Self-Compassion Mediates the Relationships Between University Students' Mindfulness, Dysfunctional Attitudes, and Various Distress and Well-Being Indicators

Tünde Póka
PhD Student, Evidence-Based Psychological Assessment and Interventions Doctoral School, Babeș-Bolyai University, Romania, email address: tunde.poka@ubbcluj.ro

Andrea Barta
Assistant Professor, Department of Applied Psychology, Babeș-Bolyai University, email address: andrea.barta@ubbcluj.ro

László Mérő
Professor, Department of Affective Psychology, ELTE, Institute of Psychology, Eötvös Lóránd University, Hungary, email address: mero.laszlo@ppk.elte.hu

Abstract: *Objective*: The current study intended to model the relationships between mindfulness, dysfunctional attitudes, and self-compassion in predicting university students' various indicators of emotional distress and well-being of university students. We aimed to examine the mediative role of self-compassion and the mediative roles of self-coldness and self-warmth in these relationships.

*Methods***:** Applying a correlational design, validated instruments were used to measure mindfulness, dysfunctional attitudes, self-compassion (and its two main components: self-warmth and self-coldness), various indicators of emotional distress (i.e., negative affect, depression, anxiety, stress), and well-being (i.e., soothing positive affect, activating positive affect, satisfaction with life). The final sample consisted of N = 176 university students. The proposed models were tested by SEM (structural equation modeling) using SPSS AMOS 20.

Results**:** The main results obtained were consistent with the hypotheses. As expected, higher levels of mindfulness led to higher well-being and lower emotional distress through increased self-compassion, and higher levels of dysfunctional attitudes led to lower well-being and higher emotional distress through decreased self-compassion. However, the results also indicated that self-coldness was more important than self-warmth in all of these relationships.

https://doi.org/10.24193/JRHE.2023.2.2

Conclusions: The results of the proposed current study supported the models for the relationships between dysfunctional attitudes, mindfulness, and self-compassion (and its positive and negative components) in predicting the various indicators of emotional distress and well-being of university students. These findings support the use of self-compassion interventions, particularly those aimed at reducing self-coldness, to improve well-being and reduce distress among university students.

Keywords*:* mindfulness, dysfunctional attitudes, self-compassion, distress, well-being

Introduction

Undergraduate students experience reduced levels of well-being and increased psychological distress compared to the general community (Bore et al., 2016; Larcombe et al., 2016; Regehr et al., 2013); therefore, it is essential to design effective interventions for them to reduce their distress and improve their well-being.

Cognitive vulnerabilities such as dysfunctional attitudes are considered to be well-known mechanisms underlying emotional distress (e.g. negative affect, stress, anxiety, depression, guilt, etc.) and lower levels of well-being (e.g., positive affect, satisfaction with life, etc.). (Abela & D'Alessandro, 2002; Hong & Cheung, 2015; Vîslă et al., 2015; Yapan et al., & Boysan, 2020). On the other hand, mindfulness and self-compassion are protective factors that may reduce distress levels and promote well-being (Carpenter et al., 2019; Chio, et al., 2021; Ferrari et al., 2019; Kirby, et al., 2017; MacBeth & Gumley, 2012; Marsh et al., 2018; Muris & Petrocchi, 2016; Tomlinson et al., 2018; Zessin, et al., 2015).

In general, studies have not consistently shown significant differences in the effectiveness of self-compassion interventions compared to other active approaches such as mindfulness or cognitive restructuring practices (Arimitsu & Hofmann, 2017; Mak et al., 2018; Preuss et al., 2021). However, some findings suggest that self-compassion interventions may be superior in terms of their effectiveness (Javidi et al., 2021) or their acceptability and applicability, particularly for students (Cândea & Szentágotai-Tătar, 2018), therefore, their adaptation and application in academic settings may be recommended.

Although multiple forms of interventions can be effective, targeting the mentioned constructs, it is advisable to explore the relationships between self-compassion, mindfulness, and various cognitive vulnerabilities (such as dysfunctional attitudes) in predicting various indicators of distress and well-being among university students. This exploration can help identify the most opportune points for intervention from a theoretical perspective. Although many studies have separately examined the relationship between self-compassion and mindfulness, as well as between self-compassion and dysfunctional attitudes, using different models (Ferrari et al., 2018; Li et al., 2022; Liu et al., 2022; Makadi & Koszycki, 2020; Phillips et al., 2018; Podina et al., 2015; Sedighimornani et al., 2019; Wong & Mak, 2013; Xavier et al., 2023), few studies

have simultaneously explored these relationships (i.e., the relationships between cognitive vulnerabilities, mindfulness and self-compassion) in predicting mental health.

In some models examining the relationships between self-compassion, cognitive vulnerabilities and mental health, self-compassion has been proposed as a moderator between cognitive vulnerabilities and distress. There is a growing body of studies on the buffering effects of self-compassion on the relationship between different cognitive vulnerabilities and different indicators of distress and well-being (Ferrari et al., 2018; Fonseca & Canavarro, 2017; Li et al., 2022; Phillips et al., 2018; Podina et al., 2015; Wong & Mak, 2013). The results of these studies are promising, suggesting that self-compassion may reduce the detrimental effects of cognitive vulnerabilities (e.g., maladaptive perfectionism, irrational beliefs, implicit dysfunctional attitudes).

However, other studies (Hassani et al., 2021; Liu et al., 2022; Xavier et al., 2023), found that self-compassion mediated rather than moderated this relationship (i.e., cognitive vulnerabilities such as dysfunctional attitudes led to lower levels of self-compassion, which resulted in higher levels of distress). For example, in a longitudinal study, Liu et al. (2022) found that one of the most common dysfunctional attitudes, negative perfectionism, was a risk factor for depression through the negative component of self-compassion (i.e., self-coldness), and positive perfectionism was a protective factor against depression via the positive component of self-compassion (i.e., self-warmth).

Studies that examine the relationship between mindfulness and self-compassion have shown that self-compassion mediates the relationship between mindfulness and various indicators of distress and well-being, such as social anxiety (Makadi & Koszycki, 2020), shame (Sedighimornani et al., 2019), recovery from mental disorders (Mak et al., 2021), and subjective well-being (Yang et al., 2022). However, Mak et al. (2021) found that only self-warmth mediates the relationship between mindfulness and personal recovery (self-coldness did not).

Thus, it appears that different components of self-compassion (i.e., self-warmth and self-coldness) may play different roles in these associations between dysfunctional attitudes and clinical outcomes and between mindfulness and clinical outcomes (Liu et al., 2022; Mak et al., 2021). The results of meta-analyses (Chio et al., 2021; Muris & Petrocchi, 2016) have also highlighted the importance of separating self-compassionate responses and uncompassionate responses toward the self, the importance of distinguishing self-warmth from self-coldness. Uncompassionate responses

(overidentification, isolation, self-judgment) are more strongly related to distress indicators than compassionate responses, but compassionate responses (mindfulness, common humanity, self-kindness) may be more important for well-being than self-coldness.

The results of mindfulness interventions have also highlighted that they are beneficial not only through increasing mindfulness, but also through increasing self-compassion (i.e., self-compassion is an important mechanism mediating the effects of the interventions) (Baer, 2003; Duarte & Pinto-Gouveia, 2017; Evans, et al., 2018; Keng, et al., 2016). Bergen-Cico and Cheon (2014) investigated the sequence of changes in meditation practices and found that an increase in mindfulness leads to an increase in self-compassion, concluding that in line with Neff's theory of self-compassion (2003b), mindfulness precedes self-compassion, therefore mindfulness skills are important for being able to cultivate self-compassion.

To the best of the author's knowledge, few studies have explored these relationships together (i.e., the relationships between cognitive vulnerabilities, mindfulness, and self-compassion). Thimm (2017), for example, examined the relationship between early maladaptive schemas (another well-established cognitive vulnerability), self-compassion, mindfulness, and psychological distress. Their results showed that self-compassion and mindfulness mediated (but did not moderate) the relationship between early maladaptive schemas and psychological distress, thus both mindfulness and self-compassion were found to be mediators.

