would show signs of professional (Pro-c) creativity. Indeed, Pro-c levels refer to expertise in a specific creative domain as professional creators (Kaufman & Beghetto, 2009). It may be plausible (and is certainly not impossible) that some students could already have become professional creators while still engaged in their studies. However, we presumed that music therapy students, art-therapy students, psychology students, and individuals engaged in lay-person art associations would not have reached a state of being publicly recognized as professional creators (see our exploratory analyses, below).

**Ethical considerations**

The participants were informed that this research aimed to explore the link between creativity and emotions, and that all the data gathered were confidential (i.e., that their participation in the study was anonymous, that the data would be stored in a secure laboratory lockbox inside the university, and that access to the data would be strictly limited to the research team). Participants who were interested in taking part in this study gave their approval by signing informed consent forms. All the participants’ questions were answered at all steps of the study. The procedures and materials were approved by the Ethics Committee of the University of Toulouse (n°2018-084). So the full sentences: The procedures and materials were approved by the Ethics Committee of the University of Toulouse (n°2018-084). Participants who chose to participate in the study completed questionnaire booklets composed of the measures described below.

**Measures**

**Creative achievements in the arts**

Participants completed the Creative Achievement Questionnaire (CAQ, Carson et al., 2005). Creative achievements in the arts were the predictive variable of this study. The CAQ is a self-reported measure of creative achievements that assesses those achievements across ten domains of creativity (visual arts, music, dance, architectural design, creative writing, humor, scientific discovery, invention, theater/film, and culinary arts). It was designed to be objective, empirically valid, and easy to administer and score. Carson et al.’s original study established the CAQ’s test-retest reliability ($r = .81, p < .0001$) and internal consistency reliability ($\alpha = .96$) based on a sample of 117 undergraduate students. The discriminant validity results showed no correlation with self-enhancing bias ($r = .05, p = .58$), and a tendency toward correlations with intelligence ($r = 0.14$). The present study only computed the domains of creativity related to the arts as a general score (i.e., as the sum of all the scores for visual arts, music, dance, creative writing, humor, and theater and film)\(^1\). We chose these six domains as together they reflect creative achievements in the arts (see Carson et al., 2005, p. 46). There are six domains in the CAQ in the arts factor, each of which encompass 7 creative achievements. The minimum possible score for the CAQ in the arts questionnaire is zero, and there is virtually no maximum, as some items can record a score that represents the number of times participants have reached the achievement in question.

At the time of the study, no validated French translation of the Creative Achievement Questionnaire was available, so the scale was translated into French following the procedure suggested by Vallerand (1989).
Vallerand suggested five steps to translate an English questionnaire into French: (1) translate the questionnaire into the target language (in our case, French) then back-translate the questionnaire into English; (2) evaluate the quality of the target-language translation and, if needed, make changes to enhance the translation; (3) pretest the translated questionnaire with native speakers of the target language to verify that the items are clear; (4) evaluate the cross-cultural equivalence of items between the original instrument and the translated instrument; and (5) evaluate the construct validity of the translated instrument, for instance in performing original research with the instrument, as was the case with the present study.

**Emotional dysregulation**

Emotion dysregulation, the study’s outcome measure, was assessed using the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004). The DERS is a brief, 36-item, self-reported questionnaire designed to assess multiple aspects of emotion dysregulation: (a) non-acceptance of emotional responses; (b) difficulties engaging in goal-directed behaviors; (c) impulse control difficulties; (d) lack of emotional awareness; and (e) clarity. Participants answer these 36 questions through a 5-point Likert scale of frequency (from 1 = almost never, to 5 = almost always). The minimum possible score was thus 36 and the maximum was 180. The DERS shows good internal consistency (α = .93), test-retest reliability (r = .88), and construct and predictive validity. This study used the French-Canadian version of the DERS (Côté, Gosselin, & Dagenais, 2013). The scores in the original study of the French-Canadian measure showed excellent reliability (α = 0.96).

**Self-compassion**

Self-compassion, as the study’s mediator and moderator variable, was assessed using the Self-Compassion Scale (SCS; Neff, 2003a). The SCS is a 26-item self-reported scale that defines self-compassion as: (a) being kind and understanding toward oneself in instances of pain or failure rather than being harshly self-critical; (b) perceiving one’s experiences as part of the broader human experience rather than seeing them as isolating; and (c) holding painful thoughts and feelings in mindful awareness rather than over-identifying with them. Participants completed the assessment using a 5-point Likert scale (1 = Almost never, to 5 = Almost always). The minimum possible score was thus 26 and the maximum was 130. The Self-Compassion Scale in Neff’s article showed excellent test-retest reliability (r = 0.93).

This study used the French translated version of the Self-Compassion Scale (Kotsou & Leys, 2016).

**Results**

**Descriptive statistics**

Preliminary analyses were conducted to ensure the quality and reliability of the data. The reliability of the participants’ scores for the creative achievements questionnaire in the arts was addressed. A test using statistical analyses software (SPSS v.24; IBM Corp, 2016) indicated that the removal of item 7 in theater/film would improve the internal consistency of the overall CAQ in the arts scores from poor (α = .57) to acceptable (α = .78). Thus, we removed this item from all the analyses reported below. Further, the internal reliability of scores on difficulties in emotion regulation scale was excellent (α = .93), and the internal reliability for participants’ scores on the self-compassion scale was also excellent (α = .92).

