Exploring Dispositional Mindfulness as a Moderator for the Impact of Negative Thoughts and Stressful Events on Momentary Affect in Daily Life

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Master Thesis

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Abstract

Background: Experiencing stressful events (SE) and negative thoughts (NT) in daily life leads to low momentary affect, which can have negative consequences for mental health, illustrating the importance of identifying factors that can buffer those relationships. Dispositional mindfulness (DM), a multi-faceted concept, is associated with better emotional processing and regulation, but its role in moderating the effects of SE and NT in daily life is not fully understood. **Aim:** This study aimed to investigate whether DM buffers the effects of SE and NT on positive and negative momentary affect in daily life. **Methods:** Data of 53 participants between 19 and 35 years of age that was previously collected in the context of a different study using the experience sampling method was used. The participant's levels of DM were assessed using the FFMQ. Ten times per day for ten consecutive days, participants reported on their momentary events, thoughts, and affect. Linear mixed models were used to analyse the relationships between SE/NT and momentary affect and the moderating effects of DM on those relationships. **Results:** SE and NT were significantly associated with lower positive and higher negative momentary affect. However, DM did not significantly moderate any of those relationships. Post-hoc analyses exploring the different facets of DM as moderators revealed two significant interactions, with describing buffering the effects of NT on positive momentary affect and non-reactivity buffering the effects of SE on negative momentary affect. **Conclusion:** While no buffering effects of DM could be found, the facets of describing and non-reactivity revealed potential in buffering the adverse effects of SE and NT on momentary affect. Future research should replicate these findings using larger and more representative samples and explore state mindfulness as a potential moderator using ESM.

Keywords: Dispositional mindfulness, momentary affect, stressful events, negative thoughts, ESM

Exploring Dispositional Mindfulness as a Moderator for the Impact of Negative Thoughts and Stressful Events on Momentary Affect in Daily Life

Poor mental health and high rates of psychopathology are significant challenges in modern society. Approximately one in eight people worldwide are suffering from a mental disorder, with depression and anxiety disorders being the most prevalent (World Health Organization, 2022). Mental disorders are one of the world's leading causes of burden of disease (Whiteford et al., 2015), and can severely impair daily functioning, reduce quality of life, and increase the risk of physical health issues (Vos et al., 2020). Additionally, mental disorders are estimated to cost the global economy an estimated $1 trillion every year due to lost productivity, creating a large economic burden (World Health Organization, 2019). Given the negative impact of mental health issues, and in pursuing the goal of treating and preventing psychopathology, it is crucial to understand the mechanisms, risk factors, and protective factors associated with the development and maintenance of these conditions (Borsboom, 2017). Gaining a better understanding of these factors could help with the development of interventions aiming at improving mental health and decreasing the societal burden of psychopathology.

The Importance of Momentary Affect

One crucial factor in understanding the mechanisms behind mental health issues are the dynamics of momentary affect in daily life, which have been an important area of study (Armey et al., 2015). The concept of momentary affect describes one's experience of emotions in any given moment, which can be categorised into positive affect (pleasant emotional states) and negative affect (unpleasant emotional states) (Pressman et al., 2019). Given the fluctuating nature of the concept, a suiting way to measure momentary affect is the experience sampling method (ESM) (Armey et al., 2015; Pressman et al., 2019). In ESM studies, participants complete multiple assessments throughout the day over the course of up

to two weeks, usually reporting on feelings and experiences in that given moment, which offers measurements of high ecological validity (Myin-Germeys et al., 2018; Myin-Germeys & Kuppens, 2021). Previous ESM studies investigating the impact of experiencing lower affect in daily life have linked it to worse mental health outcomes (Höhn et al., 2013; Telford et al., 2011). For instance, experiencing lower positive momentary affect has been shown to make people more susceptible to developing symptoms of depression in the future (Wichers et al., 2010). Similarly, higher levels of negative affect have been linked to increased experience of stress and greater risk for mental health issues (Watson et al., 1988). Conversely, the experience of positive affect in daily life has been linked to the prevention of depression and to better general mental health (Höhn, 2013). Together, these findings illustrate the important role of momentary affect in the development and prevention of mental disorders, with negative affect acting as a risk, and positive affect as a protective factor.

