



# The path from mindfulness to self-esteem: self-concept-clarity and cognitive flexibility as mediators

Andreas Stenhaug<sup>1</sup> · Stian Solem<sup>1</sup>

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## Abstract

Mindfulness is positively associated with self-esteem, yet little is known about possible mediators underlying this relation. In this study, the role of self-concept clarity and cognitive flexibility is examined as potential mediators. A predominantly female (78.9%) sample ( $N=204$ ) with a mean age of 31 years participated in a cross-sectional survey. They completed the Five Facet Mindfulness Questionnaire, the Rosenberg Self-Esteem Scale, the Self-Concept Clarity Scale, and the Cognitive Flexibility Scale. To examine relations between study variables, a multiple linear regression analysis was conducted, and a parallel mediation model was performed using the Hayes' process macro. The regression analysis explained 56% of variance in self-esteem, and all study variables were significant predictors, with self-concept clarity as the strongest predictor. The results found support for partial mediation, with self-concept clarity exhibiting a strong association with self-esteem ( $\beta=0.47$ ). The effect of cognitive flexibility was weaker but significant ( $\beta=0.16$ ). Self-concept clarity and cognitive flexibility partially explained the path from dispositional mindfulness to self-esteem. This could indicate an explanatory role of these two factors, and suggests possible processes by which mindfulness may enhance self-esteem.

**Keywords** Mindfulness · Self-concept clarity · Cognitive flexibility · Self-esteem

## Introduction

A positive association between dispositional mindfulness and self-esteem ( $r$  [range] = 0.39–0.50; Randal et al., 2015) is found consistently across studies, yet little is known about possible mediators underlying this relation. Further, researchers have investigated self-esteem as a mediator of mindfulness on several mental health-outcomes, such as depression and anxiety. Specifically, self-esteem exhibited partial mediation of the mindfulness-social anxiety relation (Rasmussen & Pidgeon, 2011), the mindfulness-depression relation, the mindfulness-anxiety relation (Bajaj et al., 2016b), and full mediation of the mindfulness- mental well-being relation (Bajaj et al., 2016a). Thus, self-esteem is an important construct connecting mindfulness to indices of mental health, which highlights the need to better understand the relationship between mindfulness and self-esteem. In this

study, the theoretically plausible, yet empirically scarce, role of self-concept clarity and cognitive flexibility is examined.

Self-esteem is often viewed as the evaluative component of the self-concept, referring to an individual's subjective evaluation of his or her worth as a person (Orth & Robins, 2014). The transdiagnostic construct is associated with several positive psychological outcomes, such as positive emotions and social confidence, and is inversely related to depression and anxiety (Rosenberg et al., 1995). Low self-esteem has been associated with reduced interpersonal risk taking, such as being cautious and restrained to prevent perceived negative attributes to be noticed (Zeigler-Hill, 2011). These self-protective strategies are employed less by individuals with higher self-esteem, as they possess evaluative resources to buffer themselves from potential failure and rejection. Although some theorists question the functional value of self-esteem (e.g., Baumeister et al., 2003), longitudinal data indicate that self-esteem is consequential for success in life domains such as relationships, work, and health, making it a worthy endeavor to examine its precursors and correlates (Orth & Robins, 2014).

Why might mindfulness relate to or enhance self-esteem? One plausible mediator of this relation is cognitive

✉ Andreas Stenhaug  
andreasstenhaug@hotmail.com

<sup>1</sup> Department of Psychology, Norwegian University of Science and Technology, Trondheim 7491, Norway

flexibility, which can be defined as “the human ability to adapt cognitive processing strategies to face new and unexpected conditions” (Moore & Malinowski, 2009, p.177). When a person is cognitively flexible, one adjusts to present moment situational factors, and become aware of choices and alternatives of viewing the same information (Martin & Rubin, 1995). As mindfulness involves actively noticing new things, it should reduce the inflexibility through which identification with thought may arise (Carson & Langer, 2006). Thus, an experience of self-relevant cognitions as context-dependent processes, rather than inflexible facts, could underlie the positive association between mindfulness and self-esteem. In support of this, a study using the Stroop-task found that meditators could de-automatize previously automatic cognitive processes, as opposed to non-meditators, and that these individuals had significantly higher dispositional mindfulness scores (Moore & Malinowski, 2009). In another study, a sample with elevated anxiety-symptoms performed a mindful-breathing exercise, inducing greater performance on attentional-inhibition (Lee & Orsillo, 2014). This suggest that dispositional mindfulness might provide the capacity for actively seeing self-relevant information and situations from new perspectives.