Table 1 presents a division of the sample by age group. We addressed the null hypothesis about differences in domain scores on the CAQ in the arts between recruitment settings (i.e., music therapy classes, art-therapy association, lay-person association, or psychology classes). Indeed, students in music therapy classes or art-therapy would have been likely to report higher creative achievements in music or visual arts, respectively, compared with individuals in psychology classes. To test this hypothesis, we computed a one-way ANOVA with recruitment setting as the grouping variable and the domain on the CAQ in the arts as dependent variables (i.e., visual art, music, dance, creative writing, humor, and film/theater, respectively). Given the uneven number of observations in each group (e.g., more than twice as many participants were recruited in the music therapy group as students recruited from undergraduate psychology classes), we assumed an inequality of variance using Welch’s F statistics. Note that sensitivity analyses assuming equal variance did not change the following results. The results showed no

| Table 1. Division of the sample by age group. |
|---------------------------------------------|
| Variables                                  | 18–30 (n = 78) | 31–50 (n = 52) | 51+ (n = 28) |
| CAQ_Arts                                   | M | SD  | M | SD  | M | SD  |
| DERS                                       | 89.1 | 21.7 | 78.4 | 18.6 | 69.5 | 12.2 |
| SCS                                        | 2.92 | 0.615 | 3.32 | 0.736 | 3.65 | 0.45 |
| Recruitment place                          | n | %  | n | %  | n | %  |
| Music therapy                              | 38 | 48.72 | 10 | 19.23 | 2 | 7.14 |
| Psychology                                 | 13 | 16.66 | 5 | 9.61 | 2 | 7.14 |
| Art-therapy associations                    | 9 | 11.54 | 19 | 36.54 | 16 | 57.14 |
| Lay-person Arts associations               | 18 | 23.08 | 18 | 34.61 | 8 | 28.57 |
difference between groups for domains on the CAQ in the arts (all p’s above 0.164), with the exception of scores on visual art (F(3, 65.7) = 8.67, p < .001), and music (F(3; 78.1) = 4.43, p = .006).

Post-hoc analyses using the Games–Howell test for unequal variances showed that participants in the visual arts reported significantly higher mean scores in visual art domain scores compared with participants from music therapy classes (t(75) = 5.02, Mdiff = 6.59, p < .001) and participants from lay-person art associations (t (73.6) = 4.564, Mdiff = 5.958, p < .001). There were no statistically significant differences in scores on visual art domains between participants from art-therapy and undergraduate psychology students (t(33.5) = 2.241, Mdiff = 5.17, p = .133). Regarding scores in the music domain, participants from music therapy settings reported significantly higher mean scores on the CAQ compared with participants from art-therapy settings (t (89.2) = 3.36, Mdiff = 4.09, p = .006), psychology courses (t(63.8) = 2.952, Mdiff = 3.89, p = .022), and lay-person art associations (t(95.9) = 3.078, Mdiff = 4.053, p = .014).

The results of these one-way ANOVA analyses were corroborated by an exploration of the minimum and maximum scores across the domains: the participants mostly reported cumulative creative achievements in the visual arts (M = 4, SD = 6.92, Mdn = 1) and music domains (M = 3.39, SD = 6.13, Mdn = 1). The domain they reported the least creative achievement in was humor (M = 0.952, SD = 1.75, Mdn = 1). Participants reported similar scores across the domains of dance (M = 1.47, SD = 4.28, Mdn = 0), creative writing (M = 1.43, SD = 3.29, Mdn = 1), and film/theater (M = 1.46, SD = 3.88, Mdn = 0). According to the face validity of the Creative Achievements Questionnaire in the arts (Carson et al., 2005), scores between 1 and 3 tend to represent lay-person creative achievements. We interpreted the present results as suggesting that most of the sample fitted the little-c level of creativity, representing everyday levels of creative achievements (Kaufman & Beghetto, 2009).

Table 2 further presents a comparison of the characteristics of the participants as well as information on central tendencies (i.e., the mean and the mode). The normality of the three main variables (i.e., creative achievements in the arts, emotion dysregulation, and self-compassion) was assessed in line with Carson et al. (2005), and the distribution of the CAQ in the arts appeared to be highly skewed, with a skewness of 9.42 (SE = 0.19) and a kurtosis of 104.63 (SE = 0.37).

Besides the Creative Achievement Questionnaire in the arts, none of the standardized variables had skewness or kurtosis levels approaching one, and visual inspections of the resulting scatterplots and histograms suggested a normal distribution. Following the statistical plan to conduct path-analyses, the plotting of residuals of emotion dysregulation against creative achievements in the arts indicated equal variance. A one-way ANOVA indicated no significant difference between genders in scores on the creative achievements in the arts questionnaire (F(1, 166) = 0.207, p = .650), scores on the self-compassion questionnaire (F(1; 136) = 0.007, p = .934), or scores on the emotion dysregulation questionnaire (F (1; 166) = 0.186, p = .667). This information was important given that the number of females (n = 137) in this sample was 4.56 times greater than the number of males (n = 31). Similar analyses failed to reveal any significant difference that could be explained by education or scores on the Creative Achievements Questionnaire in the arts (F(7; 160) = 0.990, p = .441), self-compassion (F(7; 160) = 1.544, p = .156), or emotion dysregulation (F(7; 160) = 0.662, p = .704).