Based on previous results, in this study, we propose and test a model (Figure 1) for the relationships between dysfunctional attitudes, mindfulness, and self-compassion in predicting various psychological distress (i.e., negative affect, depression, anxiety, stress) and well-being indicators (i.e., soothing positive affect, activating positive affect, satisfaction with life) among university students. This investigation can help identify the most opportune points for intervention to reduce their distress and improve their well-being.

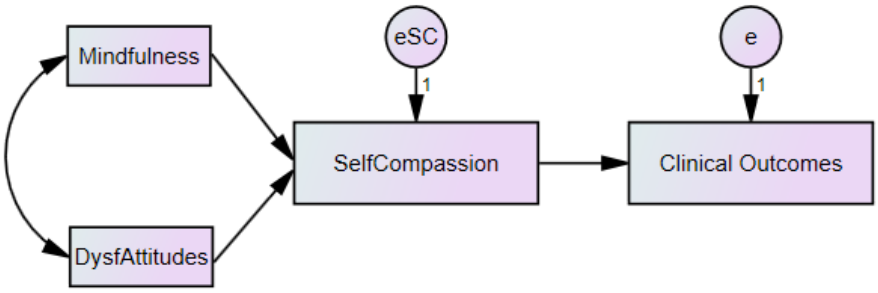

Figure 1. The Proposed Model

We hypothesized that mindfulness and dysfunctional attitudes influence university students' various psychological distress indicators (i.e., negative affect, depression, anxiety, and stress) and various well-being indicators (i.e., soothing positive affect, activating positive affect, and satisfaction with life) through self-compassion. Thus, we considered that mindfulness increases well-being and decreases distress by improving self-compassion, while dysfunctional attitudes lead to higher levels of psychological distress and lower well-being by reducing self-compassion.

Based on the results presented on different components of self-compassion (Chio et al., 2021; Liu et al., 2022; Mak et al., 2021; Muris & Petrocchi, 2016) and based on Gilbert's theory of compassion and emotion regulation systems (2009a, 2009b, 2014), another goal was to investigate which predictor variables (i.e., mindfulness and dysfunctional attitudes) affect clinical variables through which component of self-compassion (i.e., self-warmth or self-coldness). We also tested the second model presented in Figure 2 to achieve this goal.

For the second model, we hypothesized that mindfulness would affect clinical outcomes among students, especially through self-warmth, as well as dysfunctional attitudes, especially through self-coldness. We also hypothesized that in predicting various indicators of distress (i.e., negative affectivity, depression, anxiety, stress), self-coldness would have greater predictive power than self-warmth, while in predicting various indicators of well-being (i.e., soothing positive affect, activating positive affect, satisfaction with life), self-warmth would have greater predictive power than self-coldness.

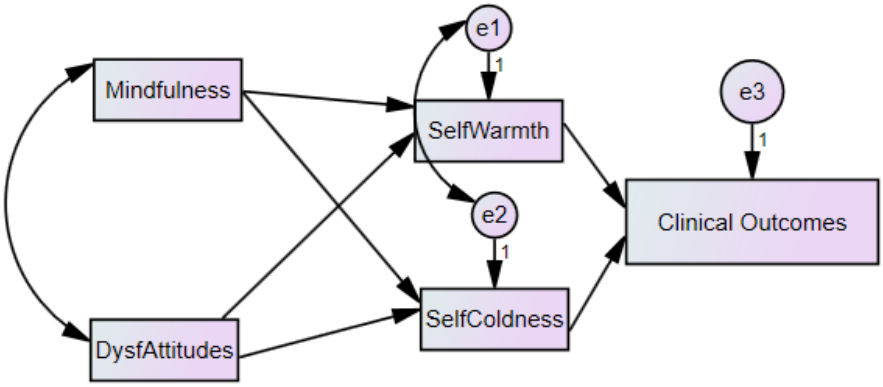

Figure 2. The Proposed Model Accounting for Different Components of Self-Compassion

METHODS

1. *Participants*

Taking into account that the first model proposed requires the estimation of 10 distinct parameters and the second requires the estimation of 13 distinct parameters, we needed at least 130 participants to test the models (Collier, 2020). In the end, 181 participants (university students) completed the questionnaires and, after preliminary analyses, five participants were excluded. Further analyses were based on the data of the remaining 176 participants. The majority of the participants were female (*n* = 140; 79,5%), from Romania (*n* = 130; 73,9%). Half of the participants studied psychology (*n* = 87; 49,4%), and half studied in other fields of study (*n* = 89; 50,6%). The mean age of the participants was 26,06 years (*SD* = 11,17).

2. *Instruments*

a) Mindfulness

Mindfulness was assessed using the Five Facet Mindfulness Questionnaire (FFMQ; Baer, et al., 2006), a widely used instrument to measure different components of mindfulness (i.e., observation, description, action with awareness, non-judgment of inner experience, and non-reactivity). This scale consists of 39 items (e.g., „I can perceive emotions without reacting to them"; „I am aware of bodily sensations when I take a bath"), which participants rate on a five-point Likert scale (*1 - never; 5 – always true*). For this study, the global mindfulness score (i.e., the mean scores of these subscales) was used.

Higher mindfulness scores indicated higher levels of trait mindfulness. For the global mindfulness indicator, the scale had acceptable internal consistency (α = .776).

b) Self-Compassion

Self-compassion was assessed using the Self-Compassion Scale – Short Form (SCS-SF; Raes et al., 2011), a 12-item version of the original Self-Compassion Scale (SCS; Neff, 2003a). The SCS-SF measures each of the components of self-compassion (i.e., self-kindness, self-judgment, common humanity, isolation, mindfulness, over-identification) with two items (e.g., "I try to see my failings as part of the human condition"). Responses are to be given on a five-point Likert scale. The six items that measure the negative dimensions of self-compassion are reverse coded. Scores for self-compassion were calculated by averaging the scores on items measuring self-compassionate behaviors (i.e., self-kindness, common humanity, mindfulness) and reverse coded scores on items measuring uncompassionate behaviors towards the self (i.e., self-judgment, isolation, over-identification). The scale showed good internal consistency for self-compassion as a global indicator (α = .822) and for self-coldness (α = .816), but the self-warmth subscale had questionable internal consistency (α = .628).

Depression, Anxiety, and Stress

Levels of depression, anxiety, and stress were assessed using the 21-item version of the Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995). Participants rated from 0 (*does not apply to me at all*) to 3 (*applies to me very much, or most of the time*) how often they usually experience each symptom. The variable scores were calculated by summing the seven items measuring stress, the seven items measuring depression, and the seven items measuring anxiety. The score for each subscale was then multiplied by 2. Higher scores indicate higher levels of depression, anxiety, and stress.

The DASS-21 showed good internal consistency in the current study for each of the subscales: depression (α = .860), anxiety (α = .836), and stress (α = .845).

c) Negative Affect

To measure the subjective dimension of distress (i.e., negative affect), we used the abbreviated Hungarian version of the Emotional Distress Profile (Profilul Distresului Emoţional - PDE; Opris & Macavei, 2005). The scale was originally developed and validated in Romania and has good psychometric properties and excellent internal consistency (α = .94) as a complex indicator of emotional distress.

The original scale consists of 26 adjectives describing negative affects, such as "sad," and "depressed". In our study, we used 12 items that had adequate face validity according to the translation. On a five-point Likert scale, participants were asked to rate the extent to which the given affective items were typical of their experiences in the past two weeks. The scale also had excellent internal consistency (α = .924) in measuring the negative affect in the present sample.