Despite there being no known research to examine the associations between dispositional mindfulness, cognitive flexibility, and self-esteem, there are plausible links. Of relevance, neurobiological findings suggest that mindfulness meditation may increase experiential engagement with the world through an integrative fronto-parietal control network, thereby relaxing narrative forms of self-reference that could underlie low self-esteem (Vago & Silbersweig, 2012). An experiential self-reference entails an experience of the self unextended in time, in contrast to a narrative self-reference that implicate one’s identity, memories, intentions and self-evaluation (Gallagher, 2000; Dor-Ziderman et al., 2013). This experiential shift should require the ability to interrupt automated processes, as intrinsic in cognitive flexibility. Furthermore, cognitive inflexibility is associated with rumination (Davis & Nolen-Hoeksema, 2000), and self-critical rumination has been shown to predict low self-esteem (Kolubinski et al., 2019). Dispositional mindfulness could therefore contribute to self-esteem by reducing ruminative tendencies.

Another plausible, yet unexamined pathway from mindfulness to self-esteem, is through self-concept clarity. Self-concept clarity refers to “the extent to which self-beliefs are clearly and confidently defined, internally consistent, and temporally stable” (Campbell et al., 1996, p. 141). It is the degree to which the narrative self is known, irrespective of the content of self-beliefs. Studies consistently report significant moderate positive associations between dispositional mindfulness and self-concept clarity (Hanley & Garland, 2017; Dummel, 2018; Bharti et al., 2022). Furthermore, individuals

with low self-esteem are more likely to have self-concepts characterized by uncertainty, instability, and inconsistency, in contrast to their higher-esteemed counterparts (Campbell et al., 1996). Taken together, clarity of self-beliefs could provide some explanatory utility as to why mindful individuals tend to report higher self-esteem (Randal et al., 2015).

How might self-concept clarity mediate the positive association between mindfulness and self-esteem? If people suspect they have mostly negative characteristics, they are likely to prefer an uncertain self-concept, rather than risk acquiring certain knowledge that this is true (Campbell, 1990). However, inducing a state of mindfulness can attenuate loss of self-esteem to negative feedback (Lyddy et al., 2022), and a higher level of mindfulness is related to lower levels of verbal defensiveness (Lakey et al., 2008). A non-evaluative orientation to experience might therefore reduce reactivity to self-related threats, allowing individuals to gain new and clear self-knowledge. Consequently, a non-evaluative, empirical self-experience could relate to more clear self-knowledge, which in turn relates to a higher evaluation of self.

In this study, it is hypothesized that:

1. Dispositional mindfulness is positively associated with self-esteem.
2. Self-concept clarity and cognitive flexibility partially mediates the relation between dispositional mindfulness and self-esteem.

This is based on the aforementioned rationale and available evidence demonstrating that mindfulness contributes to self-esteem (Randal et al., 2015), and that mindfulness relates to self-concept-clarity and cognitive flexibility (Hanley & Garland, 2017; Moore & Malinowsky, 2009). Investigating the relative contribution of these variables is important, as they may serve as targets in mindfulness-based interventions for low self-esteem and prove useful to reduce the explanatory gap relating mindfulness to self-esteem.

## Methods

### Participants and procedure

Participants were recruited using social media and posters on the university campus ( $N=204$ ). Social media recruitment was done by reaching out to groups of students, psychologists, and mindfulness-meditators respectively. There were no set inclusion or exclusion criteria except voluntary participation and being 18 years of age and over. Questionnaires and the invitation to participate were in Norwegian, making basic understanding of Norwegian language a pre-requisite. The participants responded to web-based questionnaires, where the survey program allowed no

missing data. Consent to participate was obtained prior to the administration of the survey. Demographic information included sex (male, female), age, educational level, and mindfulness-meditation experience (frequency and length). The sample was predominantly female (78.9%), with a mean age of 30.9 ( $SD = 11.5$ ), ranging from 18 to 75 years. Table 1 summarizes the sample's characteristics.