### Correlation analyses

Table 3 presents the correlations between creative achievements in the arts, emotion dysregulation, and self-compassion, and their respective subscales. For descriptive purposes, this table provides additional information to the reader about the correlations between the CAQ domains in the arts questionnaire and the subscales of the self-compassion and emotion dysregulation questionnaires. In line with the study’s hypotheses, creative achievements in the arts were found to be negatively and weakly correlated with emotion dysregulation (r = −.144, p = .007). Artistic achievements were also positively and weakly correlated with self-compassion (r = .121, p = .021). Higher levels of self-compassion were significantly correlated with lower levels of emotion dysregulation (r = −.717, p < .001). More

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| Table 2. Participants’ characteristics and central tendency information. |
|-----------------------------------------------|
|                                    | Female (n = 137) | Male (n = 31) | Total (n = 168) |
| Age (years)           | 34.45 (13.90)   | 14.16 (13.90) | 35.10 (13.83)   |
| Educational attainment | 15.00           | 15.00         | 15.00           |
| Creative achievements | 16.62 (9.23)   | 82.10 (20.78) | 160.72 (20.78)  |
| Emotion dysregulation | 3.17 (0.70)    | 3.22 (0.72)   | 3.18 (0.71)     |
| Self-compassion       | 3.11            | 3.34          | 3.14            |

Note. M = Mean, SD = Standard-deviation. For Age, 10 data points are missing.
specifically, visual arts were the only domain found to be significantly correlated with the overall dimension of emotion dysregulation, showing a weak and negative association ($r = - .140, p = .014$) and, notably, with lack of emotional awareness ($r = -.174, p = .003$). Visual arts showed a positive association with self-compassion ($r = .153, p = .014$), as well as specifically with self-kindness ($r = .122, p = .037$), common humanity ($r = .192, p = .001$), and mindfulness ($r = .199, p < .001$). Further correlational analyses between subdomain creative achievements in the arts showed that music was not significantly associated with the general construct of emotion dysregulation ($r = .060, p = .293$), but that it was significantly and positively associated with one of its subscales: difficulty in engaging in goal-directed behaviors ($r = .129, p = .028$). Finally, dance was not significantly associated with the general construct of self-compassion ($r = .085, p = .155$), but was positively associated with the self-kindness subscale ($r = .149, p = .015$). Further close-to-significant correlations of artistic creative achievements domains with emotion dysregulation and self-compassion are reported in Table 3.

**Mediation analyses**

Mediation analyses were computed to test the hypothesis that creative achievements would be positively associated with self-compassion, which in turn would be negatively associated with low emotion dysregulation. Creative achievement in the arts was thus computed as the predicting variable, with self-compassion as the mediator and emotion dysregulation as the outcome variable. This mediation model was computed in a PROCESS (Hayes, 2012). Figure 1 displays a visual representation of the mediation model, in which the values presented are standardized values. The results showed that the overall test of the mediation model significantly explained about 51.6% of the variance in emotion dysregulation scores ($F(2, 165) = 87.885, p < .001, R^2 = .516$). More precisely, artistic achievements significantly and positively predicted self-compassion scores ($\beta = 0.184, SE = .076, t(165) = 2.409, p = .017, 95\% CI [.033, .334]$). In turn, self-compassion significantly and negatively predicted emotion dysregulation scores ($\beta = -.711, SE = .055, t(165) = -12.906, p < .001, 95\% CI [-.820, -.602]$). Concerning the total $c$ path of the mediation model, artistic achievements significantly and negatively predicted the variance in emotion dysregulation scores ($\beta = -.164, SE = .076, t(165) = -2.146, p = .033, 95\% CI [-.315, -.132]$). For the direct $c'$ path of the mediation model, after accounting for self-compassion covariance in the mediation model, artistic achievements did not significantly predict emotion dysregulation ($\beta = -.034, SE = .055, t(165) = -.609, p = .543, 95\% CI [-.142, .0752]$). Overall, these analyses indicated that self-compassion mediated the relationship between high artistic achievements and low emotion dysregulation.

**Moderation analyses**

Self-compassion was tested as a moderator in the relation between creative achievements in the arts and emotion dysregulation. Given that the model contained interaction terms, and in order to avoid multicollinearity issues, the data were mean centered prior to computing them. The mediation analyses were conducted using PROCESS (Hayes, 2012).