Soothing and Activating Positive Affects

Different types of positive affect (i.e., soothing and activating positive affects) were assessed using the Types of Positive Affect Scale (Gilbert et al., 2008), which consists of 18 items and measures three different types of positive affect (i.e., soothing-, relaxing-, and activating positive affect), rated by participants between (1 – *Not characteristic of me*) and (5 – *Very characteristic of me*). The scale measures how frequently participants experience these feelings. The variable scores were calculated by summing the dedicated items. For this study, soothing- and activating positive affect were measured. The subscale measuring soothing positive affect showed acceptable (α = .757) and the subscale measuring activating positive affect showed good internal consistency (α = .886). The results are similar to those of the original English instrument, in that the internal consistency of the activating positive affect subscale was higher (α = .83) than that of the subscale measuring safeness/contentment positive affect (α = .73).

d) Dysfunctional Attitudes

The Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1980*)* is a self-report scale designed to measure the presence and intensity of dysfunctional attitudes. The Hungarian version of the DAS (Kopp M., 1994) consists of 35 items (i.e., five items for each of the seven types of dysfunctional attitudes: need for approval, need for love, need for achievement, perfectionism, entitlement, omnipotence, and autonomy), rated on a 5-point Likert scale (-2 = *strongly disagree*; 2 = *strongly agree*). For example, one item for measuring the need for approval is: "I need other people's approval in order to be happy". For this study, a global indicator of dysfunctional attitudes was calculated by summing the scores of the individual items. The scale had excellent internal consistency in measuring dysfunctional attitudes (α = .912).

e) Life Satisfaction

The five-item Hungarian version of the Satisfaction with Life Scale (SWLS; Diener et al., 1985; Martos et al., 2014) measured the agreement with statements (e.g. "In most

ways my life is close to ideal"), ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Variable scores were calculated by summing the items. The SWLS has shown high internal consistency, test-retest reliability, and validity (Diener et al., 1985). The current study also confirmed good internal consistency (α = .825).

3. Procedure and Design

This study used a correlational design and measured two predictors (i.e., dysfunctional attitudes and mindfulness), three mediators (self-compassion and separately self-coldness and self-warmth), and seven outcome variables. Of the seven outcome variables, four were used to operationalize emotional distress (i.e., negative affect, depression, anxiety, and stress) and three were used to operationalize psychological well-being (i.e., soothing positive affect, activating positive affect, and satisfaction with life).

The study was conducted in accordance with the Code of Ethics of the American Psychological Association. Following informed consent, students completed the questionnaire using an online platform (Google Forms). The study was advertised in Introduction to Psychology classes. Students were not rewarded for participating in the study.

4. Data Analyses and Assessment of Model Fit

SPSS 20 software was used for the preliminary analyses. Pearson correlations were performed to examine the associations between dysfunctional attitudes, mindfulness, self-compassion, and clinical outcomes.

The proposed model was tested using SEM (Structural Equation Modeling) in SPSS AMOS 20 software and Maximum Likelihood (ML) estimation was chosen. We used the bootstrap method to test for direct and indirect effects, generating 5000 samples (95% confidence interval). Effects were considered significant if the confidence intervals of the bootstrap analysis did not include zero (Hayes, 2018; Preacher & Hayes, 2004).

Model fit was assessed using the ratio of the chi-square statistic (CMIN) to the degrees of freedom (DF), standardized root mean square residual (SRMR), comparative fit index (CFI) and general fit index (GFI).

For the chi-square statistic and the degrees of freedom ratio, critical values between 2 and 5 have been recommended as cut-off values (Hu & Bentler, 1999). The CFI

values should not be lower than .90, but for a good fit, the CFI values should be above .95 (Hu & Bentler, 1999). For the GFI, .95 indicates a good fit, while values higher than .90 indicate an acceptable fit. For the SRMR, a value less than .08 is considered acceptable and less than .05 is considered a good fit (Schermelleh-Engel, Moosbrugger, & Müller, 2003).

RESULTS

1. Preliminary Analyses

The descriptive statistics of the measured variables (means, standard deviations, skewness, kurtosis, and Cronbach's α values) are presented in Table 1.

Table 1. Descriptive Statistics of Variables (*N* = 176)

Variable	*M*	*SD*	Skewness		Kurtosis		Cronbach α
			Statistic	Std. Error	Statistic	Std. Error	
Self-Compassion	3.081	.666	.152	.183	-.456	.364	.822
Self-Warmth	3.380	.635	.075	.183	-.253	.364	.628
Self-Coldness	3.216	.874	-.249	.183	-.554	.364	.816
Dysfunctional Attitudes	-11.545	20.584	-.075	.183	-.333	.364	.912
Mindfulness	127.78	19.024	.315	.183	-.527	.364	.776
Negative Affect	29.886	11.216	.435	.183	-.648	.364	.924
Depression	12.318	10.018	.613	.183	-.544	.364	.860
Anxiety	12.875	10.201	.727	.183	.016	.364	.836
Stress	18.454	10.581	.139	.183	-.811	.364	.845
Soothing Positive Affect	14.579	3.206	-.550	.183	.195	.364	.757
Active Positive Affect	28.335	6.923	-.246	.183	-.663	.364	.886
Life Satisfaction	24.676	5.544	-.378	.183	-.357	.364	.825

Data were normally distributed and multivariate normality was tested and confirmed in all cases. First-order correlations between variables are presented in Table 2.

Table 2. Bivariate correlations among predictor and criterion variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Self-Compassion	-											
2. Self-Warmth	.836**											
3. Self-Coldness	-.917**	-.547**										
4. Mindfulness	.532**	.419**	-.506**	-								
5.DysfunctionalAttitudes	-.477**	-.179*	.597**	-.242**	-							
6. Negative Affect	-.546**	-.334**	.589**	-.353**	.404**	-						
7. Depression	-.562**	-.335**	.613**	-.473**	.533**	.597**	-					
8. Anxiety	-.399**	-.228**	.442**	-.316**	.363**	.566**	.590**	-				
9. Stress	-.566**	-.382**	.585**	-.317**	.471**	.680**	.639**	.667**	-			
10. Soothing PA	.446**	.347**	-.428**	.386**	-.211**	-.470**	-.543**	-.296**	-.418**	-		
11. Activating PA	.332**	.286**	-.298**	.336**	-.149*	-.449**	-.390**	-.163*	-.265**	.601**	-	
12. Life Satisfaction	.384**	.305**	-.363**	.336**	-.133	-.363**	-.445**	-.242**	-.291**	.474**	.372**	-

Notes: ** Correlation is significant at the .01 level (2-tailed); * Correlation is significant at the .05 level (2-tailed)

2. Structural Equation Modeling

The First Model – Self-Compassion Mediates the Effects

To analyze the fit of the first model to the data, in which self-compassion was proposed as a mediator of the relationships between mindfulness and clinical outcomes, as well as between dysfunctional attitudes and clinical outcomes, a series of (seven) structural equation modeling tests were conducted for different clinical outcomes (four for emotional distress and three for well-being). In all cases, we found that self-compassion was a significant mediator (i.e., the indirect effects of mindfulness and dysfunctional attitudes were significant in all cases). Consistent with our hypotheses, mindfulness, and dysfunctional attitudes affected all psychological distress indicators (i.e., negative affect, depression, anxiety, and stress) and all well-being indicators (i.e., soothing positive affect, activating positive affect, and satisfaction with life) through self-compassion. In other words, higher levels of mindfulness led to improved well-being and reduced distress through improvements in self-compassion, and higher levels of dysfunctional attitudes led to higher levels of psychological distress and lower levels of well-being through reductions in self-compassion. Figure 3 shows the first model for negative affect with standardized regression weights.