About half (51.5%) of the participants had experience with mindfulness-meditation; 38.8% had experience for a year or more. Some participants (10.7%) practiced mindfulness-meditation three times a week or more, and 5.9% were an active member of a practicing group. Participants were primarily pursuing or possessing a master's degree (66.2%), followed by a bachelor's degree (23.5%) and upper secondary school (4.9%). Participants were anonymous, but they could volunteer to list their email-address for a lottery of five gift-cards (500 NOK). E-mail addresses and participants' responses were saved and stored on separate servers to ensure anonymity. The study was approved by the Regional Committee for Medical and Health Research Ethics in Norway (REK Midt, ref.nr. 3609409).

Post hoc tests found differences between age groups 18–25 and 50+ on FFMQ and self-concept clarity, with higher scores for older participants. There were no statistically significant differences ( $p < .01$ ) for any of the other grouping variables.

## Measures

Frequency of mindfulness-meditation was scored using a 1–5 scale (1 = monthly, 2 = weekly, 3 = 1–2 times per week, 4 = 3–5 times per week, 5 = daily). Experience with mindfulness-meditation was scored using a 1–4 scale (1 = 1–6 months, 2 = 6–12 months, 3 = 1–5 years, 4 = 5+ years).

Dispositional mindfulness was measured with the Five Facet Mindfulness Questionnaire 15-item version (FFMQ; Baer et al., 2006) encompassing the tendency to (1) notice or attend to inner and outer experience, (2) describe and label experiences with words, (3) act with undivided and clear awareness, (4) have a non-judging stance towards inner experience, and (5) be non-reactive to thoughts and feelings. Each question is rated on a 5-point Likert scale, ranging

**Table 1** Sociodemographic data and group comparisons on study variables (M [SD])

	N (%)	FFMQ	Self-concept clarity	Cognitive flexibility	Self-esteem
Sex					
Female	161 (78.9)	52.4 (7.6)	42.4 (9.7)	54.0 (6.5)	31.1 (5.3)
Male	43 (21.1)	50.0 (8.0)	41.9 (9.4)	55.0 (7.0)	31.0 (5.9)
Age group					
18–25	88 (43.1)	49.9 <sup>a</sup> (7.5)	40.6 <sup>a</sup> (8.9)	53.1 (7.3)	30.1 (5.4)
25–30	51 (25.0)	52.1 (7.5)	42.3 (9.5)	53.7 (5.0)	30.5 (5.6)
30–50	43 (21.1)	53.6 (7.6)	42.9 (10.2)	56.0 (6.5)	32.2 (4.8)
50+	22 (10.8)	56.4 <sup>a</sup> (6.8)	48.0 <sup>a</sup> (9.4)	56.4 (6.4)	34.0 (5.2)
Education					
Other	21 (10.2)	49.5 (8.3)	38.9 (9.4)	51.2 (7.4)	29.0 (5.5)
Bachelors	48 (23.5)	51.1 (8.5)	40.9 (10.2)	54.0 (6.8)	30.2 (5.3)
Masters	135 (66.2)	52.6 (7.2)	43.3 (9.3)	54.7 (6.3)	31.7 (5.4)
Mindfulness experience					
Yes	105 (51.5)	52.9 (7.6)	42.2 (9.9)	55.1 (6.1)	31.0 (5.7)
No	99 (48.5)	51.0 (7.7)	42.4 (9.3)	53.2 (7.0)	31.1 (5.4)
Experience					
1–6 months	15 (7.4)	51.2 (8.2)	40.4 (11.5)	52.7 (5.5)	30.9 (5.6)
6–12 months	11 (5.4)	49.0 (7.1)	40.3 (10.5)	55.9 (6.4)	30.5 (5.6)
1–5 years	52 (25.5)	53.5 (7.1)	41.1 (9.4)	54.3 (6.1)	30.1 (5.5)
Over 5 years	27 (13.2)	54.1 (8.1)	46.1 (9.1)	57.7 (5.4)	33.1 (5.8)
Frequency					
Monthly or less	54 (26.5)	51.1 (7.2)	42.8 (9.2)	54.6 (5.5)	30.2 (5.9)
Weekly	19 (9.3)	52.4 (7.7)	38.9 (11.2)	55.4 (6.8)	30.8 (6.2)
1–2 times a week	10 (4.9)	55.7 (8.9)	42.6 (13.1)	57.1 (7.0)	31.6 (6.9)
3–5 times a week	8 (3.9)	56.3 (5.9)	41.4 (10.4)	53.6 (5.1)	32.6 (3.2)
Daily	14 (6.9)	56.5 (7.4)	44.6 (8.4)	56.1 (7.1)	32.9 (4.2)

