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Dispositional mindfulness mediates the relationship between emotion regulation and creativity

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Abstract

Previous research has demonstrated positive associations between emotion regulation and creativity (Guastello et al., 2004), between mindfulness and creativity (Muller et al., 2016), and between emotion regulation and mindfulness (Hill & Updegraff, 2012). The extent to which individual differences on emotion regulation, dispositional mindfulness, self-esteem, and flow state could predict self-reported creativity was explored in 147 British participants (mean age: 36.38, $SD = 14.18$) who completed the self-report study online. Emotion regulation, mindfulness, and self-esteem significantly predicted self-reported creativity, adjusted $R^2 = .33$, $F(3,138) = 23.44$, $p < .001$. Moreover, mindfulness significantly mediated the relationship between emotion regulation and self-reported creativity, with an indirect effect of -0.05 , 95% $CI[-0.106, -0.004]$. Additionally, flow state correlated significantly with self-reported creativity, Pearson's $r = .30$, $p < .01$. Implications for well-being and clinical practice are discussed.

Keywords: emotion regulation; creativity; mindfulness; flow; self-esteem.

There are a number of ways in which an individual's ability to regulate their emotions might benefit their creativity. Previous research indicates that higher emotional intelligence, which encompasses emotion regulation, correlates positively with creative thinking, potentially through an ability to exercise more control over divergent thinking episodes (Guastello et al., 2004). Emotion regulation has been defined by Gross (2008) as our attempts to influence a) our emotions and b) the way we experience and express these emotions. Other research has demonstrated that high emotion regulation ability predicts creativity in individuals scoring high on the personality trait of openness, possibly through a heightened ability to manage and influence their emotions during the creative process (Ivcevic & Brackett, 2015). While some research indicates that negative emotions, such as worry and anxiety, can be instrumental for creative goal attainment (e.g., Leung et al., 2014), other work suggests that positive affect may facilitate creative performance in employees (e.g., Parke et al., 2015).

Less, however, is known about whether individuals who show an association between emotion regulation and creativity also possess higher levels of mindfulness. If such an effect were to be found, it would suggest that the emotion regulation as applied to creative tasks might be governed by mindful strategies rather than automatic ones. Indeed, there is evidence to suggest that motivational and emotion-driven goal pursuits can take place adaptively outside of conscious awareness (Lazarus, 1991; Lambie & Marcel, 2002; Baumeister et al., 2006). As such, exploring mindfulness in this context could help shed light on the mechanism through which emotion regulation predicts creativity.

Dispositional mindfulness (DM, also known as *trait mindfulness*) is the tendency for individuals to be aware of their cognitive, emotional, and behavioural patterns in a non-judgemental way (Brown & Ryan, 2003). As such, individuals who are high in DM find themselves in higher states of mindfulness more often than individuals who are lower on DM

(for a deeper discussion on how trait versus state mindfulness tend to co-occur in everyday life, please see Kiken et al., 2015). DM has been shown to be positively correlated with a number of psychological health outcomes, and as such has shown to be a reliable predictor of mental resilience and well-being (for a systematic review of this relationship, based on 93 studies, refer to Tomlinsen et al., 2017). Moreover, there is some evidence that training concentration mindfulness through meditation practice can increase creative performance through an increase in cognitive flexibility (Muller et al., 2016). In addition, a meta-analysis of 89 correlations from 20 samples, published between 1977 and 2015, showed a significant, albeit small-to-medium effect size, correlation between mindfulness and creativity (Lebuda et al., 2016).

Understanding the links between emotion regulation, mindfulness, and creativity also has value within the therapeutic context. A number of psychological treatments, such as cognitive behavioural therapy, use cognitive reappraisal as an emotion regulation skill which has shown high efficacy for a number of psychological disorders, including those that are characterised by persistent emotional fluctuations such as social anxiety disorder (Goldin et al., 2012). Mindfulness-based cognitive behavioural therapies have also been associated with higher cognitive reappraisal abilities, which in turn has improved mental health outcomes (Troy et al., 2013). When creativity is used as a tool in therapy, such as expressive creative writing, it is also associated with better mental health outcomes (McCardie & Byrt, 2001). As such, emotion regulation, mindfulness, and creativity all have a role to play in mental health treatments. However, in order for therapists to use these more strategically, and in order to combine them in optimal ways for improving mental health, a better understanding of their inter-relationships is needed.

