Facing the Dreaded: Does Mindfulness Facilitate Coping with Distressing Experiences?

A Moderator Analysis.

Claudia Bergomi[a]

Gunnar Ströhle[b]

Johannes Michalak[c]

Friedrich Funke[d]

Matthias Berking[e]

[a]University Hospital of Psychiatry, University of Bern, Switzerland

[b]Clinic of psychotherapy, Psychosomatic and behavior Medicine, Bad Gottleuba,

Germany

[c]University Hildesheim Germany

[d]Technical University of Dresden, Germany

[e] Philipps-University Marburg, Germany

Corresponding author: Claudia Bergomi

University Hospital of Psychiatry, Department of Psychotherapy, University of Berne,

Laupenstrasse 49, 3010 Bern, Switzerland

Phone: 0041 313876163; E-mail: bergomi@spk.unibe.ch

Abstract

Increasing evidence shows that mindfulness is positively related to mental health; however, the nature of this relationship is not fully understood. The current study utilized structural equation modeling to investigate the hypothesis that mindfulness moderates the association between the occurrence of unavoidable distressing experiences and mental health. Participants from a community sample (N=376) completed the Freiburg Mindfulness Inventory, the Positive and Negative Affect Scale, the Brief Symptom Inventory, the Inventory of Approach and Avoidance Motivation and the Incongruence Scale. Results indicated that mindfulness moderated the association between unavoidable distressing events and psychopathological symptoms/negative affect. Thus, mindfulness may contribute to enhance the ability to cope with unavoidable distressing experiences and thus mitigate the detrimental effects of these experiences on mental health.

Keywords: mindfulness; distressing experiences; mental health; moderation; avoidance

1. Introduction

Mindfulness has been defined as self-regulation of attention to the experience of the present moment, with an orientation characterized by curiosity, openness and acceptance (Bishop et al., 2004). Growing evidence indicates that mindfulness is associated with important aspects of mental health, such as lower levels of psychopathological symptoms and negative affect, as well as higher levels of positive affect, self-esteem and adaptive emotion regulation (Brown & Ryan, 2003; Michalak, Teismann, Heidenreich, Ströhle, & Vocks, 2011, Walach, Buchheld, Buttenmüller, Kleinknecht & Schmidt, 2006).

In addition, mindfulness-enhancing interventions such as Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1994) and Mindfulness-Based Cognitive Therapy (MBCT; Teasdale, Segal & Williams, 1995; Segal, Williams & Teasdale, 2002) have been shown to produce clinically significant improvements in a wide range of mental disorders and physical diseases (Grossman, Niemann, Schmidt & Walach, 2004; Salmon, Sephton, Weissbecker, Hoover, Ulmer & Studts, 2004; Hofmann, Sawyer, Witt & Oh, 2010). Several studies suggest that such improvements can (at least partly) be attributed to the development of mindfulness during the intervention. For example, mindfulness has been shown to mediate the relationship between home practice of meditation exercises and improvements in psychological functioning in MBSR (Carmody & Baer, 2008). Moreover, a study of formerly depressed patients who completed MBCT (Michalak, Heidenreich, Meibert & Schulte, 2008) found that levels of mindfulness significantly increased during treatment, and post-treatment levels of mindfulness negatively predicted the risk of relapse/recurrence to major depression in the 12-month follow-up.

Currently, research is increasingly focusing on the mechanisms through which mindfulness affects mental and physical health (Dimidjian and Linehan 2003; Shapiro, Carlson, Astin & Freedman, 2006; Crane, Barnhofer, Hargus, Winder & Amarasinghe, 2010). Several mechanisms have been proposed, including: attention regulation; enhancement of acceptance; exposure (and resulting habituation) to sensations, thoughts and emotions; emotion-regulation; decreased attachment/aversion to feelings; and facilitation of a decentered stance in which private events (e.g., thoughts and emotions) are treated as such – as opposed to accurate images of reality (Graboavac, Lau, & Willett, 2011; Baer, 2010; Coffey & Hartman, 2008; Teasdale et al., 2002).

