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Relationships between Early Maladaptive Schemas, Mindfulness, Self-compassion, and Psychological Distress

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Abstract

Early maladaptive schemas (EMSs) are maladaptive beliefs about oneself and one's relationships with others that originate from adverse childhood experiences and lead to psychological distress when activated. Schema therapy (ST) was developed to treat EMSs and maladaptive coping responses to the triggering of EMSs. Mindfulness-based interventions are increasingly used in ST. The purpose of the present study was to explore the relationships between EMSs, mindfulness, self-compassion, and psychological distress. The Young Schema Questionnaire (YSQ-S3), the Five Facet Mindfulness Questionnaire (FFMQ-SF), the Self-Compassion Scale (SCS-SF), and the Brief Symptom Inventory (BSI) were administered to 212 undergraduate psychology students (mean age= 21.8 years, *SD*= 4.4). The results showed negative associations between EMSs and mindfulness and self-compassion. Mindfulness and self-compassion mediated, but did not moderate, the associations between EMSs and psychological distress. It is concluded that low mindfulness and low self-compassion are mechanisms through which EMSs exert their effect on psychological distress. These findings support the use of techniques aimed at enhancing mindfulness and self-compassion in the treatment of EMSs.
Key words: early maladaptive schemas, mindfulness, self-compassion, psychological distress, mediation.

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Novelty and Significance

What is already known about the topic?

- Early maladaptive schemas (EMSs) are negative beliefs about one self and one's relationships with others that arise from adverse relational experiences in childhood and are associated with a broad range of psychological problems.
- Previous research suggests that EMSs are related to low mindfulness.

What this paper adds?

- In addition to low mindfulness, EMSs are also associated with low self-compassion.
- Low mindfulness and low self-compassion are important mechanisms by which EMSs lead to psychological distress.

The construct of early maladaptive schemas (EMSs) was introduced by Young (1990) to conceptualize the core psychological themes of patients with personality disorders or personality-related difficulties in living. These themes involve beliefs about the self and one's relationships with others. They are thought to develop in childhood and adolescence when basic and universal psychological needs (i.e., secure attachment, autonomy, realistic limits, self-directedness, and playfulness) are chronically frustrated. Over time, these experiences are integrated into the individual's sense of identity and perpetuated by maladaptive strategies used to cope with the painful emotions when an EMSs is activated by a situation relevant to the schema and in order to maintain a stable view of the self and the world. Maladaptive coping strategies include avoiding these situations totally (avoidance), acting as if the opposite of the schema were true

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(overcompensation), or surrendering to the schema (surrender) (Young, Klosko, & Weishaar, 2003). EMSs are considered dimensional and universal. Young (1999) has defined 18 specific EMSs, which are briefly described in the methods section. The combination of currently activated schemas and coping behaviors is termed schema mode. Several modes have been proposed (e.g., the vulnerable child, the detached protector, the punitive parent) (Young *et al*., 2003). Thus, while EMS is a trait-like concept, schema modes refer to the individual's current state. The focus of the present study is on EMSs.

In support of theory, investigations have shown that EMSs are associated with recollections of negative parenting practices, childhood trauma, and insecure attachment in childhood (Cecero, Nelson, & Gillie, 2004; Simard, Moss, & Pascuzzo, 2011; Thimm, 2010) and a variety of psychiatric diagnoses and psychological problems, including mood disorders, anxiety disorders, substance abuse, eating disorders, psychosis, and personality disorders (e.g., Barazandeh, Kissane, Saeedi, & Gordon, 2016; Koerner, Tallon, & Kusec, 2015; Kwak & Lee, 2015; Nilsson, Nielsen Straarup, & Halvorsen, 2015; Pugh, 2015; Shorey, Stuart, & Anderson, 2013; Sundag, Ascone, de Matos Marques, Moritz, & Lincoln, 2016). Moreover, findings from longitudinal studies suggest that EMSs remain stable over time (Blissett & Farrow, 2007; Renner, Lobbestael, Peeters, Arntz, & Huibers, 2012; Riso *et al*., 2006; Wang, Halvorsen, Eisemann, & Waterloo, 2010).

Schema therapy (ST) (Young, 1990; Young et al., 2003) was developed to treat EMSs, maladaptive coping styles, and maladaptive schema modes. The goal of ST is the weakening of all components of schemas and maladaptive behaviors so that patients can meet their emotional needs in adaptive ways (Young *et al*., 2003). To this end, cognitive, experiential, and behavioral techniques, along with a therapeutic relationship that is characterized by empathic confrontation and limited reparenting are used (Young *et al*., 2003). An increasing number of randomized-controlled trials suggests that ST is an effective treatment for personality disorders and other psychiatric disorders (e.g., Bamelis, Evers, Spinhoven, & Arntz, 2014; Carter *et al*., 2013; Giesen-Bloo *et al*., 2006; McIntosh *et al*., 2016). An important step in the treatment process is to identify when an EMS and associated coping responses are activated (Young *et al*., 2003). Mindfulness-based exercises are therefore increasingly integrated in ST to enhance awareness of schema processes and promote adaptive coping skills (Bricker & Labin, 2012; van Vreeswijk, Broersen, & Schurink, 2014).