The Impact of Stressful Events and Negative Thoughts on Momentary Affect

Considering the importance of momentary affect in the development and prevention of psychopathology poses questions about the factors that negatively impact momentary affect. Those factors can be external as well as internal, with a crucial external factor being the experience of stressful events. Several studies have established the link between the experience of negative daily events and increases in negative daily affect (Clark & Watson, 1988; David et al., 1997; Nezlek & Allen, 2006; Nezlek & Plesko, 2003). Accordingly, a systematic review of ESM studies found stressful events to be a predictor of subsequent depressed mood (Pemberton & Tyszkiewicz, 2016). Further, in an ESM study by Van Eck et al. (1998) as well as a daily diary study by Dunkley et al. (2017), daily stressful events were associated with increased negative and decreased positive affect. Together, these findings highlight the pervasive impact of stressful daily events on momentary affect.

An internal factor influencing the valence of momentary affect is the experience of negative thoughts, characterised by negative emotional content. For instance, Ruby et al. (2013) found negative thoughts to be associated with more subsequent negative affect. Accordingly, research has shown negative thoughts to be related to lower mood and increased stress levels (Engert et al., 2014). Furthermore, an ESM study by Killingsworth and Gilbert (2010) found that self-generated thoughts such as daydreaming and mind wandering are linked to lower momentary mood. This illustrates the negative impact that thoughts can have on people's affect.

Crucially, the concept of stress reactivity is a deciding factor for how strongly people are affected by stressful events or negative thoughts. Stress reactivity is the degree to which individuals respond to stressors and is an important factor in the development of psychopathological symptoms (Bale, 2006). An increased reactivity to daily stressors has been shown to lead to higher negative affect (Charles et al., 2013). Conclusively, these findings show that stressful events as well as the experience of negative thoughts can negatively impact positive and negative momentary affect, with stress reactivity being an important predictor for the strength of those effects.

Dispositional Mindfulness as a Potential Moderator for the Effects of Thoughts and Events on Momentary Affect

Understanding any factors that might decrease the effects of negative thoughts and stressful events on momentary affect is a crucial step in developing interventions to protect against the adverse effects of experiencing low affect in daily life and enhance mental well-being. Identifying potential moderators for these relationships can help gain an understanding of why some individuals are more or less resilient to negative thoughts and stressful events, offering implications for tailored approaches. Moderating effects might be found in looking at differences in personal characteristics, as, for instance, multiple studies have indicated

individual differences in personality to moderate the relationship between negative events and affect (David et al., 1997; Gable et al., 2000; Nezlek & Allen, 2006; Nezlek & Plesko, 2003).

One such moderating factor could be dispositional mindfulness (DM), which has been associated with less symptoms of psychopathology, more adaptive cognitive processes such as decreases in rumination and catastrophising of pain, and better processing and regulation of emotions (Tomlinson et al., 2017). Mindfulness is defined by Kabat-Zinn (1994) as the awareness resulting from "paying attention in a particular way: on purpose, in the present moment, and non-judgmentally" (p. 4), and is linked to a decrease in symptoms of mental illness and increased mental well-being (Keng et al., 2011). Mindfulness can be seen as both a momentary state and a stable trait, also called dispositional mindfulness (Brown at al., 2007; Kabat-Zinn, 1990). DM is a multi-faceted construct, including the facets "Observing", "Describing", "Acting with Awareness", "Non-judging", and "Non-reactivity" (Baer, 2006), and people differ in the extent to which they possess DM (Brown at al., 2007; Kabat-Zinn, 1990). Research on the impact of DM on mental health has been gaining increasing attention (Tomlinson et al., 2017). Nonetheless, how DM influences the effects of stressful events and negative thoughts on momentary affect requires further investigation.