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**Table 3. Zero-order correlations among creative achievements in the Arts, emotion dysregulation and self-compassion.**

| Variable | CAQ in the Arts | Visual Arts | Music | Dance | Creative Writing | Humor | Theater/Film |
|----------|----------------|-------------|-------|-------|------------------|-------|--------------|
| CAQ in the Arts | - | - | - | - | - | - | - |
| Visual Arts | .393*** | - | - | - | - | - | - |
| Music | .288*** | .171** | - | - | - | - | - |
| Dance | .303*** | .021 | .136* | - | - | - | - |
| Creative Writing | .270*** | .077 | .060 | -.004 | - | - | - |
| Humor | .283*** | .060 | -.014 | .135† | - | .204*** | - |
| Theater/Film | .362*** | -.058 | .139* | -.142* | -.269*** | .300*** | - |
| Emotion Dysregulation | -.144* | -.140* | .060 | -.050 | -.078 | -.088 | -.095 |
| Non-acceptance | -.040 | -.043 | .68 | -.019 | -.117 † | -.020 | -.026 |
| Goals | -.102 † | -.109 † | .129* | -.060 | -.014 | -.121 † | -.070 |
| Impulse | -.116* | -.094 | .055 | -.041 | -.030 | -.067 | -.090 |
| Awareness | -.147** | -.174** | -.031 | -.064 | -.111 † | .024 | -.078 |
| Strategies | -.096 † | -.056 | .017 | -.033 | .007 | -.077 | -.048 |
| Clarity | -.112* | -.174* | -.050 | -.033 | -.032 | -.046 | -.111 † |
| Self-Compassion | .121* | .153** | -.003 | .085 | -.044 | .062 | .092 |
| Self-Kindness | .163** | .199*** | .017 | .149* | -.020 | .062 | .120 † |
| Self-judgment | .062 | .074 | .005 | .093 | -.010 | -.025 | .103 † |
| Common Humanity | .059 | .122* | -.089 | .093 | -.079 | .104 † | .046 |
| Isolation | .021 | .057 | -.023 | -.047 | -.101 † | -.001 | .054 |
| Mindfulness | .151** | .192** | -.023 | .090 | .035 | .059 | .058 |
| Over-identification | .088 | .087 | -.002 | .016 | -.047 | .039 | .039 |

Note. CAQ in the Arts = Creative Achievement Questionnaire in the Arts. Non-acceptance = Non-acceptance of emotional responses. Goals = Difficulty engaging in Goal-directed behavior. Impulse = Impulse control difficulties. Awareness = Lack of emotional awareness. Strategies = Limited access to emotion regulation strategies. Clarity = Lack of emotional clarity. Kendall’s tau-b is presented for associations with CAQ in the arts and its subscales because scores on this scale did not follow a normal distribution (Carson et al., 2005). Pearson’s $r$ is presented for the other measures as they followed a normal distribution. Significant effects are presented in bold ($p < .05$, $p < .01**$, $p < .001***$). Statistically close-to-significant correlations are reported at $p < .10$ †.
to conducting the analyses. The results indicated a significant moderation effect of self-compassion in the relation between creative achievements in the arts and emotion dysregulation. The moderation model explained 53% of the variance in emotion dysregulation scores ($R^2 = 0.53$, $F(6, 161) = 30.336$, $p < .001$). More precisely, creative achievements in the arts negatively predicted scores in emotion dysregulation ($\beta = -0.304$, $SE = .146$, $t(164) = -2.090$, $p = .0381$, 95% CI $[-.592, -0.017]$), and self-compassion negatively predicted emotion dysregulation ($\beta = -0.690$, $SE = .056$, $t(164) = -12.254$, $p < .001$, 95% CI $[-.797, -.576]$). The interaction terms between creative achievements in the arts and self-compassion were significant, and explained an increase of 1% in the variance in emotion dysregulation scores ($\Delta R^2 = 0.010$, $F(1, 164) = 4.024$, $p = .046$).

Figure 2 presents a visual representation of the moderation effect as a function of levels of self-compassion. The standardized regression coefficients of creative achievements in the arts varied depending on three levels of self-compassion scores. More specifically, for low self-compassion scores ($-1$ SD), high creative achievements in the arts significantly predicted a decrease of 0.5099 standard-deviation units in emotion dysregulation scores.

Figure 1. Visual representation of the mediation model.

Figure 2. A visual representation of the moderation analyses.
(β = −0.5099, SE = .2436, t(164) = −2.093, p = .038, 95% CI [−.991, −.0288]). For mean scores of self-compassion scores, high creative achievements in the arts significantly predicted a decrease of 0.316 standard-deviation units in emotion dysregulation (β = −0.304, SE = .146, t(164) = −2.090, p = .0381, 95% CI [−.592, −.0168]). For high self-compassion scores (+1 SD), creative achievements in the arts did not significantly predict variance in emotion dysregulation (β = −0.099, SE = .064, t(164) = −1.557, p = .121, 95% CI [−.225, .0266]). An examination of the Johnson-Neyman regions of significance indicated that under the standardized cutoff of 0.6059 of self-compassion scores, 71.43% of the scores for creative achievements in the arts significantly predicted lower scores in emotion dysregulation. Overall, this moderation model therefore indicated that artistic achievements significantly and negatively predicted emotion dysregulation, and that self-compassion moderated this relationship. This data therefore supported the study’s third hypothesis.

**Discussion**

The goal of this study was to document how everyday artistic achievements may relate to positive mental health indices of low emotion dysregulation and high self-compassion. The hypothesis presented in this paper is based on the Honing Theory of Creativity, which proposes that individuals create artistic outputs in order to reduce their psychological entropy and regulate their inner emotion-arousal states associated with uncertainty (Gabora, 2017). In line with this, we tested the hypothesis that high artistic achievements would be associated with low emotion dysregulation scores. Furthermore, based on a previous art-therapy model which posited that artistic creativity may foster reduced emotion dysregulation through self-compassion (Williams, 2018), the mediating implication of self-compassion in the relationship between artistic achievements and emotion dysregulation was tested. Along with this, a moderation hypothesis was tested to investigate the extent to which people with the lowest levels of self-compassion (who are presumably more affected by social evaluation and recognition) would display the highest associations between high artistic achievements and low emotion dysregulation.