This article will focus on the potential role of mindfulness in facilitating the ability to adaptively cope with unavoidable distressing experiences (UDE) and thus increase well being. Individuals may tend to avoid situations that are likely to be distressing. In fact, avoidance motivation guides individuals' behavior towards minimization of the occurrence of undesirable situations and outcomes (Grosse Holtforth, Pincus, Grawe, Mauler, & Castonguay, 2007). However, avoidance can also negatively impact well-being and contribute to many forms of psychopathology (Hayes, Wilson, Gifford, Follette & Strosahl, 1996; Hayes, Luoma, Bond, Masuda & Lillis, 2006; 2006; Berking, Neacsiu, Comtois & Linehan, 2009). Chronic avoidance is particularly deleterious, because avoiding or preventing undesired experiences entails blocking all possible routes to those experiences (Schwarz, 1990). Chronic avoidance leads to heightened monitoring of the environment, less behavioral flexibility and diminished access to desirable experiences (Hayes et al., 2006; Jacobson, Martell & Dimidjian, 2001), which in turn may negatively impact well-being and increase vulnerability for psychopathological symptoms. Additionally, when individuals are exposed to

distressing situations they cannot avoid, they may react with heightened levels of negative feelings (e.g., intense anxiety) and/or maladaptive behavior (e.g., substance use, aggression or overeating) aimed at avoiding or suppressing the feelings related to the unavoidable situations (Linehan, 1993; Hayes et al., 1996). These behaviors may in turn decrease overall well-being and increase psychopathological symptoms – thus increasing the potentiality of further UDE.

Hayes and colleagues (1996) showed that "many forms of psychopathology can be conceptualized as unhealthy efforts to escape and avoid emotions, thoughts, memories, and other private experiences" (p.1152). They introduced the term *experiential avoidance* to describe behaviors aimed at altering the form and frequency of particular private experiences (such as painful thoughts and emotions) in order to avoid those experiences. The authors emphasized the importance of acceptance and mindfulness-based interventions in mitigating experiential avoidance and thus improving the effectiveness of treatment for clinical disorders. Correspondingly, mindfulness is negatively associated with experiential avoidance (Baer, Smith & Allen, 2004), and experiential avoidance is negatively associated with improvements in treatment outcome (Berking et al., 2009; Chawla & Ostafin, 2007).

Thus, one purpose of acceptance and mindfulness is experiential change – with the aim of changing the *function* of inner events and the individual's *relationship* to those events, as opposed to changing such events directly (Hayes et al., 2006). There are several ways in which mindfulness may be beneficial in addressing avoidance tendencies and thus in facilitating coping with UDE. Mindfulness involves a non-judgmental, accepting attitude towards experiences and the capacity and willingness to stay in contact with them, even if they are aversive (Kabat-Zinn 1994; Hayes et al.,

2006). Moreover, the present-moment focus of mindfulness facilitates an appreciation of life in the here-and-now, which may facilitate independence from the fixation on avoiding distressing experiences. Furthermore, mindfulness facilitates the adoption of a decentered stance (Teasdale et al., 2002), which reduces over-identification with avoidance tendencies and helps foster acceptance of the situation as it is, instead of judging it with respect to one's expectations or wishes. Accordingly, the ability to let go of negative automatic thoughts is positively associated with mindful awareness and increases in mindfulness during a meditation-based clinical intervention (Frewen, Evans, Maraj, Dozois & Partridge, 2008). Therefore, when individuals are forced to experience distressing situations, mindfulness may facilitate adaptive coping and thus alleviate the negative consequences on well-being. Conversely, people low in mindfulness are more likely to react in ways that lead to psychopathology, as their avoidance tendencies may be expected to be stronger. Thus, the aim of this study was to test the hypothesis that mindfulness moderates the negative effects of the UDE on psychopathological symptoms and global affect. The present investigation focused on providing evidence for the existence of such a facilitating effect of mindfulness without providing a detailed analysis of the possible mechanisms underlying this effect at the level of specific components of mindfulness.

2. Materials and Methods

2.1 Participants and design

This study included 376 participants aged 14 to 81 (M=40.4; SD=18.4). Females comprised 67.6% of the sample. Education level ranged from "10 school years or less" (12.0%) to "post graduate education" (6.7%). Most (42.0%) reported "diploma or apprenticeship" as their highest education. Participants, all fluent in German, were

asked to participate in a research project involving questionnaires about mental health. Participation was voluntary, and human-research guidelines were followed. Participants also completed additional measures not utilized in this study. Participants were solicited from the pedestrian area of downtown Berne (Switzerland), the campus of the local University, several evening adult classes, and two local orchestras. Members of the research team estimated that about one-in-four persons approached agreed to participate.