Several prior studies point towards the potential of DM for buffering the negative impact of stressful events and negative thoughts on momentary affect in daily life. In one study, a buffering effect of DM on cortisol responses as well as affective responses to a laboratory-induced social stressor was found (Brown et al., 2012). Similarly, Bergomi at al. (2013) found DM to mitigate the effects of distressing events on negative affect. However, those two studies did not use daily measurements of events and affect. In a daily diary study investigating DM in adolescents, higher DM scores predicted a weaker relationship between the number of daily stressors and negative affect (Ciesla et al., 2012). Lastly, in an ESM

study by Blanke et al. (2018), the mindfulness facet “nonjudgmental acceptance” was found to mitigate the negative relationship between daily hassles and affect. However, this study used a conceptualisation of mindfulness as a state rather than a disposition. Nonetheless, these findings indicate the potential of a buffering effect of DM on the relationship between stressful daily events and momentary affect.

Few studies have investigated the potential of DM to act as a moderator for the effects of internal events, such as negative thoughts, on emotional reactivity (Feldman et al., 2016). However, Feldman et al. (2016) have suggested that individuals with higher DM might be able to let go of distressing thoughts and be less emotionally reactive to them. Accordingly, a study on mindfulness and negative automatic thinking found DM to be associated with an increased perceived ability to let go of negative automatic thoughts (Frewen et al., 2007). Lastly, an experimental study by Feldman et al. (2010) found a brief mindfulness exercise to buffer emotional reactivity to repetitive thoughts. Conclusively, these findings illustrate the potential of DM to buffer the effects of stressful events as well as negative thoughts on momentary affect. However, these specific buffering effects have not yet been investigated in daily life.

The Present Study

The aim of this study is to investigate whether DM buffers the effects of negative thoughts and stressful events on next-moment momentary affect in daily life. Specifically, I hypothesize that 1a) negative thoughts are associated with higher subsequent negative and lower subsequent positive momentary affect compared to thoughts not rated as negative; 1b) DM moderates these associations in that higher levels of DM are associated with weaker relationships; 2a) stressful events are associated with higher negative and lower positive momentary affect compared to events not rated as stressful; and 2b) DM moderates these associations in that higher levels of DM are associated with weaker relationships.

Methods

Design

For the present study, a longitudinal research design using ESM was employed. The data used for this study was previously collected for an experimental laboratory study by De Calheiros Velozo et al. (2021). In the context of that study, daily ESM data on participants' levels of positive and negative momentary affect, the valence of their thoughts, and the nature of the events they experienced were collected. Next to this, the extent to which participants possess dispositional mindfulness was assessed. 25 minutes after arriving, participants had to complete a baseline questionnaire consisting of items about demographic data and DM, among other measurements that were not relevant for the present study. Subsequently, participants took part in a diary study using ESM (De Calheiros Velozo et al., 2022). For this, they were given a research phone that prompted them to fill out multiple questionnaires ten times a day at semi-random times for eight consecutive days, with 15 to 180 minutes between each inquiry. At every inquiry, questionnaires assessing the participants' levels of momentary affect, the valence of their thoughts, and their potentially stressful events, among other measures, had to be filled out.

Participants

58 participants were recruited from the general community using convenience sampling, online and with the use of flyers spread throughout the city. In order to be included in the study, participants had to be between 18 and 35 years old and be sufficiently skilled in speaking and reading Dutch. Exclusion criteria included a history of endocrine or cardiovascular diseases, consistent use of medications, illicit drug use within the past three months, allergy to patches or conductive gels, and employment involving night shifts. All participants were required to give their informed consent prior to participation.

Baseline Measures

'Dispositional Mindfulness'

To assess the extent to which participants possess DM, the Five Facet Mindfulness questionnaire (FFMQ; Baer et al., 2006) was used. The questionnaire consists of 39 items divided into five facets, namely observing (e.g. *"I notice the smells and aromas of things."*), describing (e.g. *"I am good at finding words to describe my feelings."*), acting with awareness (e.g. *"I find myself doing things without paying attention. (R)"*), non-judging of inner experience (e.g. *"I think some of my emotions are bad or inappropriate and I should not feel them. (R)"*), and non-reactivity to inner experience (e.g. *"I perceive my feelings and emotions without having to react to them"*). The responses were measured on a 5-point Likert scale ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*). The mean scores on all items were computed for each participant with higher scores indicating higher levels of DM. To assess the internal consistency of the items, Cronbach's Alpha was computed. With a Cronbach's Alpha of 0.9, the DM scale showed good internal consistency. The scales for the five facets showed acceptable to good internal consistency, with a Cronbach's Alpha of 0.76 for observing, 0.91 for describing, 0.88 for acting with awareness, 0.87 for non-judging, and 0.78 for non-reactivity.