This research reports three major findings. First, high artistic achievements were correlated with low emotion dysregulation, which confirmed past results as suggested by the first hypothesis. Second, the analyses revealed that this correlation between high artistic achievements and low emotion dysregulation was mediated by self-compassion. This supported the second hypothesis, in that the study found that artistic achievements were weakly and positively associated with self-compassion – which, in turn, was strongly and negatively associated with emotion dysregulation scores. The third finding was also in line with the suggested moderating effect of self-compassion. Indeed, the results showed that participants with the lowest levels of self-compassion reported the highest association between high artistic achievements and low emotion dysregulation. The strength of this association was moderate. Among averagely self-compassionate art creators, the analyses showed a significant moderate, though weaker, negative association between high artistic achievements and low emotion dysregulation. It was also observed that artistic achievements were not significantly associated with emotion dysregulation among people with high levels of self-compassion. Accordingly, the present results suggest that everyday art achievers who present low or even moderate levels of self-compassion may report lower emotion dysregulation as their creative achievements increase.

Overall, these findings, which describe an association between high artistic achievements and low emotion dysregulation, are in line with those of previous research, which have shown that adults engaged in creative activities reported reduced depression, anxiety and stress symptoms (Caddy et al., 2012). The data presented in this study also extends the recent research showing that some higher forms of verbal creativity can be associated with a less frequent use of maladaptive cognitive emotion regulation strategies (Kopcsó & Láng, 2017). Complementing these past findings, the present research also showed that the subdomains of visual arts are significantly and negatively correlated with emotion dysregulation.

The correlational findings on the positive relationship between artistic achievements and self-compassion in the present study are in line with previous results presented by Zabelina and Robinson (2010), who reported positive associations between self-compassion and creative originality. Their study suggested that an experimental induction of self-compassion facilitated creative originality among highly self-judgmental individuals. The present results complement this prior study by documenting the strength of the associations between everyday artistic achievements and self-compassion. These correlations were positive, but weak. Furthermore, the results in the present paper show that high creative achievements in the arts were associated with low emotion dysregulation levels among low and moderately self-compassionate individuals, but not among highly self-compassionate people. All in all, these results connect to The Honing Theory of
Compassion, which predicts that people involved in the arts reduce their uncertainty and its associated emotion-arousal states through the production of creative outputs (Gabora, 2017).

Previous work has outlined the importance of the arts in enhancing the meaning-making of individuals, enriching their experience, and contributing to their flourishing and overall well-being (Conner et al., 2016; Lomas, 2016; Richards, 2007). In that sense, the present study contributes to this body of literature in proposing that everyday creative accomplishments in the arts (e.g., composing an original piece of music, choreographing an original dance number, or writing jokes for other people) may reduce levels of emotion dysregulation and raise self-compassion. This data adds to the earliest view that artistic creativity may constitute an effective way by which to regulate difficult emotions (Carroll, 2005; Pennebaker, 1997).

Furthermore, the present study highlights that self-compassion may act as a significant mediator in explaining how high artistic achievements correlate with low emotion dysregulation. From that perspective, the present results support the claims of Williams (2018)’s model, that creative activities in the arts – and more precisely in art therapy – may be associated with self-compassion. Williams proposed that in developing a self-compassionate attitude through everyday artistic productions, individuals may cope better with difficult emotions and self-criticism. The present mediation analyses align with this claim and further support the idea that artistic creativity might foster self-compassion and be associated with reduced emotion dysregulation.

Allowing a better understanding of when these associations may occur, the present study’s moderation analyses indicated that participants with the lowest levels of self-compassion reported the highest correlations between artistic achievements and low emotion dysregulation. Among moderately self-compassionate artists creators, a significant, though weaker, correlation was found between high artistic achievements and low emotion dysregulation, although artistic achievements were not associated with emotion dysregulation among people with high levels of self-compassion. Accordingly, the results show that artistic achievers who present low or even moderate levels of self-compassion may tend to report lower emotion dysregulation as their creative achievements increase. These moderation analyses also indicated that individuals with the highest levels of self-compassion did not report significant associations between their artistic achievements and emotion dysregulation.

Overall, these results may to some extent be explained by social recognition and social validation. As has been discussed above, Carson et al. (2005) designed their Creative Achievements Questionnaire based on socially recognized productions, notably in the arts. In their earlier view, Schlenker and Leary (1982, p. 644) argued that people who attribute a high value to social recognition and validation may seek to present how well they have performed or achieved to others. People tend to be specifically motivated to present themselves favorably when reporting something central to their self-concept, but the pursuit of social validation tends to generate anxiety and distress (Schlenker & Leary, 1982, p. 648).