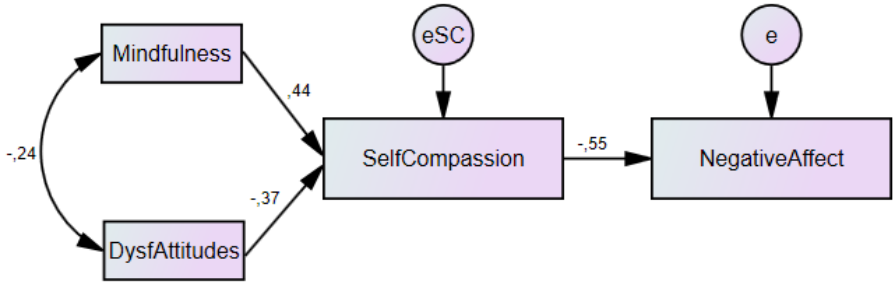

Figure. 3 Predicting negative affect mediated by self-compassion

All predictors were significant and the correlation between mindfulness and dysfunctional attitudes was also significant (r = -.242; 95%CI = -.385 to -.100; $p < .01$). Both mindfulness (ß = .44, $p < .01$) and dysfunctional attitudes (ß = -.37, $p < .01$) predicted self-compassion (see Table 3). Self-compassion had a direct effect on all clinical outcomes (Table 2). Self-compassion was a negative predictor of distress indicators: negative affect (ß = -.546, $p < .01$), depression (ß = -.562, $p < .01$), anxiety (ß = -.399, $p < .01$), and stress (ß = -.566, $p < .01$); and was a positive predictor of well-being: soothing positive affect (ß = .446, $p < .01$), activating positive affect (ß = .332, $p < .01$), and satisfaction with life (ß = .384, $p < .01$). Indirect effects for mindfulness and dysfunctional attitudes were also significant in all cases.

Table 3. Standardized direct and indirect effects for the first model

Predictor	Effect type	Outcome	Standardized Effects	95% CI	
				LL	UL
Mindfulness	Direct	Self-compassion	.442**	.296	.574
Dysfunctional Attitudes	Direct	Self-compassion	-.370**	-.485	-.248
Self-compassion	Direct	Negative affect	-.546**	-.649	-.427
Self-compassion	Direct	Depression	-.562**	-.655	-.460
Self-compassion	Direct	Anxiety	-.399**	-.526	-.259
Self-compassion	Direct	Stress	-.566**	-.664	-.453
Self-compassion	Direct	Soothing Positive Affect	.446**	.321	.562
Self-compassion	Direct	Activating Positive Affect	.332**	.206	.455
Self-compassion	Direct	Satisfaction With Life	.384**	.243	.514
Mindfulness	Indirect	Negative affect	-.241**	-.331	-.153
Mindfulness	Indirect	Depression	-.248**	-.339	-.159
Mindfulness	Indirect	Anxiety	-.176**	-.263	-.097
Mindfulness	Indirect	Stress	-.250**	-.341	-.163
Mindfulness	Indirect	Soothing Positive Affect	.197**	.114	.289
Mindfulness	Indirect	Activating Positive Affect	.147**	.074	.235
Mindfulness	Indirect	Satisfaction With Life	.169**	.086	.262
Dysfunctional Attitudes	Indirect	Negative affect	.202**	.122	.291
Dysfunctional Attitudes	Indirect	Depression	.208**	.126	.294
Dysfunctional Attitudes	Indirect	Anxiety	.147**	.080	.229
Dysfunctional Attitudes	Indirect	Stress	.209**	.127	.298
Dysfunctional Attitudes	Indirect	Soothing Positive Affect	-.165**	-.237	-.100
Dysfunctional Attitudes	Indirect	Activating Positive Affect	-.123**	-.179	-.071
Dysfunctional Attitudes	Indirect	Satisfaction With Life	-.142**	-.209	-.080

Notes: ** The regression is significant at the .01 level; CI Confidence Interval; LL Lower Limit; UL Upper Limit

We also examined the model fit of the first model for all clinical outcomes (Table 4). The fit indices (GFI and CFI) indicated a good model fit for most outcomes, and the standardized root mean square residual (SRMR) also indicated a low error rate. However, for depression, CFI and SRMR were outside the acceptable range.

Table 4. The model fit of the proposed model for different clinical outcomes

Clinical Outcome	CMIN	*DF*	CMIN/DF	GFI	CFI	SRMR
Negative Affect	8.33	2	4.16	.977	.962	.049
Depression	38.44	2	19.22	.910	.820	.100
Anxiety	11.71	2	5.85	.969	.930	.063
Stress	14.13	2	7.06	.963	.932	.063
Soothing Positive Affect	6.87	2	3.43	.981	.966	.047
Active Positive Affect	7.12	2	3.56	.980	.959	.050
Life Satisfaction	5.707	2	2.85	.984	.972	.044

The Second Model – Self-Coldness Mediates the Effects

To analyze the fit of the second model to the data, in which self-coldness and self-warmth were separately proposed as mediators of the relationships between mindfulness and clinical outcomes, and between dysfunctional attitudes and clinical outcomes, we also performed a series of structural equation modelings for different clinical outcomes. The indirect effects of mindfulness and dysfunctional attitudes were significant in all cases (Table 5).

Table 5. Standardized indirect effects for the second model

Predictor	Effect type	Outcome	Standardized Effects	95% CI	
				LL	UL
Mindfulness	Indirect	Negative affect	-.229**	-.318	-.141
Mindfulness	Indirect	Depression	-.235**	-.328	-.147
Mindfulness	Indirect	Anxiety	-.166**	-.251	-.086
Mindfulness	Indirect	Stress	-.241**	-.331	-.153
Mindfulness	Indirect	Soothing Positive Affect	.195**	.113	.287
Mindfulness	Indirect	Activating Positive Affect	.148**	.074	.237
Mindfulness	Indirect	Satisfaction With Life	.168**	.086	.263
Dysfunctional Attitudes	Indirect	Negative affect	.293**	.209	.382
Dysfunctional Attitudes	Indirect	Depression	.309**	.232	.390
Dysfunctional Attitudes	Indirect	Anxiety	.227**	.146	.314
Dysfunctional Attitudes	Indirect	Stress	.278**	.190	.374
Dysfunctional Attitudes	Indirect	Soothing Positive Affect	-.185**	-.267	-.098
Dysfunctional Attitudes	Indirect	Activating Positive Affect	-.116**	-.193	-.036
Dysfunctional Attitudes	Indirect	Satisfaction With Life	-.153**	-.233	-.071

Notes: ** The regression is significant at the .01 level; CI Confidence Interval; LL Lower Limit; UL Upper Limit

Consistent with our hypothesis, dysfunctional attitudes had a direct effect only on self-coldness (ß = .504, $p < .01$), but not on self-warmth (ß = -.082, $p > .05$). However, contrary to our hypothesis, mindfulness was a significant predictor for both, a positive predictor of self-warmth (ß = .399, $p < .01$), and a negative predictor of self-coldness (ß = -.383, $p < .01$). The direct effects of mindfulness and dysfunctional attitudes on self-warmth and on self-coldness are shown in Figure 4 and Table 6.

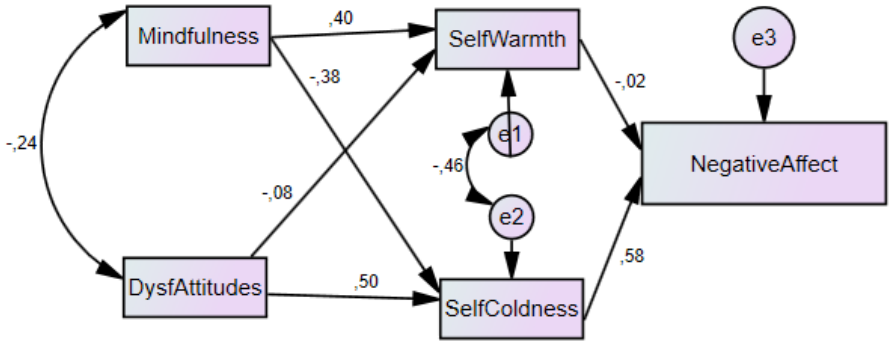

Figure 4. Predicting negative affect through self-warmth and self-coldness

The covariance and the correlation between errors for self-warmth and self-coldness were also significant ($r = -.460$; 95%CI = -.565 to -.343; $p < .01$). The model is presented in Figure 4 for negative affect.