The concept of mindfulness has its origins in Buddhist philosophy (Segal, Williams, Teasdale, & Kabat-Zinn, 2013) and has recently been adopted in Western psychology. Although there is still a lack of agreement on the precise definition of mindfulness (for a recent overview of different definitions see Williams, Dalgleish, Karl, & Kuyken, 2014) and differences between Buddhist and Western conceptualizations of mindfulness have been noted (Grossman & Van Dam, 2011; Keng, Smoski, & Robins, 2011), most definitions encompass two components: attentional focus on momentary experience and an accepting, nonjudgmental, and open attitude towards these experiences (Sauer *et al*., 2013). For example, Bishop *et al*. (2004) described mindfulness as "a kind of nonelaborative, nonjudgmental, present-centered awareness in which each thought, feeling, or sensation that arises in the attentional field is acknowledged and accepted as it is" (p. 232). A number of systematic reviews and meta-analyses have demonstrated positive relationships between mindfulness and psychological health (e.g., Desrosiers, Klemanski, & Nolen-Hoeksema, 2013; Keng *et al*., 2011) and the beneficial effects of using mindfulness-based interventions for psychological problems, in particular depression, anxiety, and stress (Eberth & Sedlmeier, 2012; Khoury *et al*., 2013).

Self-compassion is related to mindfulness and has been found to be an important mediator of the effects of mindfulness-based treatment (Kuyken *et al*., 2010). As with mindfulness, self-compassion is a construct stemming from Buddhist psychology that has received research attention in Western psychology (Barnard & Curry, 2011; Neff & Dahm, 2014). Neff (2003b) defined self-compassion as being composed of three overlapping components that engender each other: self-kindness (being kind, supporting, understanding toward oneself in times of pain versus self-judgement), common humanity (recognizing that failing and being imperfect is part of the human condition versus isolation), and mindfulness (a balanced awareness of negative thoughts and emotions versus over-identification). As such, self-compassion as a total construct is broader in scope than mindfulness. Self-compassion has been shown to be strongly related to various aspects of psychological well-being and interpersonal functioning (Neff & Dahm, 2014). Meta-analyses have confirmed that positive relationships exist between self-compassion along with well-being and large inverse relationships between self-compassion and psychopathology (MacBeth & Gumley, 2012; Zessin, Dickhäuser, & Garbade, 2015). Hollis-Walker and Colosimo (2011) found that self-compassion predicts psychological well-being about mindfulness and mediates between mindfulness and well-being. Findings from experimental studies suggest that self-compassion is an adaptive emotion-regulation strategy (e.g., Diedrich, Grant, Hofmann, Hiller, & Berking, 2014; Leary, Tate, Adams, Batts Allen, & Hancock, 2007). Accordingly, studies of interventions aimed at enhancing self-compassion have shown reductions in depression, anxiety, and self-criticism, and increases in mindfulness, self-compassion, and well-being (e.g., Gilbert & Procter, 2006; Neff & Germer, 2013; Smeets, Neff, Alberts, & Peters, 2014).

In the context of ST, it has been proposed that mindfulness-based interventions enhance the individual's awareness of schemas and modes that have been triggered and the ability to respond more reflectively and mindfully (Roediger, 2012; van Vreeswijk & Broersen, 2012). In this way, mindfulness can reduce maladaptive coping strategies. The concept of self-compassion is relevant to ST as strengthening the part of the self that is understanding and kind towards oneself and one's emotional needs is an important goal of ST.

Despite the recent interest in combining ST with mindfulness-based interventions, empirical investigations into the associations between EMSs and mindfulness are scarce. Cecero, Beite, and Prout (2008) examined the relationships between the EMSs of the disconnection and rejection domain and psychological mindedness, a construct that is related to mindfulness (Bishop *et al*., 2004). Except for the abandonment schema, the authors found moderate negative correlations of EMSs with psychological mindedness. Psychological mindedness further mediated, but did not moderate, undergraduates' adjustment to college. Shorey and colleagues (Shorey, Anderson, & Stuart, 2014; Shorey, Brasfield, Anderson, & Stuart, 2015) found in two studies of patients seeking residential substance use treatment that most EMSs are negatively correlated with mindfulness as measured by the Mindful Attention Awareness Scale (MAAS, Brown & Ryan, 2003). Nonsignificant associations were found for abandonment, emotional deprivation, enmeshment, entitlement, social isolation, and negativity in women and emotional deprivation, entitlement, and unrelenting standards in men. Recently, Fischer, Smout, and Delfabbro (2016) reported a correlation of -.61 between a total EMSs severity score and the MAAS. Although one of the most used instruments for measuring mindfulness, the MAAS has been criticized for assessing only one dimension of mindfulness (attention) and measuring general inattentiveness instead of mindfulness (Sauer *et al*., 2013; Van

Dam, Earleywine, & Borders, 2010). To the present author's knowledge, the associations between EMSs and self-compassion have not yet been investigated. However, relevant to the current investigation, Podina, Jucan, and David (2015) recently found negative correlations between irrational thoughts and self-compassion and that self-compassion moderated the relationships between irrational beliefs and depression.