On the other hand, recent work has shown that higher levels of self-compassion tend to be associated with fewer concerns about presenting a valorizing self-image (Long & Neff, 2018). Accordingly, it is possible that less self-compassionate art creators might be more sensitive to social recognition and self-presentation than highly self-compassionate ones. These concerns about self-concept might lead low and moderately self-compassionate individuals with few artistic achievements to experience painful emotions (e.g., Lear & Pepper, 2016). In comparison, it is likely that low and moderately self-compassionate individuals with high artistic achievements may report lower emotion dysregulation. As for highly self-compassionate individuals, it is plausible that their highly self-compassionate attitudes might prevent them from experiencing emotion dysregulation driven by sensitivity to social recognition or evaluation (Long & Neff, 2018; Vettese et al., 2011).

Another view of these results is that people with low and moderate self-compassion might also have a less clear self-concept, a situation which has been associated with a greater tendency to experience negative emotions and distress (Cicero, 2017). Presumably, reports of a person’s artistic achievements might add clarity and stability to their self-concept, and might therefore reduce their uncertainty after receiving their peers’ validation through their creative productions (Pickering, Hadwin, & Kovshoff, 2019; Schlenker & Leary, 1982, p. 645). As such, individuals with low and moderate levels of self-compassion with high artistic achievements may report fewer difficult emotions than their counterparts with fewer artistic achievements (Lear & Pepper, 2016; Ritchie et al., 2011). Conversely, in that view, highly self-compassionate individuals might present a clearer and more stable self-concept. Hence, social validation through artistic achievements may not exert a significant effect on their self-concept because it is likely to already be clear and stable. These claims merit further research.

The findings of the present study may have implications for practitioners in clinical or counseling psychology, as well as those in art-therapy. Indeed, practitioners
could use reports of artistic achievements to help their clients to foster a self-compassionate attitude, thus promoting a strategy of prevention in relation to emotion dysregulation. In that sense, it is possible that low and moderately self-compassionate individuals may be sensitive to social evaluation due to unclear self-concepts (Neff & Vonk, 2009, p. 28; Leary, Tate, Adams, Batts Allen, & Hancock, 2007). In fact, research has shown that individuals with an unclear or unstable self-concept tend also to report feelings of uncertainty, instability, and inconsistency about themselves (Campbell et al., 1996). The Honing Theory of Creativity suggests that such uncertainty and inconsistencies foster emotion-arousal and therefore lead to emotion-arousal states that individuals could potentially reduce through creative production (Gabora, 2017). Accordingly, it is plausible that interventions valorizing previous clients’ artistic achievements might help them to strengthen their self-concept, allowing them to be more self-compassionate. In turn, as proposed by Williams (2018) model, this may help them to regulate their negative emotions.

A limitation of the present study, however, is that its correlational design does not allow any firm conclusions about these findings to be drawn, as no assertions can be made about the directionality of the regression paths presented (e.g., Maxwell & Cole, 2007). That said, it should be noted that both the backwards mediation and moderation models were non-significant when the directionality of the variables were reversed. Another limitation is that although the study objectively measured artistic achievements, it did not address other forms of creativity, such as artistic activities. Therefore, it is possible that the association between artistic achievements and self-compassion might fundamentally reflect an association between artistic activities and self-compassion. Hence, future research could seek to explore whether everyday artistic activities might predict higher levels of self-compassion and lower levels of emotion dysregulation.

In addition, small correlation coefficients between artistic achievements and self-compassion were observed. These might represent how little variance in self-compassion and in emotion dysregulation is captured when measuring artistic achievements. More precisely, an examination of the subscales’ results showed a weak and negative association between visual arts and emotion dysregulation, as well as a weak and positive association between visual arts and self-compassion. Nevertheless, other close-to-significant associations were found, which may suggest that the present sample was too small, and therefore not sensitive enough to capture a true representation of artistic achievements as measured by the Creative Achievement Questionnaire (Carson et al., 2005). In addition, it remains unclear whether the results can be generalized to males, as they were underrepresented in this sample.

A final limitation of our study relates to the computation of a general score of creative achievements in the arts rather than a deeper exploration of correlations, as well as mediation and moderation analyses across creative domains. This limitation can be discussed at two different levels. First, at an epistemological level, part of the answer can be found in addressing whether one is interested in (a) the general aspect of creativity (in which case, one may compare, for instance, a highly trained musician with a person who engages in multiple artistic domains), or (b) the domain-specificity of creativity (in which case, one cannot compare individuals across domains, but can only meaningfully compare the artists creating in the same specific domains of interest; see, for instance, Baer & Kaufman, 2005). In the present study, we reported domain-specific data in the correlation table, but our main objective was to start by documenting the association between the general construct of creative achievements in the arts (following previous researchers who had applied a similar method; e.g., Kaufman et al., 2016, p. 4), emotion dysregulation, and self-compassion.

At a statistical level, the distribution of the CAQ questionnaire (Carson et al., 2005), would have required an extremely large sample in each creative domain in order to ensure sufficient statistical power to reliably detect the presence of a statistically significant association, or to correctly reject the null hypothesis. Future research may therefore choose to approach the question of the relation between artistic achievements, self-compassion, and emotion dysregulation through a domain-specific lens.