Table 6. Standardized direct effects for the second model

Predictor	Effect type	Outcome	Standardized Effects	95% CI	
				LL	UL
Mindfulness	Direct	Self-Warmth	.399**	.232	.546
Mindfulness	Direct	Self-Coldness	-.383**	-.497	-.257
Dysfunctional Attitudes	Direct	Self-Warmth	-.082	-.233	.066
Dysfunctional Attitudes	Direct	Self-Coldness	.504**	.397	.600
Self-warmth	Direct	Negative affect	-.018	-.179	.139
Self-warmth	Direct	Depression	.000	-.146	.148
Self-warmth	Direct	Anxiety	.020	-.127	.173
Self-warmth	Direct	Stress	-.089	-.232	.060
Self-warmth	Direct	Soothing Positive Affect	.161*	-.017	.340
Self-warmth	Direct	Activating Positive Affect	.176*	.001	.350
Self-warmth	Direct	Satisfaction With Life	.152	-.015	.319
Self-coldness	Direct	Negative affect	.579**	.449	.699
Self-coldness	Direct	Depression	.612**	.508	.718
Self-coldness	Direct	Anxiety	.452**	.312	.583
Self-coldness	Direct	Stress	.537**	.410	.661
Self-coldness	Direct	Soothing Positive Affect	-.340**	-.487	-.176
Self-coldness	Direct	Activating Positive Affect	-.202**	-.367	-.032
Self-coldness	Direct	Satisfaction With Life	-.280**	-.434	-.114

Notes: ** The regression is significant at the .01 level; * The regression is significant at the .05 level; CI Confidence Interval; LL Lower Limit; UL Upper Limit

Testing the effects of self-warmth and self-coldness separately on the different outcomes, the results showed that self-coldness was more relevant in all cases (not only for indicators of emotional distress). The direct effects of self-warmth on the different indicators of well-being and distress are presented in Table 6. Self-warmth had no significant effect on the distress indicators: neither negative affect (ß = -.018, $p > .05$), nor depression (ß = .000, $p > .05$), nor anxiety (ß = .020, $p > .05$), nor stress (ß = -.089, $p > .05$). We found a small effect of self-warmth on soothing positive affect (ß = .161, $p < .05$) and activating positive affect (ß = .176, $p < .05$), but based on the bootstrapping method the effect on soothing positive affect was not significant. Self-warmth also did not affect satisfaction with life (ß = .152, $p > .05$).

Although self-warmth did not affect clinical outcomes, self-coldness was a significant positive predictor (see Table 6) for all distress indicators: negative affect (ß = .579, $p < .01$), depression (ß = .612, $p < .01$), anxiety (ß = .452, $p < .01$), and stress (ß = .537, $p < .01$); and was a negative predictor for all well-being indicators: soothing positive affect (ß = -.340, $p < .01$), activating positive affect (ß = -.202, $p < .01$), and satisfaction with life (ß = -.280, $p < .01$). Thus, our last hypothesis was partially confirmed, our data supported that self-coldness was more relevant than self-warmth in predicting various indicators of distress, but contrary to our hypothesis, self-coldness also had greater predictive power than self-warmth for various indicators of well-being.

Assessing the model fit of the second model for all clinical outcomes (Table 7), we found that the fit indicators (GFI and CFI) indicated a good fit to the model for all outcomes (including depression), and the standardized root mean square residual (SRMR) also indicated a low level of error.

Table 7. The model fit of the second model with different components of self-compassion for different clinical outcomes

Clinical Outcome	CMIN	*DF*	CMIN/DF	GFI	CFI	SRMR
Negative Affect	2.51	2	1.256	.994	.998	.019
Depression	26.10	2	13.05	.947	.921	.060
Anxiety	6.44	2	3.22	.986	.982	.035
Stress	8.20	2	4.10	.982	.978	.034
Soothing Positive Affect	6.79	2	3.39	.985	.980	.038
Active Positive Affect	7.21	2	3.60	.984	.977	.041
Life Satisfaction	6.07	2	3.03	.987	.982	.037

DISCUSSION

The present study aimed to test the fit of two proposed models of the relationship between dysfunctional attitudes, mindfulness, self-compassion (its two components), and various indicators of university students' distress and well-being. In the first model, the mediative role of self-compassion was tested for the relationship between mindfulness and various clinical outcomes (i.e., various indicators of emotional distress: negative affect, depression, stress, and anxiety; and various indicators of well-being: soothing positive affect, activating positive affect, and life satisfaction), and for the

relationship between dysfunctional attitudes and these clinical outcomes. In the second model, we separately examined the mediation role of self-warmth (i.e., mean scores for the positive components of self-compassion: mindfulness, common humanity, and self-kindness) and self-coldness (i.e., mean scores for the negative components of self-compassion: over-identification, isolation, and self-judgment) in these relationships.

Reinforcing previous results (Hassani et al., 2021; Mak et al., 2021; Makadi & Koszycki, 2020; Liu et al., 2022; Sedighimornani et al., 2019; Xavier et al., 2023; Yang et al., 2022), our hypotheses for the first model were confirmed, which means that mindfulness led to an increase in students' well-being and a decrease in their emotional distress through self-compassion, and dysfunctional attitudes led to a decrease in well-being and an increase in emotional distress through self-compassion. In most cases, the first model provided an excellent fit to the data, with depression being an exception. When we investigated which of the relationships not represented in the model might increase the model fit, we found that dysfunctional attitudes not only lead to depression through self-compassion but also directly affect it. This is not surprising given that the Dysfunctional Attitudes Scale (Weissman & Beck, 1978) was developed specifically to measure dysfunctional attitudes in depression.

Based on Gilbert's theory (2009a, 2009b, 2014) and findings on the relative importance of self-coldness and self-warmth in predicting indicators of distress and well-being (Chio et al., 2021; Liu et al., 2022; Mak et al., 2021; Muris & Petrocchi, 2016), in the second model we tested the mediative role of these two components of self-compassion (i.e., self-coldness and self-warmth) separately. This model showed a good fit for the data for all clinical outcomes (including depression).

Our hypothesis that dysfunctional attitudes would influence clinical outcomes, especially through self-coldness, based on the results of Liu et al. (2022), was confirmed. We found a direct effect of dysfunctional attitudes only on self-coldness (not on self-warmth) and significant indirect effects on all outcomes. This implies that dysfunctional attitudes lead to a decrease in students' well-being and an increase in their emotional distress through self-coldness.

Our unexpected findings that mindfulness had an indirect effect on clinical outcomes (including well-being indicators), in many cases only through self-coldness, can be explained by the fact that self-warmth has no direct effect on these clinical indicators (mindfulness had a direct effect on both self-warmth and self-coldness). The exception

was activating positive affect, which means that, for activating positive affectivity, the influence of mindfulness was mediated by both components of self-compassion, however, for the other six outcomes (including distress indicators and other well-being indicators), only self-coldness mediated the effect of mindfulness. Indeed, in the findings of Mak et al.(2021), only self-warmth mediated the relationship between mindfulness and personal recovery from mental problems, but mindfulness had a direct effect on both self-coldness and self-warmth, as in our study.

Based on the results of meta-analyses (Chio et al., 2021; Muris & Petrocchi, 2016), we expected that self-coldness would have greater predictive power than self-warmth in predicting various indicators of distress (i.e., negative affectivity, depression, anxiety, stress), and that self-warmth would have greater predictive power than self-coldness in predicting various indicators of well-being (i.e., soothing positive affect, activating positive affect, satisfaction with life). However, our results showed that when we control for covariance between the two components when testing the relations in a single model, self-coldness also has greater significance in indicators of well-being. If we were to base our conclusions only on the correlation test (Table 1), we would draw completely different conclusions. Although in our model, self-warmth did not affect any of the distress indicators (i.e., negative affect, depression, anxiety, stress), the correlations between them were significant in all cases. Furthermore, based on correlation analyses alone, the relationships between self-warmth and well-being indicators were similar to the relationships between self-coldness and well-being indicators.

This makes sense given the results of the current meta-analysis (Chio et al., 2021), which found that although self-kindness (r = .39) was more strongly associated with well-being than self-judgment (r = -.29), and mindfulness (r = .39) was more strongly associated with well-being than over-identification (r = -.32), common humanity (r = .29) had a significantly weaker relationship with well-being (both eudaimonic and hedonic well-being) than isolation (r = -.36). The effect size of the relationship between self-warmth and the well-being (r = .38) and effect size of the relationship between self-coldness (r = -.36) and well-being were significantly different, but the difference was small. Based on these results, we conclude that it is very important to examine the relative importance of self-coldness and self-warmth in models in which the individual effects of each component can be tested while controlling for the effects of the other.