The intention of the present study is to expand upon previous work and to explore the relationships between EMSs, facets of mindfulness, and self-compassion. It is expected that EMSs are negatively related to both mindfulness and self-compassion. In addition, a second purpose is to explore whether mindfulness and self-compassion influence the associations between EMSs and psychological distress. Mindfulness and self-compassion can influence these relationships in two ways: as moderators (i.e., variables that affect the strength of the relationships) and mediators (i.e., variables that account for the relationships) (cf. Baron & Kenny, 1986).

METHOD

Participants

The sample consisted of 212 undergraduate students (74% female, mean age= 21.8 years, *SD*= 4.4; one individual did not indicate his or her age and sex.) who participated as a part of a research requirement in an introductory psychology class. The students were offered the option to write a paper instead of participating in a research project. The measures were completed in groups. Information about the study was provided, and all participants were offered an opportunity for debriefing. After returning the completed questionnaires to the project leader, the students received a confirmation notice stating that they participated in the study and a lottery ticket as reward. No personally identifiable data were collected, and ethical approval was therefore not required according to the Norwegian Health Research Act.

Instruments

Young Schema Questionnaire-Short Form 3 (YSQ-S3; Young, 2005). The YSQ-S3 is a self-report inventory designed to assess EMSs. The YSQ-S3 consists of 90 items that are scored on a 6-point Likert scale from (1) completely untrue of me to (6) describes me perfectly. The inventory measures 18 EMSs, organized in five domains. Each EMS is represented by five items. The disconnection and rejection domain is composed of the abandonment (e.g., "I worry that people I feel close to will leave me or abandon me"), mistrust (e.g., "It is only a matter of time before someone betrays me"), emotional deprivation (e.g., "I don't have people to give me warmth, holding, and affection"), defectiveness/shame (e.g., "I'm unworthy of the love, attention, and respect of others"), and social isolation (e.g., "I don't belong; I'm a loner") schemas. The schemas of dependence/incompetence (e.g., "I do not feel capable of getting by on my own in everyday life"), vulnerability to harm or illness (e.g., "I can't seem to escape the feeling that something bad is about to happen"), enmeshment (e.g., "I often feel I do not have a separate identity from my parent(s) or partner"), and failure to achieve (e.g., "I'm not as talented as most people are at their work") are subsumed under the impaired autonomy domain. The impaired limits domain includes the schemas of entitlement (e.g., "I feel that I shouldn't have to follow the normal rules or conventions that other people do") and insufficient self-control (e.g., "If I can't reach

a goal, I become easily frustrated and give up"). The subjugation (e.g., "I think that if I do what I want, I'm only asking for trouble"), self-sacrifice (e.g., "I've always been the one who listens to everyone else's problems"), approval-seeking (e.g., "Unless I get a lot of attention from others, I feel less important") schemas are organized under the other-directedness domain. Finally, the overvigilance and inhibition domain is composed of the schemas of negativity/pessimism (e.g., "Even when things seem to be going well, I feel that it is only temporary"), emotional inhibition (e.g., "I find it embarrassing to express my feelings to others"), unrelenting standards (e.g., "I feel that there is constant pressure for me to achieve and get things done"), and punitiveness (e.g., "If I don't try my hardest, I should expect to lose out"). Previous research has demonstrated that the YSQ-S3 has good internal consistency and convergent validity and supports the proposed factor structure (e.g., Bach, Simonsen, Christoffersen, & Kriston, in press; Calvete, Orue, & González Diez, 2013). In the present study, all scales showed acceptable to high internal consistencies, except for the enmeshment scale (α= .45) with a median of .73.