The Present Study

Previous studies have shown positive relationships between emotion regulation and creativity, as well as between mindfulness and creativity. In addition, mindfulness has been correlated positively with adaptive emotion regulation, including lower reactivity to emotions, lower frequencies of experiencing emotions such as anger and sadness, and fewer reports of emotion dysregulation in general (Hill & Updegraff, 2012). In the present study, it was investigated whether the relationship between emotion regulation and creativity might be mediated through mindfulness. While these three variables have been studied separately in all three combinations (i.e., emotion regulation-creativity, mindfulness-creativity, and mindfulness-emotion regulation), no known study has explored all three variables together in order to test whether the emotion regulation-creativity link might be mediated through mindfulness.

There are a couple of theoretical reasons why mindfulness may be expected to mediate this relationship. First, the ability to effectively regulate emotions is likely to involve some awareness of one's emotional, cognitive, and physical state, which can be expected to be associated with higher levels of DM (e.g., Coholic, 2011). Second, creativity is more likely to be predicted through DM, because without an awareness of the emotional and cognitive processes underlying the creative process, one is less likely to a) employ effective creative strategies, and b) consider oneself more creative. The latter is particularly relevant for the present study in that a self-report, rather than a test-based, measure of creativity was used. In line with recent theoretical advances in the field which have empirically demonstrated that mindfulness and cognitive reappraisal might enhance each other in a positive loop (Garland et al., 2017), the present study predicts that one of the mechanisms through which mindfulness might mediate the relationship between emotion regulation and creativity is through a non-judgmental and high state of awareness. Such states can result in

both more persistent efforts to be creative (without being discouraged by failures along the way) as well as a higher state of awareness of the employment of effective strategies through the trial-and-error process. This prediction also fits with the ‘*mindfulness-to-meaning theory*’ (Garland et al., 2015) which proposes that mindfulness promotes a metacognitive and flexible state of mind during problem-solving which enhances both the meaning found in the tasks at hand as well as the positive reappraisal of the strategies employed.

The other objective of the present study was to examine the extent to which self-reported creativity scores could be predicted by emotion regulation, DM, self-esteem, and *flow* (which refers to a deep sense of immersion in a given task; Csikszentmihalyi, 1975). Self-esteem was included because of previous studies showing a positive correlation between self-esteem and domain-specific creativity (Barbot, 2020). The present study sought to test whether self-esteem could predict general creativity. Theoretically, based on the mindfulness-to-meaning theory (Garland et al., 2015), one would expect a higher level of self-esteem in individuals who engage in creative tasks during higher states of mindfulness because of the sense of meaning and well-being that results from the approach taken to problem-solving, as well as because of the positive reappraisal. The higher the sense of meaning and effective reappraisal, the higher one might expect the self-esteem to be because of their self-affirmation and ego buffering effects (Düring, & Jessop, 2015).

Flow (Csikszentmihalyi, 1975) is a term used to describe a state of mind where one is deeply immersed in an engaging activity with deep concentration and low likelihood of distraction. Flow has been shown to be positively associated with positive affect (Eisenberger, 2005), which is often linked positively both to positive reappraisal and to effective emotion regulation. In addition, flow was expected to predict creativity because a high ability to enter a flow state should facilitate one’s creativity given the higher degree of task absorption compared to low-flow individuals (Cseh et al., 2015).

Therefore, the two hypotheses for this study were:

H1: In a multiple regression model, the dependent variable of self-reported creativity will be predicted significantly by the independent variables of emotion regulation, dispositional mindfulness, self-esteem, and flow.

H2: Emotion regulation will predict self-reported creativity, and dispositional mindfulness will mediate this relationship.