ESM Measures

'Momentary Negative Thoughts'

The valence of the thoughts participants were having at the time of each inquiry was assessed by asking them to indicate how pleasant their thoughts were in that moment, on a 7-point bipolar scale ranging from -3 (*very unpleasant*) to 3 (*very pleasant*). Thoughts that were scored between 0 and 3 were rated as not negative and thus coded as 0, while thoughts scored between -3 and -1 were rated as negative and coded as 1.

'Stressful Events'

The perceived stressfulness of events was assessed by asking the participants to indicate on a 7-point bipolar scale ranging from -3 (*very unpleasant*) to 3 (*very pleasant*), how pleasant the most important event since the last inquiry was. Events that were scored between 0 and 3 were rated as not stressful and thus coded as 0, while events scored between -3 and -1 were rated as stressful and coded as 1.

'Momentary Affect'

To assess the levels of positive and negative momentary affect experienced at each inquiry, participants were asked to indicate on a 7-point Likert scale ranging from 1 (*not at all*) to 7 (*very much*), to what extent they felt *ashamed, worried, anxious, annoyed, and down*, with the mean scores of those items having been computed as negative momentary affect. They were also asked to indicate to what extent they felt *relaxed, satisfied, and cheerful,* with the mean scores of those items having been computed as positive momentary affect. To assess the internal consistency of the positive and negative momentary affect items within and between participants, between- and within-person Cronbach's Alpha values were computed. To compute the within-person Cronbach's Alpha, person-mean centered variables for each item were created by subtracting the person-specific mean per item from the corresponding item scores. The between-person Cronbach's Alpha for the positive momentary affect measurements was .89, and .94 for the negative momentary affect measurements, indicating good internal consistency. The within-person Cronbach's Alpha for the positive momentary affect measurements was .75, and .72 for negative momentary affect measurements, demonstrating acceptable internal consistency within participants.

Data Analysis

All analyses were performed using the statistical program R Studio (version 4.0.2). First, the demographic data of the participants were computed using descriptive statistics. In line with the methodology of this study, the variables for negative thoughts (NT) and stressful

events (SE) were recoded as categorical variables with the values 0 and 1, respectively. To test hypothesis 1a, lagged linear mixed models were used. As the first step, lagged variables for positive (PA_{T+1}) and negative (NA_{T+1}) momentary affect at time $t + 1$ were created to analyse the relationship between negative thoughts at one point and momentary affect at the next point of inquiry. To avoid carry-over effects from one day to the next, the last measures of PA_{T+1} and NA_{T+1} each day were coded as a non-response. This prevents the influence of negative thoughts from the previous day on the momentary affect measures of the following morning. Then, two linear mixed models were applied using NT as independent variable and PA_{T+1} and NA_{T+1} as the dependent variables. To allow the baseline levels of PA_{T+1} and NA_{T+1} and the effects of NT on momentary affect to vary across participants, the participant variable and the slope term for NT were included as random effects. Additionally, to account for potential systematic differences in affect that could occur at different times of inquiry, a random intercept for time points was included. To test hypothesis 1b, the same models were used with the addition of the interaction between NT and DM. Hypothesis 2a was tested using the same models, with stressful events (SE) as independent variable and PA and NA as separate dependent variables. Finally, to test hypothesis 2b, the same models were used with the addition of the interaction between SE and DM.

Results

Descriptive Statistics

Out of the 58 participant that took part in the original study, five were excluded for further analyses because they had not filled out necessary self-report questionnaires. Thus, the sample used for this study consisted of 53 participants. The mean age was 23.94 (SD = 3.03), with a minimum age of 19 and a maximum age of 35. An overview of the descriptive statistics of the sample is presented in Table 1. The descriptive statistics for the continuous variables dispositional mindfulness (DM), positive momentary affect (PA), and negative

momentary affect (NA) are presented in Table 2, and the descriptive statistics for the categorical variables negative thoughts (NT) and stressful events (SE) are presented in Table 3. The mean score for DM in this sample was 3.35. To compare, a study by Williams et al. (2014) found a mean DM score of 3.09 in an unspecified sample of 940 participants. This indicates that, on average, participants in the present study possessed slightly higher levels of DM, but further statistical testing and consideration of effect sizes would be necessary to determine the significance of this difference.