Overall, there is a need to confirm the results of the present correlational study through future research on the link between creativity and self-compassion, and its association with low emotion dysregulation. Such research could aim to explore the associations between artistic activities, emotion dysregulation, and self-compassion with a larger and more representative sample, focusing on specific domains of creative achievements. Future work may seek to explore whether artistic achievements continue to show close-to-significant weak associations with self-compassion and emotion dysregulation, or if the strength of this association changes. Moreover, future researchers might decide to investigate the relationships between artistic creativity, positive self-concept, and self-compassion, to address the validity of the propositions discussed in this section. Experimental confirmatory studies are also needed to address the validity of the present claims. Ensuring causality is particularly meaningful in asserting the
effects of creativity on positive mental health. In that sense, it should be noted that the results of this study are based on an assumed non-clinical population. Thus, the model tested via analyses of the present data might need to be explored in clinical contexts, in order to consider the extent to which the model holds or differs in artists with particularly high emotion dysregulation scores. Doing so could contribute to the documenting of the positive outcomes of everyday artistic creativity, with a special focus on a domain-specific view of creativity.

Notes

1. We chose to focus only on a general score for creative achievements in the arts through a domain general lens because we assumed that in the context of everyday creativity, individuals reporting creative achievements were comparable. We also assumed that we could compare participants reporting items relative to everyday levels of creativity; for instance, “I have played with a recognized orchestra or band” (Music item 2); “My choreography has been performed publicly” (Dance, item 3); and/or “I have written jokes for other people” (Humor, Item 3). It could be argued that these items could actually all be reported by a single individual because they could be achievements of one person over his or her life, without necessarily reaching a Pro-c level of any kind. For a similar procedure, (see Kaufman et al., 2016, p. 4).

2. We thank an anonymous reviewer for suggesting these analyses.

3. The possibility that this mediation model might have been backward was also explored by computing emotion dysregulation as a predictor, creative achievements in the arts as the outcome variable, and self-compassion as the mediator. The analyses indicated no mediation effect. Emotion dysregulation did not predict scores in artistic achievements (β = −.067, SE = .110, t(165) = −.609, p = .543, 95% CI [−.283, .149]). Likewise, self-compassion did not significantly predict scores in artistic achievements (β = .136, SE = .110, t(165) = 1.238, p = .217, 95% CI [−.081, .325]). This overall non-significant mediation model barely rejected the null hypothesis (F(2, 166) = 3.077, p = .049, R² = .036).

4. The possibility that this moderation model might have been backward was also tested by analyzing creative achievement in the arts as an outcome variable. Emotion dysregulation was computed as a first predictor, and self-compassion as a second predictor. Because of the count distribution of the CAQ, a negative binomial model was computed. Any interaction between emotion dysregulation and self-compassion should have indicated a moderation effect. This alternative moderation model indicated a significant predictive effect of scores in emotion dysregulation on creative achievement in the arts (b = −.365, SE = .075, 95% CI [−.511, −.218], p < .001). A significant predictive effect of self-compassion on artistic achievements was also observed (b = .352, SE = .0717, 95% CI [.211, .493], p < .001). A close-to-significant interaction effect was found between self-compassion and emotion dysregulation scores that negatively predicted creative achievements in the arts (b = −.162, SE = .0841, 95% CI [−.327, .003], p = .054), but it failed to reject the null hypothesis.

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Appendices

**PROCESS output for mediation analyses**

Run MATRIX procedure:  

********** PROCESS Procedure for SPSS Version 3.5.3 **********

Written by Andrew F. Hayes, Ph.D. www.afhayes.com

*****************************************************

Model: 4
Y: ZDERS
X: ZCAQ
M: ZSCS
Sample
Size: 168

**********************************************************

**OUTCOME VARIABLE:**
ZSCS

**Model Summary**

R R-sq MSE F df1 df2 p,1838,0338,9720 5,8058 1,0000 166,0000,0171

**Model**

coeff se t p LLCI ULCI
constant,0000,0761,0000 1,0000 -,1502,1502
ZCAQ,1838,0763 2,0495,0171,0332,3345

**Covariance matrix of regression parameter estimates:**
constant ZCAQ
constant,0058,0000
ZCAQ,0000,0058

**********************************************************

**OUTCOME VARIABLE:**
ZDERS

**Model Summary**

R R-sq MSE F df1 df2 p,7182,5158,4901 87,8854 2,0000 165,0000,0000

**Model**

coeff se t p LLCI ULCI
constant,0000,0540,0000 1,0000 -,1066,1066
ZCAQ, -0,336,0551 6,090,0543 ,1424,0752
ZSCS, -7,113,0551 -12,9062,0000 -8,201,0025

********************************************************** TOTAL EFFECT MODEL

**********************************************************
OUTCOME VARIABLE:
ZDERS

Model Summary
R R-sq MSE F df1 df2 p,1643,0270,9789 4,6062 1,0000
166,0000,0333

Model
coeff se t p LLCI ULCI
constant,0000,0763,0000 1,0000 -.1507,1507
ZCAQ -.1643,0766 -.2,1462,0333 -.3155 -.0132
Covariance matrix of regression parameter estimates:
constant ZCAQ
constant,.0058,0000
ZCAQ,.0000,0059

********** TOTAL, DIRECT, AND INDIRECT EFFECTS OF X ON Y **********

Total effect of X on Y
Effect se t p LLCI ULCI c_ps c_cs-,1643,0766 -.2,1462,0333
-.3155 -.0132 -.1643 -.1643