Method

Participants and procedure

In this study, 147 participants (mean age: 36.38, $SD = 14.18$) completed the study, with 103 females and 44 males. All participants were based in the U.K., and were predominantly White British. Participants were recruited through social media and workplace networking. Participants were mainly professionals, with only 37 students amongst the sample. The study was completed anonymously by participants online. After answering basic demographic questions, participants completed the following five scales in the following order: Mindful Attention Awareness Scale (MAAS), Rosenberg Self-Esteem Scale (RSES), Kaufman Domains of Creativity Scale (K-DOCS; only the 'Self/Everyday' domain was included in this study), Difficulties in Emotion Regulation Scale (DERS), and Flow Experiences Scale (FES).

Measures

Mindful Attention Awareness Scale (MAAS). The MAAS (Brown & Ryan, 2003) was used as the dispositional mindfulness measure because of its 15 items focus on the extent to which the individual is paying attention to, and is aware of, their cognitive, emotional, and behavioural patterns. The MAAS is the most widely used scale of mindfulness, especially in the physical and psychological health context (Tomlinsen et al., 2017) and has demonstrated

a good internal consistency ($\alpha = .85$; Brown & Ryan, 2003). The 15 items measure lapses in attention (e.g., *'I could be experiencing an emotion and not be conscious of it until some time later'*, *'I find it difficult to stay focused on what's happening in the present'*, and *'I find myself preoccupied with the future or the past'*). The scale goes from 1 (*'Almost always'*) to 6 (*'Almost never'*), and a higher mean score indicates higher levels of DM. The MAAS has been psychometrically validated by subsequent studies such as MacKillop and Anderson (2007) who tested the measure on an ethnically diverse sample. Furthermore, more recently, Osman et al. (2016) provided some evidence for the concurrent validity of the MAAS with validated measures of related constructs, such as self control and self management.

Rosenberg Self-Esteem Scale (RSES). The RSES (Rosenberg, 1965) was used because of its status as the most widely used and validated unidimensional self-esteem scale, with a recent meta-analytic validity, test-retest reliability, and convergent validity study supporting the scale as a valid and reliable instrument (with Cronbach's alpha values averaging at .89 between samples from the United Kingdom, United States, and Australia, Schmitt & Allik, 2005). The scale consists of 10 items (e.g., *'On the whole, I am satisfied with myself'*, *'I feel that I do not have much to be proud of'* (Reverse item), and *'I take a positive attitude toward myself'*) scored from 0 (*'Strongly disagree'*) to 3 (*'Strongly agree'*), with a higher summed total score indicating higher self-esteem.

Kaufman Domains of Creativity Scale (K-DOCS). The K-DOCS (Kaufman, 2012) is a self-report creativity scale consisting of five different domains of creativity. However, for the purpose of the present study, only the *Self/Everyday* subscale was used because it is applicable to every individual on a daily basis (unlike some of the other, more specialised, subscales, such as *'Performance'* or *'Artistic'*). The subscale has shown to have a Cronbach's alpha of .86 (Kaufman, 2012), which indicates good internal reliability. The test-retest reliability (after two weeks) was .80 for this subscale (Kaufman, 2012). Participants rate

themselves on how creative they think they are compared to other individuals of their age and life experience, from a scale of 1 (*'Much less creative'*) to 5 (*'Much more creative'*) in response to 11 items (e.g., *'finding something fun to do when I have no money'*, *'helping other people cope with a difficult situation'*, and *'teaching someone how to do something'*). Higher summed scores indicate higher levels of perceived creativity.

Difficulties in Emotion Regulation Scale (DERS-18). The DERS-18 (Victor & Klonsky, 2016) is an 18-item scale that has shown to have high internal reliability (Cronbach's $\alpha = .91$), as well as good predictive validity of emotion regulation experiences as reported in a two-week diary (Victor & Klonsky, 2016). The 5-point scale asks participants to respond to statements (e.g., *'I am confused about how I feel'*, *'When I'm upset, I have difficulty getting work done'*, and *'When I'm upset, I lose control over my behaviors'*) using 1 (*'Almost never'*) to 5 (*'Almost always'*). A higher score on the summed total of the 18 items indicates more difficulty in emotion regulation.