Table 1

Characteristics of the sample (N = 53)

Characteristics		Number	Percentage
Gender			
	Male	7	13.21 %
	Female	46	86.79 %
Nationality			
	Belgian	46	86.21 %
	Dutch	3	6.90 %
	Others	4	6.90 %
Marital Status			
	Single	12	22.64 %
	In a relationship	31	58.49 %
	Married	9	16.98 %
	Others/NA	1	1.89 %
Education			
	NA	1	1.89 %
	Working	14	26.42 %
	University students	38	71.70 %

Note. N = Number of respondents

Table 2

Descriptive statistics of continuous variables (N = 53)

	Mean	SD	Min	Max
DM	3.35	0.51	1.77	4.26
PA	4.58	1.32	1.00	7.00
NA	1.71	0.95	1.00	6.80

Note. DM = Dispositional Mindfulness, PA = Positive Momentary Affect, NA = Negative Momentary Affect, SD = Standard Deviation

Table 3

Descriptive statistics of categorical variables (N = 53)

	Category	Frequency	Proportion
NT	0	3256	.893
	1	391	.107
SE	0	3083	.865
	1	482	.135

Note. NT = Negative Thoughts, SE = Stressful Events

Relationship between Negative Thoughts and Momentary Affect and DM as Moderator

The linear mixed model used to investigate the relationship between negative thoughts and subsequent positive momentary affect revealed a significant negative relationship (*Estimate* = -0.46, *SE* = 0.07, $p < .001$). Similarly, the model used to investigate the relationship between negative thoughts and subsequent negative momentary affect revealed a significant positive relationship (*Estimate* = 0.35, *SE* = 0.07, $p < .001$). This

indicates that experiencing negative thoughts is associated with lower subsequent positive and higher subsequent negative momentary affect.

The terms for the interactions between negative thoughts and DM in the model for positive momentary affect (*Estimate* = -0.12, *SE* = 0.16, $p = .452$) and in the model for negative momentary affect (*Estimate* = -0.06, *SE* = 0.15, $p = .675$) were not significant, indicating that DM does not significantly moderate the relationships between negative thoughts and subsequent momentary affect.

Relationship between Stressful Events and Momentary Affect and DM as Moderator

The linear mixed model used to investigate the relationship between stressful events and positive momentary affect revealed a significant negative relationship (*Estimate* = -0.67, *SE* = 0.08, $p < .001$). Similarly, the model used to investigate the relationship between stressful events and negative momentary affect revealed a significant positive relationship (*Estimate* = 0.40, *SE* = 0.07, $p < .001$). This indicates that experiencing stressful events is associated with lower positive and higher negative momentary affect.

The terms for the interactions between stressful events and DM in the model for positive momentary affect (*Estimate* = 0.08, *SE* = 0.17, $p = .637$) and in the model for negative momentary affect (*Estimate* = -0.08, *SE* = 0.14, $p = .602$) were not significant, indicating that DM does not moderate the relationships between stressful events and momentary affect.

Post-hoc Analyses

Since no significant buffering effects of DM were found and prior literature hinted towards the possibility of the different facets independently buffering the effects of stressful events and negative thoughts on momentary affect (Blanke et al., 2018; Lindsay et al., 2018; Wenzel et al., 2020), post-hoc analyses were conducted to investigate the moderation effects of the five facets. Therefore, variables for the five different facets observing, describing,

acting with awareness, non-judging, and non-reactivity were created. To explore these potential moderation effects, the linear mixed models were repeated, with the addition of the interactions between the independent variables (NT and SE) and the separate variables for the five facets. Two models revealed significant buffering effects. Describing buffered the effects of NT on subsequent positive momentary affect (*Estimate* = -0.02, *SE* = 0.01, *p* = .037) and non-reactivity buffered the effects of SE on negative momentary affect (*Estimate* = -0.03, *SE* = 0.01, *p* = .044).