Five Facet Mindfulness Questionnaire-Short Form (FFMQ-SF; Bohlmeijer, Peter, Fledderus, Veehof, & Baer, 2011). Mindfulness was measured with the FFMQ-SF, which is an abbreviated form of the 39-item Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Dundas, Vøllestad, Binder, & Sivertsen, 2013) with 24 items that are answered on a 5-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). Five scales assess the attention and acceptance components of mindfulness: observing (four items, e.g., "I pay attention to physical experiences, such as the wind in my hair or sun on my face"), describing (five items, e.g., "I'm good at finding words to describe my feelings"), acting with awareness (five items, e.g., "I find myself doing things without paying attention"), nonjudging of experience (five items, e.g., "I tell myself that I shouldn't be thinking the way I'm thinking"), and nonreactivity to inner experience (five items, e.g., "When I have distressing thoughts or images, I just notice them and let them go"). The FFMQ-SF has shown similar structure, reliability, and validity as the original questionnaire (Bohlmeijer *et al*., 2011). Since the observing scale has been found to be unrelated to the remaining scales in student and non-meditating samples (e.g., Baer *et al*., 2006; Gu *et al*., 2016; Williams *et al*., 2014), this scale was omitted when computing the FFMQ-SF sum score, following the recommendation by Gu *et al*. (2016). In the present sample, the Cronbach's alpha for the FFMQ-SF scales ranged from .77 to .86. The FFMQ-SF total score had an alpha of .85.

Self-Compassion Scale–Short Form (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011). The SCS-SF was used to assess self-compassion. This self-report inventory is comprised of 12 items from the 26-item Self-Compassion Scale (Neff, 2003a). Items are rated on a 5-point Likert scale from 1 (almost never) to 5 (almost always). The three components of self-compassion proposed by Neff (2003b) are covered with four items each, two of which are reversed scored, i.e., self-kindness (e.g., "I try to be understanding and patient towards those aspects of my personality I don't like"), common humanity (e.g., "I try to see my failings as part of the human condition") and mindfulness (e.g., "When something upsets me I try to keep my emotions in balance"). The SCS-SF has been found to have structural validity, adequate internal consistency, test-retest reliability, and convergent validity (Castilho, Pinto Gouveia, & Duarte, 2015; Raes *et al*., 2011). The SCS-SF total score used in the present study had an alpha of .86.

Brief Symptom Inventor (BSI; Derogatis, 1992). The BSI is a 53-item self-report inventory designed to assess various psychological symptoms (e.g., "feeling no interest in things") and their current intensity. Items are rated on a five-point Likert scale from 0 (not at all) to 4 (extremely). The BSI comprises nine symptom scales and three global indices. In the present study, the global severity index (GSI) was used, which is the average of all items. The GSI had a Cronbach's alpha of .95.

Data analysis

First, the pattern of missing values, the distribution of the study variables, and their internal consistencies were examined. The bivariate associations between the study measures were explored with Pearson correlations. To reduce the number of moderation and mediation analyses, schema domains, instead of individual EMSs, and the total score of the FFMQ-SF, instead of the FFMQ-SF facets, were used, respectively. Regression analyses were employed to test whether mindfulness and self-compassion moderate the relationships between EMSs and psychological distress. Moderation is assumed to occur when the interaction of the predictor and proposed moderator is significant (Baron & Kenny, 1986). Mediation of mindfulness and self-compassion between EMSs and psychological distress was investigated using a series of multiple mediation analyses. These analyses were conducted separately for each of the five YSQ-S3 domains with mindfulness and self-compassion as mediators and psychological symptoms as dependent variable. A bootstrapping approach with 10.000 samples was used to obtain point estimates of the total, direct, and indirect (total and specific for mindfulness and self-compassion) effects and to construct 95% confidence intervals. Completely standardized effects were used as measures of the effect sizes (small= .01, medium= .09, large= .25; cf. Kenny, 2016).

The analyses were conducted with SPSS 23 (descriptive statistics and correlations) and PROCESS 2.15 for SPSS (Hayes, 2013) for the moderation and mediation analyses.

RESULTS

Only 0.3% of the values were missing. Little's MCAR test was not significant ($\chi^2_{(7221)}$= 7308.98, p= .231), indicating that the missing data were completely at random. Missing data were not replaced. However, a given scale score was not computed when the number of missing data points exceeded 20%. The means, standard deviations, ranges, and Cronbach's alphas of the study variables are presented in Table 1.

The YSQ-scales mistrust, emotional deprivation, defectiveness, social isolation, dependence, vulnerability to harm, enmeshment, subjugation, and negativity had a non-normal distribution in the sample (skewness and/or kurtosis >1) and were log transformed prior to correlation analyses.

The correlations of EMSs with mindfulness, self-compassion and psychological distress are displayed in Table 2. Except for the self-sacrifice schema, all specific EMSs and schema domains were significantly related (p <.05) to the total score of the FFMQ-SF. The associations were strongest for the defectiveness (-.56) and negativity (-.54) schemas, but relatively weak for the entitlement (-.14) schema. The median for the specific EMSs was -.35 and for the schema domains -.47. With respect to the facets of the FFMQ-SF, all EMSs and schema domains were significantly (p <.05) correlated with nonjudging of experience with a range from -.14 (enmeshment) to -.45 (negativity). The entitlement, self-sacrifice and unrelenting standards schemas were associated solely with this facet. In contrast, none of the schemas and domains were associated with the observing facet of the FFMQ-SF. The majority of EMSs and schema domains (with the exception of the enmeshment, entitlement, and self-sacrifice schemas) were significantly correlated with the SCS-SF total score. The range of significant correlations was from -.21 (approval seeking) to -.59 (negativity) for the specific schemas and -.29 (other-directedness) to -.56 (overvigilance) for the schema domains. The medians were -.39

Table 1. Descriptive statistics.