Overall, these results highlight the importance of self-compassion (especially self-coldness) regarding students' mental health. Based on these findings, the implementation of self-compassion interventions in academic context would be a major step towards supporting students' well-being and reducing their distress, however, randomized controlled trials are needed to test the effectiveness of these interventions. The most well-established programs designed to cultivate self-compassion include the Mindful Self-Compassion Program (MSC), developed and tested by Neff and Germer (2012) based on Neff's (2003a, 2003b, 2023a, 2023b) conceptualization of self-compassion, and the Compassionate Mind Training (CMT; Irons & Heriot-Maitland, 2021), based on Gilbert's (2009a, 2009b, 2009c, 2023) biopsychosocial and evolutionary approach to self-compassion, the Compassion Focused Therapy (CFT) model. Both are group-based resource-building training programs spanning eight weeks, and both incorporate a blend of written exercises, imaginative practices, meditation, and body-based activities. There is increasing evidence to support the effectiveness of these programs (e.g., Germer & Neff, 2019; Irons & Heriot-Maitland, 2021; Matos et al., 2017; Neff & Germer, 2012), even for university students (e.g., Beaumont et al., 2021; Smeets et al., 2014).

Although generally, studies have not revealed significant differences in the effectiveness of self-compassion interventions when compared with alternative approaches, such as cognitive restructuring (see, e.g., Arimitsu & Hofmann, 2017), some findings indicate the potential superiority of self-compassion interventions, based on their effectiveness (Javidi et al., 2021), or their acceptability and applicability for students (Cândea & Szentágotai-Tătar, 2018). Therefore, the adaptation of these interventions is highly recommended.

Despite the significance of these results, our study has some limitations. Firstly, although these models have good to excellent fit to the data, the model fit may be overestimated due to low degrees of freedom ($df = 2$; Collier, 2020). Secondly, our model could be further elaborated by taking into account six different components of self-compassion (i.e., mindfulness, common humanity, self-kindness, over-identification, isolation, self-judgment), instead of only addressing the negative (self-coldness) and the positive (self-warmth) components. Further research has been proposed which focuses on these specific components, especially based on the results cited by Chio et al. (2021). Considering the psychometric properties of the six subscales, the original Self-

Compassion Scale (Neff, 2003a) is recommended for this purpose due to the low internal consistency of the scale's abbreviated form (Raes et al., 2011).

For further research, it is recommended to consider the different facets of mindfulness (i.e., observation, description, acting with awareness, non-judgment of inner experience, and non-reactivity) and the different types of dysfunctional attitudes in these relationships (i.e., need for approval, need for love, need for achievement, perfectionism, entitlement, omnipotence, and autonomy). The findings of previous studies suggest that different aspects of mindfulness may have different degrees of influence on student distress and well-being (Bodenlos et al., 2015), and that mindfulness interventions may improve these with varying levels of effectiveness (Quaglia et al. & Brown, 2016). Thus, it may be important to consider these separately in these models.

The correlational design also restricts our understanding of these relationships. Without a longitudinal perspective, potentially reversed pathways or alternative explanations remain unaddressed. Therefore, it is recommended to further investigate self-compassion as a mediator in these relationships in a longitudinal design, in particular, based on the results of Maxwell et al. (2011), which show that cross-sectional analyses can indicate the existence of a significant indirect effect, even when the true longitudinal indirect effect is zero. Randomized controlled trials are also recommended to test the effectiveness of the most well-established programs designed to cultivate self-compassion for improving students' mental health.

CONCLUSION

The current study contributes to a growing body of literature that emphasises the importance of self-compassion in improving student well-being and reducing emotional distress. Our findings show that self-compassion is an important mechanism through which dysfunctional attitudes and low levels of mindfulness lead to emotional distress and lower levels of well-being among university students, and also highlight the importance of self-coldness (as opposed to self-warmth) in these relationships. Results for several clinical indicators (four distress indicators: negative affect, depression, anxiety, stress; and three well-being indicators: soothing positive affect, activating positive affect, and life satisfaction) were consistent with our models, which confirms the reliability of the tested models. These findings support the use of self-compassion interventions, in particular the importance of reducing self-coldness, to improve well-being and reduce emotional distress among university students. These interventions can be essential taking into account that college students experience elevated psychological distress and lower levels of well-being compared to the general community (Bore et al., 2016; Larcombe et al., 2016; Regehr et al., 2013; Tobar et al., 2022).

Overall, this study has implications for university education policies, since the introduction of self-compassion interventions, such as the Compassionate Mind Training or the Mindful Self-Compassion Program, would be a major step towards supporting students' mental health, reducing their distress and enhancing their well-being.

Both the Mindful Self-Compassion Program (MSC; Germer & Neff, 2019; Neff & Germer, 2012) and the Compassionate Mind Training (CMT; Irons & Heriot-Maitland, 2021) are group-based eight-week resource-building trainings. The Compassionate Mind Training was adapted to academic settings by the first author of this article and its effectiveness has been tested among psychology students. Preliminary results support its effectiveness on various indices of distress and well-being (results in press). In addition, qualitative (narrative) feedback reflects the feasibility, effectiveness, and perceived need for the program in academic settings. In this case, the program was part of the students' profile practice, however, its application may vary (for example, it may be delivered in counselling centers or as a facultative module). In a recent systematic review, Franzoi et al. (2022) overviewed the current psychological services offered to students in Europe,

but none of the studies identified examined self-compassion interventions, therefore, the introduction and investigation of these types of interventions is highly recommended during tertiary education.

The results of this study also highlight the importance of examining the effects of self-coldness and self-warmth on emotional distress and well-being in complex models using structural equation modeling (not just correlations) in which the individual effects of each component can be tested while controlling for the effect of the other.

Compliance with Ethical Standards

a) *Conflict of Interest* - No conflict of interest is associated with this publication.
b) *Ethical Standards* - The study was undertaken in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.
c) *Informed Consent* - All participants gave their informed consent prior to their inclusion in the study.
d) *Funding* - No funding was received to assist with the preparation of this manuscript.

REFERENCES

Abela, J. R. Z., & D'Alessandro, D. U. (2002). Beck's cognitive theory of depression: A test of the diathesis-stress and causal mediation components. *British Journal of Clinical Psychology, 41*(2), 111–128. https://doi.org/10.1348/014466502163912

Arimitsu, K., & Hofmann, S. G. (2017). Effects of compassionate thinking on negative emotions. *Cognition and Emotion, 31*(1), 160-167. https://doi.org/10.1080/02699931.2015.1078292

Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice, 10*(2), 125–143. https://doi.org/10.1093/clipsy.bpg015

Baer, R., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27-45. http://dx.doi.org/10.1177/1073191105283504

Beaumont, E., Bell, T., McAndrew, S., & Fairhurst, H. (2021). The impact of compassionate mind training on qualified health professionals undertaking a compassion-focused therapy module. *Counselling & Psychotherapy Research, 21*(4), 910-922. https://doi.org/10.1002/capr.12396

Bergen-Cico, D., & Cheon, S. (2014). The mediating effects of mindfulness and self-compassion on trait anxiety. *Mindfulness, 5*(5), 505–519. https://doi.org/10.1007/s12671-013-0205-y

Bodenlos, J. S., Wells, S. Y., Noonan, M., & Mayrsohn, A. (2015). Facets of dispositional mindfulness and health among college students. *J Altern Complement Med., 21*(10), 645-652. https://doi.org/10.1089/acm.2014.0302

Bore, M., Pittolo, C., Kirby, D., Dluzewska, T. & Marlin, S. (2016). Predictors of psychological distress and well-being in a sample of Australian undergraduate students. *Higher Education Research & Development, 35*(5), 869-880. https://doi.org/10.1080/07294360.2016.1138452