Discussion

The aim of this study was to investigate whether DM buffers the effects of negative thoughts and stressful events on momentary affect in everyday life. In line with the hypothesis, significant effects of negative thoughts and stressful events on momentary affect were found, with negative thoughts predicting lower subsequent positive and higher subsequent negative momentary affect, and stressful events predicting lower concurrent positive and higher negative momentary affect. However, in the sample used for this study, DM did not significantly moderate the effects of negative thoughts and stressful events on momentary affect.

The Effects of Stressful Events and Negative Thoughts on Momentary Affect

In line with findings of previous studies (Almeida et al., 2009; Van Eck et al., 1998; Ruby et al., 2013; Engert et al., 2014), the results of the present study indicate that stressful events and negative thoughts are significantly related to decreases in positive and increases in negative momentary affect in daily life. Next to the concept of stress reactivity as described earlier, these effects can be further explained by looking at the mechanisms of cognitive appraisal. During the process of cognitive appraisal, people interpret events or thoughts as threatening, harmful, or stressful, and decide whether they will be able to cope with them (Lazarus & Folkman, 1984). Appraising a stressor as threatening, harmful, or stressful can

lead to intensified negative emotions and, thus, increase the degree of stress reactivity (Folkman et al., 1986). Accordingly, the appraisal of a stressor as threatening has been shown to be related to increased psychological distress (Almeida et al., 2005). Together, this helps explain the negative impact of stressful events and negative thoughts on momentary affect by showing that cognitive appraisal of these stressors influences stress reactivity.

The Moderation Effect of DM

In previous studies, DM was found to mitigate the effects of a social stressor (Brown et al., 2012) and distressing events (Bergomi et al., 2013) on affect. Next to this, DM has been associated with an improved ability to let go of negative thoughts and decreased emotional reactions to them (Feldman et al., 2016; Frewen et al., 2007). Thus, DM was expected to mitigate the adverse effects of stressful events and negative thoughts on momentary affect. Methodological and theoretical factors could offer explanations for why DM did not have a moderating effect in this study. A methodological factor could be the relatively small sample size of the study, which must be considered a limitation. With 53 participants, the sample is rather small. In comparison, other studies investigating the concepts of mindfulness and affect in daily life used between 70 (Blanke et al., 2018) and well above 100 participants (Brockman et al., 2016; Wenzel et al., 2020). Thus, future studies should employ similar study designs with larger samples to see if the findings of the current study can be verified. Except for the interaction between stressful events and DM in the model for positive momentary affect, the interaction effects were in the expected direction, hinting at the possibility of larger sample sizes revealing more significant buffering effects. However, the mixed results point towards the notion that there might be no significant moderation effects of DM on the effects of stressful events and negative thoughts on momentary affect.

A potential theoretical explanation for this lack of moderation effects of DM relates to the distinction between state mindfulness and DM. Drawing from examples of other constructs, such as anxiety and affect, research has shown that while trait measures often predict state measures, traits cannot fully explain momentary state measures, which can vary significantly and are influenced by immediate circumstances (Endler & Kocovski, 2001; Merz & Roesch, 2011). While DM refers to the general tendency of individuals to be mindful in daily life, state mindfulness refers to the immediate level of mindful awareness that can fluctuate from moment-to-moment dependent on the context and situation (Keng et al., 2011; Shapiro et al., 2005; Suelmann et al., 2018). For instance, momentary affect itself can be one factor influencing levels of state mindfulness, with lower affect predicting lower concurrent levels of mindfulness (Suelmann et al., 2018). In a study looking at state mindfulness and affect, Blanke et al. (2018) found indications for a buffering effect of state mindfulness on the negative relationship between daily hassles and affect, measured once per day. Further, mindfulness training has been shown to have a reducing effect on stress reactivity (Lindsay et al., 2018). In their study on the effectiveness of mindfulness training, they were able to confirm those findings. Crucially, the study design included a 14-day intervention period, followed by a booster session just before the post-intervention assessment, which specifically primed the participants to use their acquired mindfulness skills (Lindsay et al., 2018). Thus, the stress-buffering effects found in that study can likely be attributed to the concept of state mindfulness. Similarly, Frewen et al. (2007) found significant decreases in the perceived difficulty of letting go of negative thoughts after completion of a meditation-based mindfulness intervention, and Feldman et al. (2010) found a brief mindfulness exercise to decrease emotional reactivity to repetitive thoughts. These findings point towards the possibility that fluctuating levels of state mindfulness, which could not have been detected by a single assessment of DM, might play a role in moderating the effects of stressful events and