		Mean	*SD*	Range	Cronbach's α
YSQ-S3	Disconnection and rejection domain	2.02	0.74	1.00-4.64	.93
	Abandonment	2.13	0.92	1.00-5.40	.83
	Mistrust	2.02	0.95	1.00-5.80	.85
	Emotional deprivation	1.94	0.99	1.00-6.00	.81
	Defectiveness	1.85	0.84	1.00-4.60	.84
	Social isolation	2.18	1.04	1.00-5.60	.88
	Impaired autonomy domain	1.75	0.50	1.00-3.35	.83
	Dependence	1.50	0.56	1.00-3.80	.68
	Vulnerability to harm	1.70	0.72	1.00-4.40	.71
	Enmeshment	1.57	0.50	1.00-3.80	.45
	Failure	2.24	1.01	1.00-5.20	.87
	Impaired limits domain	2.37	0.59	1.00-3.90	.73
	Entitlement	2.21	0.64	1.00-5.00	.63
	Insufficient self-control	2.52	0.83	1.00-5.00	.75
	Other-directedness domain	2.69	0.55	1.33-4.53	.72
	Subjugation	1.89	0.69	1.00-4.20	.67
	Self-sacrifice	3.36	0.91	1.20-5.80	.73
	Approval-seeking	2.81	0.85	1.20-5.60	.70
	Overvigilance domain	2.67	0.68	1.30-4.85	.87
	Negativity	2.24	0.94	1.00-6.00	.80
	Emotional inhibition	2.41	0.87	1.00-5.00	.71
	Unrelenting standards	3.42	0.99	1.20-6.00	.76
	Punitiveness	2.60	0.81	1.00-5.25	.68
FFMQ-SF	Nonreact	3.20	0.81	1.00-5.00	.79
	Observing	3.68	0.83	1.50-5.00	.77
	Actaware	3.39	0.71	1.00-5.00	.79
	Describing	3.66	0.81	1.00-5.00	.86
	Nonjudge	3.04	0.81	1.00-4.80	.80
	FFMQ-SF total score	3.32	0.53	1.85-4.70	.85
SCS-SF total score		3.09	0.74	1.33-4.92	.86
BSI (GSI)		0.74	0.51	0.04-2.47	.95

Notes: N= 210–212; YSQ-S3= Young Schema Questionnaire–Short Form 3; FFMQ-SF= Five Facet Mindfulness Questionnaire-Short Form; Actaware= acting with awareness; Nonjudge= nonjudging of experience; Nonreact= nonreactivity to inner experience; SCS-SF= Self-Compassion Scale–Short Form; BSI= Brief Symptom Inventory; GSI= General Severity Index.

and -.48 for the specific EMSs and the schema domains, respectively. All EMSs and schema domains were significantly ($p < .05$) related to psychological symptoms (GSI) with correlation coefficients ranging from .16 (enmeshment) to .60 (negativity) for the specific EMSs (median= .43) and from .33 (other-directedness) to .62 (disconnection) for the schema domains (median= .55). The correlations of the FFMQ-SF and SCS-SF total scores with the GSI were -.58 and -.61, respectively.

The results of the regression analyses predicting psychological distress from schema domains to test for moderation of mindfulness and self-compassion are summarized in Table 3. The regressions models with mindfulness as moderator explained between 37% (other-directedness) and 47% (disconnection) of the variance of the GSI with a median of 43%. The regressions models with self-compassion as moderator explained between 41% (impaired limits and other-directedness) and 50% (disconnection) of the variance of the GSI with a median of 46%. Only the interaction of the overvigilance schema domain with self-compassion was significant (p= .022).

The results of the analyses examining mediation of mindfulness and self-compassion between schema domains and psychological distress are displayed in Table 4. For all schema domains, the bias-corrected bootstrapped 95% confidence intervals of the total and specific indirect effects were above zero, indicating that the schema

Table 2. Correlations of EMSs and schema domains with mindfulness, self-compassion, and psychological distress.