Other = high school, vocational school, and others. <sup>a</sup> =  $p < .01$

from 1 (never or very rarely true) to 5 (very often or always true) with higher scores reflecting greater mindfulness. Items are selected from the FFMQ-39, whereby FFMQ-15 has a similar factor structure and correlate strongly with the initial 39-item measure (Gu et al., 2016). Cronbach's alpha was 0.82 for the entire scale, and as follows for each subscale: observing (0.62), describing (0.84), acting with awareness (0.69), non-judging (0.81), non-reactivity (0.71).

Self-esteem was measured with the Rosenberg Self-Esteem Scale, (Rosenberg, 1965). The RSE has 10 items using a 4-point Likert scale, with higher scores reflecting greater self-esteem. The RSE has shown to be a reliable and valid measure of global self-esteem (Gray-little et al., 1997). Cronbach's alpha was 0.86.

Self-concept clarity was measured with the Self-Concept Clarity Scale, a 12-item questionnaire (Campbell et al., 1996). Each question is rated on a 6-point Likert scale, with higher scores reflecting greater self-concept clarity. Sample items include "My beliefs about myself often conflict with another" and "In general, I have a clear sense of who I am and what I am". The scale has shown to be a reliable and valid measure of self-concept clarity (Campbell et al., 1996). Cronbach's alpha was 0.89. The scale was translated to Norwegian by the authors using a back-translation procedure.

Cognitive flexibility was measured with the Cognitive Flexibility Scale, a 12-item questionnaire (Martin & Rubin, 1995). Each question is rated on a 6-point Likert scale, with higher scores reflecting greater cognitive flexibility. Sample items include "I feel like I never get to make a decision", and "I have many possible ways of behaving in any given situation". The scale has demonstrated good internal reliability, and construct- and concurrent validity (Martin & Rubin, 1995). Cronbach's alpha was 0.79. The scale was translated to Norwegian by the authors using a back-translation procedure.

## Statistical analyses

Pearson's correlations were used to provide correlations between all study variables. Several *t*-tests were conducted to see if the categorical variables gender, education, and meditation-experience could be related to the study variables. To explore the relative contribution of study variables in explaining variance in self-esteem, a multiple linear regression was applied. The independent variables were gender, age, dispositional mindfulness, self-concept clarity, and cognitive flexibility, and the dependent variable was self-esteem. To investigate whether self-concept-clarity and cognitive flexibility could explain the association between mindfulness and self-esteem, a parallel mediation model was performed using model 4 from the Hayes' process macro version 4.1 on SPSS v. 28. The dependent variable for

analysis was self-esteem and the independent variable was mindfulness. The mediator variables were self-concept clarity and cognitive flexibility. Age was included as a covariate. The analysis consisted of 5000 bootstrapped samples.

## Results

The *t*-tests showed no significant association between the study variables and gender and education, with one trivial exception. Possessing or pursuing a master's degree compared to a bachelor's degree, was associated with longer experience with mindfulness meditation  $t(97)=0.16, p=.019$ . Age exhibited positive correlations with the study variables, suggesting that higher age was associated with higher scores on dispositional mindfulness, self-esteem, self-concept clarity, and cognitive flexibility, as well as frequency and length of experience with mindfulness meditation. Length of mindfulness-meditation experience was also positively correlated with cognitive flexibility. Frequency of mindfulness-meditation exhibited positive correlations with dispositional mindfulness.