negative thoughts on momentary affect in daily life. However, these past studies indicating potential buffering effects of state mindfulness only used single measurements and did not investigate those effects in everyday life. Thus, the possibility of state mindfulness moderating the effects of distressing events and thoughts on momentary affect in daily life should be explored in future research using ESM designs with multiple daily assessments of state mindfulness levels. Should such buffering effects of state mindfulness be found, this could have important implications for designing interventions specifically aimed at reducing the adverse effects of stressful events and negative thoughts by inducing more mindful states and improving the ability to react in mindful ways to distressing situations in daily life.

Mindfulness Facets as Potential Moderators

Several past studies have indicated that the extent to which individuals possess the different facets of mindfulness, especially acceptance, could influence the moderating qualities of mindfulness (Blanke et al., 2018; Lindsay et al., 2018; Wenzel et al., 2020). The only significant effects found in the present study were of the facets “Nonreactivity”, which relates to the ability to let thoughts or feelings arise without reacting or becoming consumed by them (Baer et al., 2006), and buffered the effects of stressful events on negative momentary effect, and “Describing”, which relates to the ability to verbally label internal experiences such as thoughts and emotions (Baer et al., 2006), and buffered the effects of negative thoughts on positive momentary affect. In line with these findings, Ciesla et al. (2012) found non-reactivity to buffer the relationship between the number of daily hassles and negative affect, and Feldman et al. (2016) found non-reactivity to buffer the effects of distressing internal experiences on negative affect. However, those studies also found such buffering effects for other facets, such as non-judging or acting with awareness, which could not be replicated in this study. Thus, future research should try to confirm the findings of this study and further investigate the different facets of mindfulness as potential moderators of the

adverse effects of stressful events and negative thoughts on daily momentary affect. If confirmed by future research, the findings of the present-study could have implications for interventions aiming at specifically increasing those facets of mindfulness that have buffering effects.

Strengths and Limitations

An important strength of the study is that it attempted to fill a gap in the literature on mindfulness by investigating how DM moderates the relationships of negative thoughts and stressful events with momentary affect. Further, the methodology of the study shows several strengths, such as the use of ESM, which allowed for the collection of real-time data on negative thoughts, stressful events, and momentary affect and minimises retrospective bias (Myin-Germeys et al., 2018). Next to this, although it does not capture potentially context-dependent and fluctuating levels of mindfulness, the use of the FFMQ to assess DM can be considered another methodological strength. The FFMQ is a widely used self-report measure and allows for comprehensive and thorough assessment of DM. It makes use of a multi-faceted approach, assessing multiple aspects of mindfulness, which enhances the ability to capture the complexity of the construct of DM (Baer et al., 2006).

Next to the strengths, the study has some limitations that need consideration. As mentioned above, with 53 participants, the sample is rather small, which can make it more difficult to detect between-subject effects and increase the risk of type-II errors (De Calheiros Velozo et al., 2021). Next to this, the questionnaires to be filled out at every inquiry during the ESM study were quite long. This could have caused response fatigue (Reynolds et al., 2016), which can lead to less accurate responses effecting the quality and reliability of the data.

Conclusion

To conclude, while the present study highlights the significant negative relationships between negative thoughts and subsequent momentary affect, as well as stressful events and momentary affect, no buffering effects of DM on those relationships could be found. This might be explained by the relatively small sample size and differences between state mindfulness and DM in their ability to stabilise momentary affect in challenging daily situations. Further, post-hoc analyses revealed potential buffering effects of the mindfulness facets of describing and non-reactivity. While this study failed to find the expected moderating effects of DM, it provides additional support for the idea of different facets of mindfulness buffering the effects of stressful events and negative thoughts on affect and offers several suggestions for future research. Future studies should replicate this study using a larger sample, and further investigate the possibilities of state mindfulness and the different mindfulness facets acting as moderators in daily life, using thorough ESM designs.

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