YSQ-S3	FFMQ-SF						SCS-SF	BSI
	Observing	Describing	Actaware	Nonjudge	Nonreact	Total	Total	GSI
Disconnection domain	.01	-.40***	-.35***	-.43***	-.28***	-.54***	-.54***	.62***
Abandonment	-.06	-.27***	-.27***	-.36***	-.30***	-.44***	-.49***	.49***
Mistrust	.01	-.30***	-.27***	-.38***	-.18*	-.42***	-.38***	.48***
Emotional deprivation	.06	-.26***	-.24***	-.25***	-.11	-.32***	-.35***	.40***
Defectiveness	-.07	-.47***	-.35***	-.43***	-.26***	-.56***	-.52***	.57***
Social isolation	.01	-.39***	-.35***	-.35***	-.22**	-.49***	-.45***	.55***
Impaired autonomy domain	-.05	-.38***	-.39***	-.31***	-.22**	-.48***	-.48***	.55***
Dependence	-.06	-.30***	-.31***	-.22**	-.14*	-.36***	-.26***	.37***
Vulnerability to harm	.07	-.26***	-.24***	-.35***	-.20**	-.39***	-.41***	.45***
Enmeshment	-.09	-.14*	-.12	-.14*	-.15*	-.21**	-.12	.17*
Failure	-.05	-.36***	-.40***	-.20**	-.12	-.40***	-.46***	.49***
Impaired limits domain	-.08	-.23***	-.37***	-.23***	-.11	-.34***	-.34***	.40***
Entitlement	-.09	-.05	-.12	-.15*	-.05	-.14*	-.13	.16*
Insufficient self-control	-.05	-.28***	-.43***	-.21**	-.12	-.38***	-.39***	.45***
Other-directedness domain	-.01	-.25***	-.22**	-.30***	.06	-.26***	-.29***	.33***
Subjugation	-.02	-.39***	-.27***	-.21**	-.10	-.36***	-.29***	.35***
Self-sacrifice	.13	.01	-.01	-.16*	.13	-.01	-.12	.17*
Approval-seeking	-.13	-.16*	-.20**	-.23***	.06	-.20**	-.21**	.20**
Overvigilance domain	.03	-.31***	-.37***	-.44***	-.17*	-.47***	-.56***	.59***
Negativity	.00	-.32***	-.42***	-.45***	-.27***	-.54***	-.59***	.60***
Emotional inhibition	-.06	-.43***	-.38***	-.32***	-.14*	-.47***	-.39***	.52***
Unrelenting standards	.00	-.10	-.13	-.28***	-.06	-.22**	-.40***	.30***
Punitiveness	.12	-.13	-.21**	-.27***	-.04	-.24**	-.33***	.36***

Notes: *N*= 210-212; YSQ-S3= Young Schema Questionnaire-Short Form 3; FFMQ-SF= Five Facet Mindfulness Questionnaire-Short Form; Actaware= acting with awareness; Nonjudge= nonjudging of experience; Nonreact= nonreactivity to inner experience; SCS-SF= Self-Compassion Scale-Short Form; BSI= Brief Symptom Inventory; GSI= General Severity Index; * p <.05. ** p <.01; *** p <.001.

Table 3. Regression analyses testing moderation of mindfulness and self-compassion between schema domains and psychological distress *(GSI)*. *N*= 210-211.

Domain		Predictors	*b*	*SE*	*t*	*p*	R^2
Moderator: Mindfulness	1	Disconnection and rejection	0.22	0.18	1.19	.236	
		Mindfulness	-0.39	0.13	-3.03	.003	
		Disconnection x mindfulness	0.02	0.06	0.41	.683	.47
	2	Impaired autonomy	0.26	0.30	0.86	.390	
		Mindfulness	-0.44	0.17	-2.58	.011	
		Impaired autonomy x mindfulness	0.03	0.10	0.31	.760	.43
	3	Impaired limits	-0.07	0.30	-0.22	.827	
		Mindfulness	-0.67	0.22	-3.08	.002	
		Impaired limits x mindfulness	0.08	0.09	0.89	.375	.38
	4	Other-directedness	0.06	0.34	0.18	.858	
		Mindfulness	-0.60	0.28	-2.12	.036	
		Other-directedness x mindfulness	0.03	0.10	0.33	.743	.37
	5	Overvigilance	0.50	0.22	2.30	.023	
		Mindfulness	-0.21	0.18	-1.17	.242	
		Overvigilance x mindfulness	-0.06	0.07	-0.94	.351	.46
Moderator: Self-compassion	1	Disconnection and rejection	0.40	0.12	3.30	.001	
		Self-compassion	-0.18	0.09	-1.98	.049	
		Disconnection x self-compassion	-0.05	0.04	-1.21	.226	.50
	2	Impaired autonomy	0.49	0.20	2.39	.018	
		Self-compassion	-0.21	0.12	-1.72	.086	
		Impaired autonomy x self-compassion	-0.06	0.07	-0.83	.406	.46
	3	Impaired limits	0.00	0.19	0.00	.996	
		Self-compassion	-0.50	0.15	-3.40	.001	
		Impaired limits x self-compassion	0.06	0.06	0.94	.348	.41
	4	Other-directedness	0.40	0.22	1.80	.073	
		Self-compassion	-0.17	0.19	-0.92	.358	
		Other-directedness x self-compassion	-0.08	0.07	-1.15	.253	.41
	5	Overvigilance	0.60	0.15	3.99	<.001	
		Self-compassion	0.02	0.13	0.14	.887	
		Overvigilance x self-compassion	-0.11	0.05	-2.31	.022	.48