Carpenter, J. K., Conroy, K., Gomez, A. F., Adams, L. C., & Hofmann, S. G. (2019). The relationship between trait mindfulness and affective symptoms: A meta-analysis of the Five Facet Mindfulness Questionnaire (FFMQ). *Clinical Psychology Review, 74*, 101785. http://dx.doi.org/10.1016/j.cpr.2019.101785

Cândea, D., & Szentágotai-Tătar, A. (2018). The impact of self-compassion on shame-proneness in social anxiety. *Mindfulness, 9*(4), 1816-1824. https://doi.org/10.1007/s12671-018-0924-1

Chio, F.H.N., Mak, W.W.S. & Yu, B.C.L. (2021). Meta-analytic review on the differential effects of self-compassion components on well-being and psychological distress: The moderating role of dialecticism on self-compassion. *Clinical Psychology Review, 85*, 101986. https://doi.org/10.1016/j.cpr.2021.101986

Collier, J.E. (2020). *Applied Structural Modeling using AMOS. Basic to advanced techniques.* Routledge

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment, 49*(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13

Duarte, J., & Pinto-Gouveia, J. (2017). Mindfulness, self-compassion and psychological inflexibility mediate the effects of a mindfulness-based intervention in a sample of

oncology nurses. *Journal of Contextual Behavioral Science, 6*(2), 125-133. https://doi.org/10.1016/j.jcbs.2017.03.002

Evans, S., Wyka, K., Blaha, K. T., & Allen, E. S. (2018). Self-compassion mediates improvement in well-being in a mindfulness-based stress reduction program in a community-based sample. *Mindfulness, 9*(4), 1280–1287. https://doi.org/10.1007/s12671-017-0872-1

Ferrari, M., Hunt, C., Harrysunker, A., Abbott, M. J., Beath, A. P. & Einstein, D. A. (2019). Self-compassion interventions and psychosocial outcomes: a meta-analysis of RCTs. *Mindfulness, 10*(8), 1455–1473. https://doi.org/10.1007/s12671-019-01134-6

Ferrari, M., Yap, K., Scott, N., Einstein, D. A., & Ciarrochi, J. (2018). Self-compassion moderates the perfectionism and depression link in both adolescence and adulthood. *PLoS ONE, 13*(2), Article e0192022. https://doi.org/10.1371/journal.pone.0192022

Fonseca, A. & Canavarro, M. C. (2018). Exploring the path between dysfunctional attitudes towards motherhood and postpartum depressive symptoms: The moderating role of self-compassion. *Clin Psychol Psychother., 25*(1), 96-106. https://doi.org/10.1002/cpp.2145

Franzoi, I. G., Sauta, M. D., Barbagli, F., Avalle, C., & Granieri, A. (2022). Psychological interventions for higher education students in Europe: A systematic literature review. *Youth, 2*(3), 236-257. https://doi.org/10.3390/youth2030017

Germer, C., & Neff, K. D. (2019). Mindful Self-Compassion (MSC). In I. Itvzan (Ed.) *The handbook of mindfulness-based programs: Every established intervention, from medicine to education* (pp. 357-367). London: Routledge.

Gilbert, P. (2009a). Introducing compassion-focused therapy. *Advances in psychiatric treatment. 15*(3), 199-208. https://doi.org/10.1192/apt.bp.107.005264

Gilbert, P. (2023). Self-compassion: An evolutionary, biopsychosocial, and social mentality approach. In A. Finlay-Jones, K. Bluth, & K. Neff (Eds.). *Handbook of Self-Compassion* (Chap. 4), Springer. https://doi.org/10.1007/978-3-031-22348-8

Gilbert, P. (2009b). *The compassionate mind.* Constable & Robinson Ltd.

Gilbert, P. (2009c). The nature and basis for Compassion Focused Therapy. *Hellenic Journal of Psychology, 6*(3), 273-291.

Gilbert, P. (2014). The origins and nature of Compassion Focused Therapy. *British Journal of Clinical Psychology, 53*(1), 6-41. https://doi.org/10.1111/bjc.12043

Gilbert, P., McEwan, K., Mitra, R., Franks, L., Richter, A. & Rockliff, H. (2008). Feeling safe and content: A specific affect regulation system? Relationship to depression, anxiety, stress, and self-criticism. *The Journal of Positive Psychology*, *3*(3), 182-191. https://doi.org/10.1080/17439760801999461

Hassani, S. F., Tizdast, T., & Zarbakhsh, M. R. (2021). The role of self-compassion and hope in the relationship between psychological wellbeing, maladaptive schemas, resilience, and social support in women with multiple sclerosis. *Journal of Client-Centered Nursing Care,* *7*(3), 195-204. http://dx.doi.org/10.32598/JCCNC.7.3.372.1

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.

Hong, R. Y., & Cheung, M. W.-L. (2015). The structure of cognitive vulnerabilities to depression and anxiety: Evidence for a common core etiologic process based on a meta-analytic review. *Clinical Psychological Science,* *3*(6), 892–912. https://doi.org/10.1177/2167702614553789

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal,* *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Irons, C., & Heriot-Maitland, C. (2021). Compassionate mind training: An 8-week group for the general public. *Psychology and Psychotherapy: Theory, Research and Practice, 94*(3), 443-463. https://doi.org/10.1111/papt.12320

Javidi, Z., Prior, K. N., Sloan, T. L., & Bond, M. J. (2021). A randomized controlled trial of self-compassion versus cognitive therapy for complex psychopathologies. *Current Psychology,* https://doi.org/10.1007/s12144-021-01490-4

Keng, S.-L., Seah, S. T. H., Tong, E. M. W., & Smoski, M. (2016). Effects of brief mindful acceptance induction on implicit dysfunctional attitudes and concordance between implicit and explicit dysfunctional attitudes. *Behaviour Research and Therapy, 83*, 1-10. https://doi.org/10.1016/j.brat.2016.05.004

Kirby, J. N., Tellegen, C. L. & Steindl, S. R. (2017). A meta-analysis of compassion-based interventions: Current state of knowledge and future directions. *Behavior Therapy, 48(*6), 778-792, https://doi.org/10.1016/j.beth.2017.06.003

Kopp, M. (1985). *Klinikai pszichofiziológia. Pszichoszomatikus füzetek 2.* MAOTE & MPT

Larcombe, W., Finch, S., Sore, R., Murray, C.M., Kentish, S., Mulder, R.A., Lee-Stecum, P., Baik, C., Tokatlidis, O. & Williams, D.A. (2016). Prevalence and socio-demographic correlates of psychological distress among students at an Australian university. *Studies in Higher Education, 41*(6), 1074-1091. https://doi.org/10.1080/03075079.2014.966072

Li, Q., Wu, J., & Wu, Q. (2022). Self-compassion buffers the psychological distress from perceived discrimination among socioeconomically disadvantaged emerging adults: A longitudinal study. *Mindfulness (N Y), 13*(2), 500-508. https://doi.org/10.1007/s12671-021-01810-6

Liu, L., Han, Y., Lu, Z., Cao, C., & Wang, W. (2022). The relationship between perfectionism and depressive symptoms among Chinese college students: The mediating roles of self-compassion and impostor syndrome. *Current Psychology*, http://dx.doi.org/10.1007/s12144-022-03036-8

Lovibond, S.H. & Lovibond, P.F. (1995). *Manual for the Depression Anxiety Stress Scales. (2nd. Ed.).* Psychology Foundation

MacBeth, A., & Gumley, A. (2012). Exploring compassion: a meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review, 32*(6). 545-552. https://doi.org/10.1016/j.cpr.2012.06.003

Mak, W. W. S., Chio, F. H. N., Chong, K. S. C., & Law, R. W. (2021). From mindfulness to personal recovery: the mediating roles of self-warmth, psychological flexibility, and valued living. *Mindfulness, 12*(4), 994-1001. https://link.springer.com/article/10.1007/s12671-020-01568-3

Mak, W. W. S., Tong, A. C. Y., Yip, S. Y. C., Lui, W. W. S., Chio, F. H. N., Chan, A. T. Y., & Wong, C. C. Y. (2018). Efficacy and moderation of mobile app-based programs for mindfulness-based training, self-compassion training, and cognitive behavioral psychoeducation on mental health: Randomized controlled noninferiority trial. *JMIR Mental Health, 5*(4), e60. https://mental.jmir.org/2018/4/e60/