Flow Experiences Scale (FES). The 8-item FES (Schwartz & Waterman, 2006; Cronbach's α of .70). was used as the flow measure on a 7-point scale from 1 (*'Not at all characteristic of me'*) to 7 (*'Very characteristic of me'*). Participants were asked to respond to eight statements starting with *'When I engage in an activity that I enjoy, I....'* (this was a slight modification of the original scale which used *'When I engage in this activity, I....'* – this item was changed so that it would apply to different daily activities rather than one specific activity). The eight items included *'...I feel I have clear goals'*, *'...I feel in control'*, and *'...I lose track of time'*. This scale was chosen over alternative flow scales because the items seemed more relevant to creativity and mindfulness. The validity of the scale beyond the original study could not be ascertained given that no studies on it were found.

Results

After outlier values for each variable measured were excluded from the dataset, a stepwise multiple regression was carried out in order to test H1: whether MAAS, flow, self-esteem, and emotion regulation predict K-DOCS scores. Model 1 in the stepwise analysis revealed emotion regulation as the most significant predictor of K-DOCS, adjusted $R^2 = .29$, $F(1, 138) = 56.00$, $p < .001$. Because the scale used (i.e., DERS-18) measures difficulties in emotion regulation (and a higher score is indicative of lower emotion regulation ability) the measure negatively predicted K-DOCS scores as shown in the correlations in Table 1. MAAS was included in model 2, adjusted $R^2 = .31$, $F(2,138) = 32.31$, $p < .001$. Model 3 included emotion regulation, MAAS, and self-esteem, adjusted $R^2 = .33$, $F(3,138) = 23.44$, $p < .001$, which suggests that these three predictors collectively accounted for 33% of the variance in creativity. Table 1 below suggests that flow was not included as a significant predictor in the stepwise multiple regression because of its collinearity with the other predictors, which cancelled out its predictive power over K-DOCS. Flow did, however, correlate significantly with K-DOCS, Pearson's $r = .30$, $p < .01$.

INSERT TABLE 1 HERE.

H2, namely that mindfulness mediates the relationship between emotion regulation and creativity, was tested using the mediation model (Model 4) in the PROCESS version 3.5 (Hayes, 2020) downloaded from processmacro.org into SPSS with emotion regulation as the IV, creativity as the DV, and mindfulness as the mediator. The 5000 sample bootstrapped confidence interval was used to check the indirect effect of X (IV) on Y (IV) with MAAS as the mediator, which was -0.05 , 95% $CI[-0.106, -0.004]$. Since the confidence interval did not include zero (Field, 2006), mindfulness could be concluded to mediate the relationship between emotion regulation and creativity.

Discussion

The present study found that emotion regulation, dispositional mindfulness, and self-esteem collectively predicted 33% of the variance in self-reported creativity, with emotion regulation by far being the strongest predictor of creativity (on its own explaining 29% of the variance in creativity). Moreover, mindfulness was found to significantly mediate the relationship between emotion regulation and creativity. Finally, flow was also strongly correlated ($r = .30, p < .01$) with creativity but was not a significant predictor variable.

These results are consistent with previous findings of emotion regulation and mindfulness being positively associated with creativity (Guastello et al., 2004; Ivcevic & Brackett, 2015; and Lebuda et al., 2016). The present study has contributed to the literature by demonstrating that mindfulness can mediate the relationship between emotion regulation and creativity. This is an important discovery because it suggests that awareness of one's emotional and cognitive patterns might be more crucial for creativity (at least perceived creativity) than automatic (i.e., 'mindless') emotion regulation ability on its own. This raises new questions regarding the extent to which, and the conditions under which, mindfulness exerts an influence on creativity. One can imagine situations where being mindful can enhance creativity through an increased insight into how one might optimise one's thinking and behaviour to perform more creatively. This might especially be the case when the creative goal requires emotional sensitivity and continuous performance feedback, for example, during an improvisational musical performance in a group. However, there might also be situations where the role of mindfulness is less important, for example, when choreographing a dance sequence for a film where the director to some extent dictates the emotional and visual content. In such a case, the choreographer might rely more on their