domains affect symptomatic distress indirectly through mindfulness and self-compassion and that mindfulness and self-compassion mediated together, but also individually, the relationships between schema domains and psychological distress. The effect sizes of the total indirect effects were in the medium to large range, from .18 (other-directedness) to .28 (disconnection). The specific indirect effects of mindfulness were medium (ranging from .07 for other-directedness to .12 for overvigilance), while the specific indirect effects through self-compassion were in the medium to large range (from .11 for other-directedness to .17 for disconnection). To compare the specific indirect effects through mindfulness and self-compassion, point estimates of the differences were calculated. The 95% confidence intervals did contain zero (disconnection: -0.133 to 0.025; impaired autonomy: -0.171 to 0.047; impaired limits: -0.113 to 0.034; other-directedness: -0.101 to 0.030; overvigilance: -0.114 to 0.049), indicating that the indirect effects through mindfulness and self-compassion are not statistically different.

Table 4. Mindfulness and self-compassion as mediators between schema domains and psychological distress (GSI): point estimates of effects and effect sizes *N*= 209-210.

		Independent variables				
		Disconnection	Impaired autonomy	Impaired limits	Other-directedness	Overvigilance
Total effect (95% CI)		0.416 (0.343, 0.490)	0.546 (0.430, 0.662)	0.330 (0.223, 0.438)	0.299 (0.181, 0.418)	0.434 (0.353, 0.515)
Direct effect (95% CI)		0.223 (0.147, 0.309)	0.273 (0.155, 0.390)	0.142 (0.049, 0.236)	0.132 (0.034, 0.230)	0.236 (0.148, 0.323)
Total indirect effect (95% CI)		0.188 (0.137, 0.257)	0.273 (0.201, 0.365)	0.188 (0.117, 0.275)	0.167 (0.100, 0.249)	0.198 (0.142, 0.267)
ES (95% CI)		0.277 (0.209, 0.364)	0.271 (0.206, 0.347)	0.220 (0.142, 0.307)	0.182 (0.111, 0.260)	0.270 (0.202, 0.349)
Specific indirect effects	FFMQ-SF (95% CI)	0.071 (0.028, 0.119)	0.110 (0.053, 0.177)	0.077 (0.037, 0.133)	0.068 (0.033, 0.116)	0.084 (0.044, 0.132)
	ES (95% CI)	0.104 (0.042, 0.174)	0.109 (0.053, 0.175)	0.091 (0.044, 0.152)	0.074 (0.036, 0.126)	0.115 (0.060, 0.179)
	SCS-SF (95% CI)	0.117 (0.071, 0.178)	0.163 (0.099, 245)	0.111 (0.062, 0.182)	0.099 (0.052, 0.172)	0.114 (0.061, 0.178)
	ES (95% CI)	0.173 (0.110, 0.254)	0.162 (0.102, 0.234)	0.130 (0.076, 0.204)	0.108 (0.058, 0.178)	0.155 (0.086, 0.233)

Notes: ES= Effect size (completely standardized indirect effect); FFMQ-SF= Five Facet Mindfulness Questionnaire-Short Form total score; SCS-SF= Self-Compassion Scale-Short Form total score.

Discussion

The present study investigated the links between EMSs, mindfulness, self-compassion and psychological distress and extended previous research on EMSs and mindfulness by including facets of mindfulness and a measure of self-compassion. Further, the role of mindfulness and self-compassion in regards to the associations between EMSs and psychological distress was explored.

Consistent with previous findings on the relationships between EMSs and mindfulness (Fischer *et al*., 2016; Shorey, Anderson, & Stuart, 2014; Shorey *et al*., 2014), the results showed negative associations between the YSQ-S3 scales and the FFMQ-SF total score suggesting that EMSs are related to low awareness of the present moment and a non-judgmental attitude to ongoing experience. One could speculate that these associations reflect the coping strategy of avoidance, i.e. the individual's attempt to avoid the triggering of an EMS or painful emotions that accompany the activation

of EMSs (Young, 1999). A notable exception is the self-sacrifice schema which had a near-zero correlation with the FFMQ-SF total score. On the facet level, EMSs were related to four of the five facets of the FFMQ-SF. The observing scale was unrelated to the schema domains and specific EMSs. This result may be due to the sample used in the present study. It has repeatedly been reported that in student and non-meditating samples the observing scale is not correlated with psychological problems and does not load on a higher-order mindfulness factor (e.g., Baer *et al*., 2006; Dundas *et al*., 2013; Williams *et al*., 2014). Van Dam, Earleywine, and Danoff-Burg (2009) suggest that the interpretation of the meaning of the items of the observing scale varies with knowledge and experience with mindfulness and that the items therefore may be answered differently between meditating and non-meditating samples. Furthermore, except for the enmeshment and entitlement schemas, EMSs were negatively related to self-compassion, indicating that the presence of EMSs tends to be associated with a self-critical and harsh attitude towards oneself and one's problems.