Makadi, E., & Koszycki, D. (2020). Exploring connections between self-compassion, mindfulness, and social anxiety. *Mindfulness, 11*(2), 480–492. https://doi.org/10.1007/s12671-019-01270-z

Marsh, I.C., Chan, S.W.Y, & MacBeth, A. (2018). Self-compassion and psychological distress in adolescents – a meta-analysis, *Mindfulness (N Y). 9*(4), 1011-1027, https://doi.org/10.1007/s12671-017-0850-7

Martos, T., Sallay, V., Desfalvi, J., Szabó, T., & Ittzés, A. (2014). Az Élettel Való Elégedettség Skála Magyar változatának (SWLS-H) pszichometriai jellemzői. *Mentálhigiéné és Pszichoszomatika, 15*(3), 289-303. http://dx.doi.org/10.1556/Mental.15.2014.3.9

Matos, M., Duarte, C., Duarte, J., Pinto-Gouveia, J., Petrocchi, N., Basran, J., & Gilbert, P. (2017). Psychological and physiological effects of compassionate mind training: A pilot randomized controlled study. *Mindfulness, 8* (6), 1699–1712. https://doi.org/10.1007/s12671-017-0745-7

Maxwell, S. E., Cole, D. A., & Mitchell, M. A. (2011). Bias in cross-sectional analyses of longitudinal mediation: partial and complete mediation under an autoregressive model. *Multivariate Behav Res., 46*(5), 816-841. https://doi.org/10.1080/00273171.2011.606716

Muris, P., & Petrocchi, N. (2016). Protection or vulnerability? A meta-analysis of the relations between the positive and negative components of self-compassion and psychopathology. *Clinical Psychology and Psychotherapy. 24*(2), 373-383. https://doi.org/10.1002/cpp.2005

Neff, K. (2003a). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*(3), 223–250. https://psycnet.apa.org/doi/10.1080/15298860309027

Neff, K. (2003b). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, *2*(2), 85-101. https://psycnet.apa.org/doi/10.1080/15298860309032

Neff, K. D. (2023a). Self-compassion: Theory and measurement. In. A. Finlay-Jones, K. Bluth, & K. Neff (Eds.). *Handbook of Self-Compassion* (Chap. 1), Springer. https://doi.org/10.1007/978-3-031-22348-8

Neff, K. D. (2023b). Self-compassion: Theory, method, research, and intervention. *Annual Review of Psychology, 74,* 193-218. https://doi.org/10.1146/annurev-psych-032420-031047

Neff, K.D., & Germer, C. K. (2012). A pilot study and randomized controlled trial of the Mindful Self-Compassion Program. *Journal of Clinical Psychology, 69*(1), 28-44. https://doi.org/10.1002/jclp.21923

Opris, D. & Macavei, B. (2007). The profile of emotional distress: Norms for the Romanian population. *Journal of Cognitive and Behavioral Psychotherapies*, 7(2), 139–152.

Phillips, W.J., Hine, D.W., & Marks, A.D.G. (2018). Self-compassion moderates the predictive effects of implicit cognitions on subjective well-being. *Stress and Health, 34*(1), 143-151. https://doi.org/10.1002/smi.2773

Podina, I., Jucan, A., & David, D. (2015). Self-compassion: A buffer in the pathway from maladaptive beliefs to depression. An exploratory study. *Journal of Evidence–Based Psychotherapies*, *15*(1), 97-109.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*(4), 717-731. https://doi.org/10.3758/bf03206553

Preuss, H., Capito, K., van Eickels, R.H., Zemp, M. & Kolar, D. R. (2021). Cognitive reappraisal and self-compassion as emotion regulation strategies for parents during COVID-19: An online randomized controlled trial. *Internet Interventions, 24*, 100388. https://doi.org/10.1016/j.invent.2021.100388

Raes, F., Pommier, E., Neff, K. D., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clin Psychol Psychother, 18*(3), 250-255. https://doi.org/10.1002/cpp.702

Regehr, C., Glancy, D. & Pitts, A. (2013). Interventions to reduce stress in university students: A review and meta-analysis. *Journal of Affective Disorders, 148*(1), 1–11. https://doi.org/10.1016/j.jad.2012.11.026

Sedighimornani, N., Rimes, K. A., & Verplanken, B. (2019). Exploring the relationships between mindfulness, self-compassion, and shame. *SAGE Open, 9*(3). https://doi.org/10.1177/2158244019866294

Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research*, *8*(2), 23–74.

Smeets, E., Neff, K., Alberts, H., & Peters, M. (2014). Meeting suffering with kindness: Effects of a brief self-compassion intervention for female college students. *Journal of Clinical Psychology*, *70*(9), 794-807. https://doi.org/10.1002/jclp.22076.

Thimm, J. C. (2017). Relationships between early maladaptive schemas, mindfulness, self-compassion, and psychological distress. *International Journal of Psychology & Psychological Therapy, 17,* 1-15.

Tobar, C. F., Michels, M., & Franco, S. C. (2022). Self-compassion and positive and negative affect on medical students during the COVID-19 pandemic. *J Hum Growth Dev., 32*(2), 339-350. http://doi.org/10.36311/jhgd.v32.11909

Tomlinson, E. R., Yousaf, O., Vittersø, A. D., & Jones, L. (2018). Dispositional mindfulness and psychological health: A systematic review. *Mindfulness (N Y), 9*(1), 23-43. https://doi.org/10.1007/s12671-017-0762-6

Quaglia, J. T., Braun, S. E., Freeman, S. P., McDaniel, M. A., & Brown, K. W. (2016). Meta-analytic evidence for effects of mindfulness training on dimensions of self-reported dispositional mindfulness. *Psychol Assess., 28*(7), 803-818. https://doi.org/10.1037/pas0000268

Vîslă, A., Holtforth, M.g. & David, D. (2015). Descriptive/Inferential Cognitive Processes and Evaluative Cognitive Processes: Relationships Among Each Other and with Emotional Distress. *J Rat-Emo Cognitive-Behav Ther*, 33(2), 148-159. https://doi.org/10.1007/s10942-015-0207-x

Weissman, A. N., & Beck, A. T. (1978). Development and validation of the Dysfunctional Attitude Scale. Paper presented at the Annual Meeting of the American Educational Research Association, Toronto, Canada.

Wong, C. C. Y., & Mak, W. W. S. (2013). Differentiating the role of three self-compassion components in buffering cognitive-personality vulnerability to depression among Chinese in Hong Kong. *Journal of Counseling Psychology, 60*(1), 162–169. https://doi.org/10.1037/a0030451

Xavier, S., Branquinho, M., Pires, R., Moreira, H., Coelho, M., & Araújo-Pedrosa, A. (2023). Dysfunctional attitudes toward motherhood and depressive symptoms in Portuguese pregnant women during COVID-19 pandemic: the mediating roles of self-compassion and mindful self-care. *Mindfulness, 14*(2), 418-428. https://doi.org/10.1007/s12671-022-02049-5

Yang, F.-H., Tan, S.-L., & Lin, Y.-L. (2022). The relationships among mindfulness, self-compassion, and subjective well-being: The case of employees in an international business. *Sustainability, 14*(9), 5266. https://doi.org/10.3390/su14095266

Yapan, S., Türkçapar, M. H., & Boysan, M. (2020). Rumination, automatic thoughts, dysfunctional attitudes, and thought suppression as transdiagnostic factors in depression and anxiety. *Current Psychology: A Journal for Diverse Perspectives on*

Diverse Psychological Issues. Advanced online publication. https://doi.org/10.1007/s12144-020-01086-4

Zessin, U., Dickhauser, O. & Garbade, S. (2015). The relationship between self-compassion and well-being: A meta-analysis. A*pplier Psychology: Health and Well-Being*, *7*(3), 340-364. https://doi.org/10.1111/aphw.12051