automatized expertise while working around a set repertoire of movements, possibly requiring less mindfulness in the process. Future research should explore how high and low mindfulness individuals perform creative tasks under varying conditions of awareness (e.g., through mindfulness meditation training), creative control or autonomy, and interactive versus solo performances. Qualitative methodologies might be particularly informative in examining the extent to which individuals are aware of the underlying emotional and cognitive bases of their creative performance.

The finding that self-esteem predicted creativity significantly, albeit explaining a small portion of the variance, could be because the present study used a self-report measure of creativity: individuals who scored higher on self-esteem might *believe* that they are more creative even if they are not. Also, it might be the case that higher self-esteem leads to higher self-efficacy regarding creative tasks in everyday life. Future research should explore whether self-esteem is associated with creative ability as evaluated by independent raters, rather than by participants themselves.

While flow did predict creativity on its own (8% of the variance, $p < .001$), when entered into a stepwise regression with the other three variables, it lost its predictive power due to its explanatory overlap with the other predictors. Nevertheless, its significant correlation with creativity is noteworthy, and warrants further investigation. Indeed, the ability to enter a flow state might benefit creative performance when it requires a deep concentration and absorption. However, this might be task-dependent because some creative tasks might necessitate higher levels of flow, especially when they involve novel problem solving, which might be more likely to require one's full attention.

A limitation of the present study is its cross-sectional design, which is not as robust a way of testing the role of DM as a mediator, compared to an experimental design. As such,

the findings and their interpretation might be less conclusive, given the presence of other variables unaccounted for (for a detailed discussion of the issue of *endogeneity* in cross-sectional designs, please refer to Sande & Ghosh, 2018). However, when dealing with stable dispositions (or traits), such as DM and emotion regulation, these are not amenable to experimental manipulation. One might, however, be able to corroborate this mediational effect in an experimental paradigm in a future study by inducing higher levels of state mindfulness thorough, for example, priming (Lueke & Gibson, 2016) or longer interventions (Robins et al., 2012) to see if the emotion regulation and creativity link is still mediated by DM under induction of state mindfulness. It may be the case that induced states of mindfulness play a more significant role in the emotion regulation and creativity relationship in individuals who score high on DM. Another limitation of the present study is its reliance on a self-report creativity questionnaire. Future studies could investigate whether these findings can be replicated with test-based measures of creativity. Indeed, previous studies have shown that there exist high associations between self-reported creativity measures and creative self-efficacy, as opposed to actual performance (Reiter-Palmon et al., 2012). However, in the present study we used the ‘self/everyday’ subscale of the K-DOCS which has more of a behavioural focus and might as such be argued to be less about self-efficacy and more about what creative behaviours one actually engages in on a daily basis.

Future research recommendations

Future research could also explore how flow is associated with creative performance in different domains, as well as whether creative tasks in a familiar domain (e.g., composing a music piece if you are a composer) require different levels of flow compared to creative tasks in a non-familiar domain (e.g., writing a poem for the first time). It might be the case the novel creative problem solving requires more cognitive involvement, whereas familiar creative problem solving requires more emotional involvement – and as a result higher levels

of flow. Future studies could also further explore the link between creativity and emotion regulation as related to multiple facets of mindfulness. The present study used the MAAS which is a uni-dimensional measure of mindfulness, but there are alternative measures that tap into mindfulness as a multi-faceted construct, such as the Five Facet Mindfulness Questionnaire (Baer et al., 2008). It might be the case that certain facets of mindfulness, such as *non-judgment* or *non-reactivity*, might be associated with creativity and emotion regulation in interesting ways. Moreover, measuring participants' meditation experience could be an additional relevant variable to include in future studies given that it has been shown to be associated with higher scores on mindfulness measures (Baer et al., 2008) and might as such play a role in creativity both in general and within the clinical context.