The cross-sectional and correlational design of the study prevents inferences about potential causal directions between EMSs and mindfulness/self-compassion. Low mindfulness and self-compassion can be maladaptive strategies to cope with existing EMSs, but they may also precede and contribute to the development of EMSs. The observed associations may also be due to common developmental origins. In ST, EMSs are thought to be the result of adverse relational experiences with close others in childhood, such as rejection, abuse, or overprotection. Consistent with theory, adverse parenting and trauma in childhood have shown to be related to EMSs (e.g., Cecero *et al*., 2004; Muris, 2006). Similarly, Gilbert and Procter (2006) propose that high self-criticism arises from rejection or early trauma. Accordingly, Neff and McGehee (2010) found that maternal criticism is negatively related to self-compassion. Recent findings also suggest that low dispositional mindfulness is associated with parental rejection in childhood via insecure attachment (Pepping & Duvenage, 2016). Longitudinal studies are needed to disentangle the temporal relationships between EMSs, mindfulness, and self-compassion to identify possible common developmental pathways.

The current study investigated further whether mindfulness and self-compassion influence the relationships between EMSs and psychological distress. Replicating previous findings (e.g., Welburn, Coristine, Dagg, Pontefract, & Jordan, 2002), EMSs were correlated with psychological distress. Self-compassion moderated the relationship between the overvigilance schema domain and distress, but otherwise no moderating effects of mindfulness or self-compassion were found. However, in line with the findings reported by Cecero *et al*. (2008), the results supported a model in which mindfulness and self-compassion mediate the associations between EMSs and psychological distress. This suggests that low mindfulness and self-compassion are important mechanisms through which EMSs exert their influence on symptomatic distress. Both the combined and the separate indirect effects through mindfulness and self-compassion were significant, but not the difference between the effects of mindfulness and self-compassion. Thus, although mindfulness and self-compassion are related and overlapping constructs, they also individually mediated the relationships between EMSs and psychological distress. It has been previously reported that mindfulness and self-compassion complement each other in the prediction of anxiety and depression (Soysa & Wilcomb, 2015). Mindfulness is a part of self-compassion, according to the conceptualization by Neff (2003b), but the SCS-SF may cover different aspects of mindfulness than the FFMQ-SF (cf. Muris & Petrocchi, in press).

The present study's findings regarding the associations between EMSs, mindfulness, self-compassion, and psychological distress support STs emphasis on maladaptive coping as a treatment target in general and recent developments to integrate mindfulness-based interventions with ST (van Vreeswijk *et al*., 2014) specifically. Mindfulness may counteract the experiential avoidance often associated with EMSs. Increasing the patient's emotional self-care and ability to acknowledge and fulfill one's own psychological needs is an explicit goal of ST. Schema therapists may find it useful to adopt techniques from newly developed therapies specifically aimed at enhancing self-compassion, such as loving-kindness meditation or compassionate letter writing (Gilbert & Procter, 2006; Neff & Germer, 2013). Recent findings suggest that self-compassion facilitates the use of other adaptive emotion regulation strategies (e.g., cognitive reappraisal) in individuals with depression (Diedrich, Hofmann, Cuijpers, & Berking, 2016).

This exploratory investigation has limitations that have to be considered when interpreting the results. The sample consisted of undergraduate psychology students, the majority of which were female, and it is unclear if the findings can be generalized to clinical populations. In addition, mindfulness and self-compassion were assessed using self-report inventories. However, it has been argued that the concept of mindfulness is too complex to be properly measured by self-report (e.g., Grossman & Van Dam, 2011). Approaches to the assessment of mindfulness suggested as alternatives to self-report include interviews, language-based approaches, informant reports, biological and neuropsychological measures and momentary assessment approaches (Davidson & Kaszniak, 2015; Grossman & Van Dam, 2011; Sauer *et al*., 2013). The SCS has been criticized for its unstable factor structure (Costa, Marôco, Pinto Gouveia, Ferreira, & Castilho, in press; Williams *et al*., 2014) and the inclusion of reversed coded items (Muris, Otgaar, & Petrocchi, 2016). For a response to these criticisms see Neff (2016a, b). Furthermore, because the short form of the SCS was used in the current investigation, only a total score for self-compassion was calculated. However, there are findings that suggest that the three components of self-compassion may have a different impact on the associations between personality and psychopathology (Wong & Mak, 2013).

In conclusion, the results of the current study suggest that EMSs are negatively associated with mindfulness and self-compassion. Mindfulness and self-compassion further mediated the relationships between EMSs and psychological distress. These findings support the use of techniques that enhance mindfulness and self-compassion in the treatment of EMSs.

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