Every facet of dispositional mindfulness was significantly correlated with self-esteem, ranging from weak to medium in strength: observe ( $r=.21$ ), acting with awareness ( $r=.32$ ), non-reacting ( $r=.40$ ), describe ( $r=.43$ ) and non-judging ( $r=.59$ ). Table 2 displays the correlations between the study variables. As indicated in Table 2, there was a strong positive correlation between self-esteem and self-concept clarity. Dispositional mindfulness showed moderate positive correlations with self-concept clarity, cognitive flexibility, and self-esteem. Self-concept clarity exhibited a moderate positive correlation with cognitive flexibility.

A multiple linear regression analysis (Table 3) showed that gender, age, dispositional mindfulness, self-concept clarity, and cognitive flexibility explained 56% of the variance in self-esteem. Gender and age were not significant predictors. The data met the assumption of independent errors (Durbin-Watson = 2.06), and tolerance values ranged from 0.64 to 0.96 (VIF values from 1.04 to 1.65), indicating no problems with multicollinearity.

The results of the parallel mediation analysis showed a partial mediation with self-concept clarity showing a strong association with self-esteem ( $p < .0001$ ). The effect of cognitive flexibility was weaker but significant ( $p = .0044$ ). A summary of the mediation analysis is displayed in Fig. 1.

A SEM-model was used to investigate possible differential effects of FFMQ subscales. Using the two most reliable subscales (non-judging and describing), the analysis found that non-judging had the strongest effect on self-concept clarity and self-esteem. Describing had a stronger effect on cognitive flexibility but no direct effect on self-esteem. The result of the SEM-model is illustrated in Supplemental Fig. S1.

**Table 2** Bivariate correlations, means and standard deviations for study variables

	1.	2.	3.	4.	5.	6.	<i>M (SD)</i>
1. FFMQ							51.94 (7.69)
2. Age	0.27***						30.87 (11.50)
3. Frequency	0.29**	0.21*					2.13 (1.45)
4. Length	0.17	0.34***	0.14				2.87 (0.96)
5. Self-concept clarity	0.53***	0.26***	0.04	0.18			42.27 (9.59)
6. Cognitive flexibility	0.51***	0.19**	0.07	0.22*	0.50***		54.20 (6.61)
7. Self-esteem	0.59***	0.26***	0.18	0.12	0.70***	0.53***	31.05 (5.43)

Frequency = frequency of mindfulness-meditation. Length = experience with mindfulness-meditation  
 \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

**Table 3** Multiple regression predicting self-esteem

Variables	$\beta$	<i>t</i>	<i>p</i>
Gender	0.03	0.64	0.521
Age	0.04	0.83	0.410
Dispositional mindfulness	0.25	4.25	<0.001
Cognitive flexibility	0.16	2.73	0.007
Self-concept clarity	0.47	8.09	<0.001

The dependent variable was the Rosenberg Self-Esteem scale

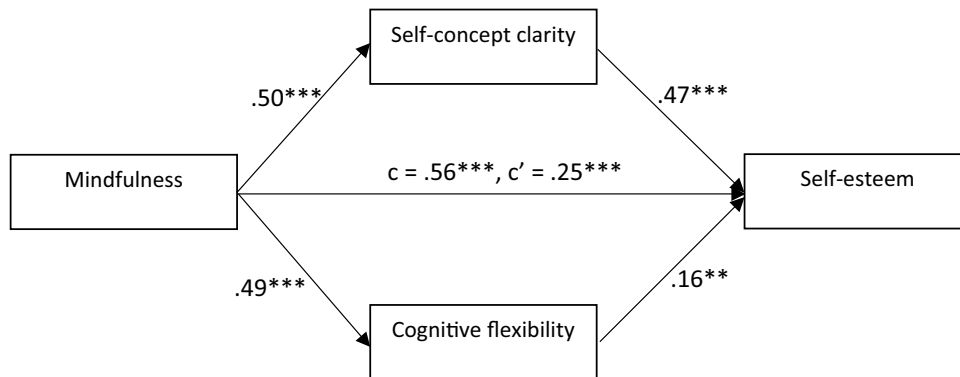
### Discussion

The primary goal of this study was to test whether self-concept clarity and cognitive flexibility could mediate the relation between mindfulness and self-esteem, thereby addressing the empirical gap relating these clinically relevant constructs. A regression analysis of dispositional mindfulness, self-concept clarity and cognitive flexibility as independent variables, explained 56% of the variance in the dependent variable self-esteem. Self-concept clarity and cognitive flexibility were significant mediators of the relation between dispositional mindfulness and self-esteem, with self-concept-clarity exhibiting the strongest association to self-esteem. The results align well with previous studies finding mindful individuals to report greater self-esteem

(Randal et al., 2015), yet extend them by demonstrating mediational effects of self-concept-clarity and cognitive flexibility on this relation.