Implications for clinical practice

For therapists who work with patients to improve well-being and to reduce emotion dysregulation, the findings of the present study are encouraging. The way in which emotion regulation predicts perceived creativity and a higher self-efficacy in self-expression (Silvia & Phillips, 2004) might be through higher states of mindfulness which might allow the individual to use their creativity in ways that encourage therapeutic self-expression. The awareness that individuals have of their emotional, cognitive, and physical state seems to play an important role in predicting creativity, possibly because one is more aware of the creative process and its benefits. Given that everyday creativity has been associated with higher levels of well-being and mental health (e.g., Cropley, 1990) the question arises: what therapeutic approach might encourage a healthy form of creativity and self-expression, characterised by a high level of self-awareness and emotion regulation ability? As discussed in the introduction, mindfulness-based cognitive behavioural therapy (or MBCT) has shown high efficacy in treating a number of mental health disorders (Chiesa, & Serretti, 2011), and emotion awareness and emotion regulation abilities seem to play a key part in improving the

patients' mental health. Likewise, creativity-based interventions have shown high efficacy in patient populations (Mcardie & Byrt, 2001). However, in light of the present findings, the MBCT and creativity-based interventions could be combined for an even higher level of intervention effectiveness. An intervention that incorporates cognitive reappraisal (as an emotion regulation improvement technique), mindfulness, and creativity might encourage in the patient a number of complementary skills, such as higher self-efficacy (Tierney & Farmer, 2011), higher self-esteem (Wang & Wang, 2016), and higher self-awareness (Silvia & Phillips, 2004). The optimal combination of these complementary skills would depend on the nature of the disorder, its severity, as well as the personality and preferences of the patient. What emotion regulation, mindfulness, and creativity all have in common is the constructive use of meta-cognitive ability (Sternberg, 1985) in a way that enhances motivation and performance. Such a meta-cognitive problem-solving approach could be encouraged by the therapist regardless of the particular therapeutic approach or orientation.

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Data availability statement

The data that support the findings of this study are available from the corresponding author, [OY], upon reasonable request.

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Table 1

Correlations between the five variables ($N = 144$)

	MASS	K-DOCS	Flow	Self-esteem
K-DOCS	.405**	1		
Flow	.222**	.295**	1	
Self-esteem	.390**	.443**	.338**	1
Emotion Reg.	-.514**	-.516**	-.237**	-.537**

**Correlation is significant at the 0.01 level (2-tailed)

Appendix A: Stepwise multiple regression and mediation output tables from SPSS and PROCESS version 3.5.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.539 ^a	.290	.285	4.84021
2	.568 ^b	.322	.312	4.74737
3	.585 ^c	.342	.328	4.69282

a. Predictors: (Constant), ER_TOTAL

b. Predictors: (Constant), ER_TOTAL, MAAS_TOTAL

c. Predictors: (Constant), ER_TOTAL, MAAS_TOTAL, SE_TOTAL

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1312.046	1	1312.046	56.004	.000 ^b
	Residual	3209.580	137	23.428		
	Total	4521.626	138			
2	Regression	1456.519	2	728.259	32.313	.000 ^c
	Residual	3065.107	136	22.538		
	Total	4521.626	138			
3	Regression	1548.581	3	516.194	23.439	.000 ^d
	Residual	2973.045	135	22.023		
	Total	4521.626	138			

- a. Dependent Variable: KDOCS_TOTAL
- b. Predictors: (Constant), ER_TOTAL
- c. Predictors: (Constant), ER_TOTAL, MAAS_TOTAL
- d. Predictors: (Constant), ER_TOTAL, MAAS_TOTAL, SE_TOTAL

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

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
-.2156	.0430	-5.0181	.0000	-.3006	-.1307	-.0380	-.4179

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
MAAS_TOT	-.0506	.0261	-.1064	-.0038

Partially standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
MAAS_TOT	-.0089	.0046	-.0187	-.0007

Completely standardized indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
MAAS_TOT	-.0981	.0488	-.2009	-.0075

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