Direct effect of X on Y
Effect se t p LLCI ULCI c'_ps c'_cs-.0336,0551 -.6090,5433
-.1424,0752 -.0336 -.0336

Indirect effect(s) of X on Y:
Effect BootSE BootLLCI BootULCI
ZSCS -.1308,0967 -.4221 -.0838

Partially standardized indirect effect(s) of X on Y:
Effect BootLLCI BootULCI
ZSCS -.1308,0947 -.4138 -.0872

Completely standardized indirect effect(s) of X on Y:
Effect BootLLCI BootULCI
ZSCS -.1308,0368 -.2025 -.0540

*************** ANALYSIS NOTES AND ERRORS

Level of confidence for all confidence intervals in output:
95,000

5000

-- END MATRIX --

PROCESS output for moderation analyses

Run MATRIX procedure:

************** PROCESS Procedure for SPSS Version 3.5.3 **************

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2018). www.guilford.com/p/hayes3

************************************************************

Model: 1
Y: ZDERS
X: ZCAQ
W: ZSCS
Sample
Size: 168

************************************************************

OUTCOME VARIABLE:
ZDERS

Model Summary
R R-sq MSE F df1 df2 p,7262,5274,4812 61,0057 3,0000
164,0000,0000

Model
coeff se t p LLCI ULCI
constant -.0375,0567 -.6620,5089 -.1495,0744
ZCAQ -.3045,1457 -.2,0902,0381 -.5921 -.0168
ZSCS -.6863,0560 -.12,2544,0000 -.7969 -.5758
Int_1,2054,1024 2,0061,0465,0032,047

Product terms key:
Int_1: ZCAQ x ZSCS

Covariance matrix of regression parameter estimates:
constant ZCAQ ZSCS Int_1
constant,.0032,0025 -.0002 -.0019
ZCAQ,0025,0212 -.0022 -.0138
ZSCS,0002,0031,0013
Int_1,0019 -.0138,0013,0105

Test(s) of highest order unconditional interaction(s):
R2-chng F df1 df2 p
X*W,0116 4,0244 1,0000 164,0000,0465

-- -- --

Focal predict: ZCAQ (X)
Mod var: ZSCS (W)

Conditional effects of the focal predictor at values of the moderator(s):

ZSCS Effect se t p LLCI ULCI
-1,0000 -.5099,2436 -.2,0928,0379-.9910 -.0288,0000
-3,045,1457 -.2,0902,0381 -.5921 .0168,0000
-3,099,1063 -.1,5572,1214 -.2,247,0266

Moderator value(s) defining Johnson-Neyman significance region(s):
Value % below % above: 6059,71,4286 28,5714

Conditional effect of focal predictor at values of the moderator:

ZSCS Effect se t p LLCI ULCI
-2,7435 -.8680,4195 -.2,0690,0401 -1,6964 -.0396
-2,4967 -.8173,3945 -.2,0719,0938 -.1596 -.0384
-2,2498 -.7666,3695 -.2,0749,0936 -.1495 -.0371
-2,0030 -.7159,3445 -.2,0782,0933 -.1395 -.0357
-1,7562 -.6652,3196 -.2,0816,0839 -.1295 -.0342
-1,5094 -.6145,2947 -.2,0852,0836 -.1196 -.0326
-1,2625 -.5638,2699 -.2,0890,0833 -.1096 -.0309
-1,0157 -.5131,2452 -.2,0926,0799 -.9973 -.0289
-.7689 -.4624,2206 -.2,0958,0376 -.8981 -.0268
-.5221 -.4117,9663 -.2,0927,0374 -.7920 -.0242
-.2753 -.3610,1721 -.2,0974,0375 -.7009 -.0212
-.0284 -.3103,1484 -.2,0915,0380 -.6033 -.0174
2,184 -.2596,1252 -.2,0733,0397 -.5069 -.0124
4,652 -.2089,1031 -.2,0270,0433 -.4125 -.0054
6,059 -.1800,0912 -.1,9745,0500 -.3601,0000
7,120 -.1582,0827 -.1,9126,0575 -.3216,0051
9,589 -.1075,0659 -.1,6320,1046 -.2377,0226
1,0257 -.0568,0558 -.1,0181,3101 -.1671,0534
1,4525 -.0061,0563 -.1,0922,9132 -.1173,1050
1,6993,0446,0671,6642,5075 -.0879,1770
1,9462,0953,0843 1,1300,2601 -.0712,2617
2,1930,1459,1048 1,3922,1657 -.0610,3529

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
ZCAQ ZSCS ZDERS .
BEGIN DATA.
-.4409 -.1,0000,8736,0000 -.1,0000,6488
1,0000 -.1,0000,1389
-.4409,0000,0967,0000,0000 -.0375
1,0000,0000 -.3420
- .4409 1,0000 -.6802,0000 1,0000 -.7239
1,0000 1,0000 -.8230
END DATA.
GRAPH/SCATTERPLOT =
ZCAQ WITH ZDERS BY ZDERS .
******************************* ANALYSIS NOTES AND ERRORS
*******************************
Level of confidence for all confidence intervals in output: 95,0000
W values in conditional tables are the mean and ± SD from
the mean.
NOTE: The following variables were mean centered prior to
analysis:
ZSCS ZCAQ
– – END MATRIX – –