In this study, self-concept clarity significantly mediated the relation between dispositional mindfulness and self-esteem. This suggest that being mindful in everyday life may contribute to more clear self-beliefs, which in turn is associated with greater self-esteem. Furthermore, it offers correlational support for the hypothesis that mindfulness improves self-knowledge (Carlson, 2013). Given theoretical claims of low self-esteem being linked to cautiousness, attempts at hiding perceived bad qualities, and low risk-willingness (Zeigler-Hill, 2011), a non-evaluative present moment awareness may counteract such self-protective strategies, thus overcoming a barrier for self-knowledge (Carlson, 2013). Following Bishop et al’s. (2004) operationalization of mindfulness, present moment attention may facilitate increased information about one’s thoughts, feelings, and behaviors, whereas a non-evaluative orientation to experience may reduce reactivity to negative self-relevant information. In support of this, one study found that dispositional mindfulness reduced affective and cortisol responses to social evaluative threat (Brown et al., 2012). In another study it was found that a brief mindfulness induction weakened the relation between negative feedback and reductions in self-esteem (Lyddy et al., 2022). Mindful individuals may

**Fig. 1** Parallel mediation analysis exploring two potential mediators of the dispositional mindfulness – self-esteem relation. *Note.* The figure shows standardized path coefficients. Path *c* = total effect, path *c'* = direct effect. Age was added as a covariate but was not significant ( $p = .065$ ) in the analysis. \*\*  $p < .01$  \*\*\*  $p < .001$



therefore pursue situations that generate negative thoughts about the self, yet without elaborative processing or avoidance of these experiences, likely learning something about new about themselves (Pepping et al., 2016). Self-concept clarity, and ultimately greater self-esteem, may thus be facilitated by addressing informational barriers to self-knowledge, and by reducing reactivity to self-related threats (Carlson, 2013). That said, any claims of causality are tentative due to the cross-sectional nature of the study.

Cognitive flexibility also mediated the relation between dispositional mindfulness and self-esteem. This indicates that being mindful may contribute to more flexible thought processes, which in turn is associated with greater self-esteem. Considering that cognitive inflexibility is associated with ruminative styles of thinking (Davis & Nolen-Hoeksema, 2000), dispositional mindfulness could positively influence self-esteem by reducing rumination. Mindful thinking entails being sensitive to different perspectives and the current context, and this may counteract repetitive and narrow thinking repertoires (Carson & Langer, 2006). Relatedly, cognitive flexibility may contribute to decentering, which has been suggested as a potential mechanism of mindfulness (Gecht et al., 2014). In the context of self-esteem, it is possible that mindful individuals become less consumed by negative self-relevant thoughts, and instead perceive them flexibly as a context-dependent mental event. Further, cognitive flexibility and self-esteem are both indices of psychological health and has shown promising results as outcomes variables in mindfulness-based interventions (Lao et al., 2016; Randal et al., 2015). Yet, the relationship between cognitive flexibility and self-esteem is poorly understood and results vary between studies from small and insignificant associations (Kim & Omizo, 2005) to moderate effects (Chen et al., 2019). More research is therefore needed to clarify the relation between the complex and diverse concept of cognitive flexibility with other relevant variables such as self-esteem and rumination.

With respect to the facet level of dispositional mindfulness, non-judging exhibited the strongest relationship to self-esteem, which is in accord with a previous study (Pepping et al., 2013). The use of a short form of the FFMQ in this study warrants caution regarding interpretation on the facet level (Pelham III et al., 2019). However, these findings suggest that self-esteem may be influenced by dispositional mindfulness in a multitude of ways, and draws attention to the potential relative significance of being non-judgmental towards experience. Though seemingly paradoxical, a non-judgmental orientation to experience may serve as a path towards a greater judgement of self.

These findings have potential clinical implications. Specifically, treatments that target low self-esteem might benefit from addressing barriers to clear self-knowledge and cognitive flexibility. Mindfulness-based interventions could be promising to achieve this. For instance, following 8-weeks

of mindfulness-based cognitive therapy, a statistically significant increase ( $d=0.64$ ) in self-esteem was found for outpatients with mood- or anxiety disorders (Ree & Craigie, 2007). Further, a recent systematic review found preliminary evidence for improvements in cognitive flexibility following mindfulness-based interventions (Lao et al., 2016). Conceivably, a non-evaluative present moment awareness could inform clients that behaviors can be viewed from different perspectives in light of context, and challenge the notion that one is inherently “bad” (Carson & Langer, 2006). Future studies should examine whether cognitive flexibility and/or self-concept clarity are underlying mechanisms by which mindfulness-interventions may increase self-esteem.

### Limitations and future directions

This study has different limitations. First, the strong correlation between the measures of self-concept clarity and self-esteem ( $r=.70$ ) suggest that some of the association may be due to conceptual overlap between the constructs. However, there was no problem with multicollinearity, indicating that they may indeed be separable. Importantly, this study was cross-sectional, precluding us from making any conclusions regarding causality, temporal dimensions, or direction of influence. The sample ( $N=204$ ) was predominantly female (78.9%) and had a large proportion of people pursuing or possessing a master’s degree (66.2%). This may limit the generalizability of the results. Survey studies risk selection bias and future studies should therefore aim to recruit representative samples. However, there were no statistical differences for gender or education on any study variable, supporting the notion that the findings could be valid also for males and people from different educational backgrounds. Furthermore, there may be other important variables that mediate the significant positive association between dispositional mindfulness and self-esteem. One suggestion for future research is to examine self-critical rumination as a mediator, given that it is predictive of low self-esteem (Kolubinski et al., 2019), and lower levels of rumination is associated with higher levels of mindfulness (Heeren & Philippot, 2010).

Moreover, the measures were self-report data, which might make responding vulnerable to social desirability bias. The survey was conducted using an online platform (nettskjema.no) and the order of the questionnaires was the same for everyone, starting with demographics, then mindfulness, self-esteem, self-concept clarity, and cognitive flexibility. Future survey studies should explore and control for possible order effects. Relatedly, a recent systematic review found no relation between self-report measures and neuropsychological tests of cognitive flexibility in healthy adults (Howlett et al., 2021). Therefore, future studies should employ both self-report measures and neuropsychological tests of cognitive flexibility to help clarify and replicate the significant relationship to self-esteem found in this study.

## Conclusion

In this study, it was shown that self-concept clarity and cognitive flexibility are significant mediators of mindfulness and self-esteem, with self-concept clarity exhibiting the strongest association to self-esteem. This suggests that a clearer sense of self, and more flexible thinking, can partially explain the path from dispositional mindfulness to self-esteem. This claim is further evidenced by the regression analysis, whereby 56% of variance in self-esteem was explained by dispositional mindfulness, self-concept-clarity, and cognitive flexibility. Given the centrality of self-concept clarity, exploring this factor in future studies could provide tentative insights into a potential mechanism of mindfulness, possibly informing future treatment for low self-esteem. Finally, evidence relates mindfulness to experiential self-processes (e.g., Farb et al., 2007), and simultaneously to the narrative self-aspects of self-concept clarity and self-esteem, as in this study. Hence, calling of the search for self-understanding and self-esteem altogether, by being in the present moment, may be precisely what leads to the acquirement of a clear, esteemed self. Perhaps it is through forgetting about one's narrative self, that a clear foundation for authenticity and self-esteem arises?

**Supplementary information** The online version contains supplementary material available at <https://doi.org/10.1007/s12144-023-05016-y>.

**Author contribution** SS obtained ethical approval. Conceptualization and design of this paper: both; Data preparation: AS; formal analysis: both; Writing original draft: AS; Rewriting and editing: both. Both authors read and approved the final manuscript.

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**Data availability** The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

## Declarations

**Ethics approval and consent to participate** The study was approved by the Regional Committee for Medical and Health Research Ethics in Norway (REK Midt, ref.nr. 3609409). Informed consent was obtained from all individual participants included in the study.

**Competing interests** On behalf of both authors, the corresponding author states that there is no conflict of interest.

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