2.2 Measures

2.2.1 Mindfulness: The Freiburg Mindfulness Inventory (FMI, Walach et al., 2006) is a 30-item scale that assesses various aspects of mindfulness (*mindful presence*, *non-judgmental acceptance*, *openness to experiences* and *insight*). The FMI measures mindfulness as a holistic construct with facets that are too phenomenologically interwoven to be clearly distinguished and measured as independent aspects. Participants rate their responses on a scale from 1 *(rarely)* to 4 *(almost always)*. The scale has a good internal consistency in the present sample (Cronbach's α=.85) as well as in the scale's validation study (α=.93; Walach et al., 2006).

2.2.2 Occurrence of unavoidable distressing experiences (UDE). The perceived UDE was measured as the product of the perceived occurrence of possibly distressing experiences and the individual degree to which a participant is negatively affected by these experiences. These two aspects were measured with the Short Incongruence Scale (INC-S, Grosse Holtforth, Pincus, Grawe, Mauler, & Castonguay, 2007; Grosse Holtforth & Grawe, 2003) and the Inventory of Approach and Avoidance Motivation (IAAM; Grosse Holtforth & Grawe, 2000) respectively.

The INC-S measures the perceived lack of fulfillment of goals and the perceived

occurrence of generally avoided experiences (Grawe, 2006). This study used only the subscale of the INC-S focusing on experiences that individuals usually tend to avoid. This subscale comprises nine items that are related to the following aspects: separation, deprecation, humiliation, accusations, dependency, being hostile, vulnerability, helplessness and failure. Participants rate on a 5-point likert scale how often they recently (no exact time frame such as a week was given) experienced what the item says (e.g. "I've humiliated myself," "I've been criticized," "I had to show my weaknesses to others."). The INC-S avoidance scale displays acceptable internal consistency ($\alpha > .77$; Grosse Holtforth & Grawe, 2003). Construct validity of the scale is supported by several findings: First, psychotherapeutic outpatients showed significantly higher occurrence of commonly distressing experiences than controls. Second, the occurrence of distressing experiences was substantially associated with psychopathological symptoms in both community controls and psychiatric outpatients ($r=.53-.70$). Finally, the substantial association with well-being went beyond their shared interrelation with neuroticism (Grosse Holtforth & Grawe, 2003). Internal consistency of the avoidance-related subscale of the INC-S in the present sample was high ($\alpha=.83$).

The IAAM assesses the how distressing or pleasant several given situations are for an individual. The questionnaire comprises two kinds of situations: usually approached and usually avoided situations (Grosse Holtforth & Grawe, 2000). The 37 IAAM items are based on common distressing experiences that therapists identified in case formulations of psychotherapy patients. For the present analysis only the nine items corresponding to the nine distressing situations from the INC-S were used. Participants rate on a 5-point likert scale how terrible the event listed in the item felt for them (e.g., "humiliating myself," "being powerless," "not being able to make my own decisions.").

The validity of the scale is widely supported: Outpatients showed much higher levels of distress in usually avoided experiences than healthy controls; higher levels of distress were negatively associated with happiness and positively associated with psychopathological symptom load, interpersonal problems and neuroticism (Grosse Holtforth & Grawe, 2000). The nine subscales of the IAAM focusing on distressing experiences showed satisfactory internal consistency in outpatients and controls (Grosse Holtforth & Grawe, 2000). Internal consistency for the nine items in the present sample was satisfying (α=.70).

The UDE was measured by multiplying the score on each INC-S item (i.e., occurrence of generally distressing experiences) with the corresponding score on the IAAM (i.e., individual degree of repulsion towards the same experience) and then summing the scores of the product variables. Thus, the occurrence of each distressing experience was weighted by its individual relevance for each participant. Internal consistency over the nine product variables was high (α=.83) in the present sample.

2.2.3 Measures of mental health: We assessed mental health as 1) absence of psychopathological symptoms and 2) level of global affect (positive and negative). Affect was chosen because: a) it is similar to subjective well-being (Diener, 1994), as moods and emotions can be conceptualized as reactions to the events occurring in one's life (Diener et al., 1999); and b) affect plays a crucial role in the development of mental disorders (Gross & Muñoz, 1995).

The psychopathological symptom load was measured with the Brief Symptom Inventory (BSI, Derogatis, 1993; Franke, 2000). The BSI is a short version of the Symptom Check List (SCL-90-R) and measures subjective impairment due to somatic and psychological symptoms (during the previous week). The 53 items cover nine

symptom dimensions (*somatization, obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism*) and a total score (Global Severity Index, GSI), which assesses global psychopathological load. Participants rate items on a scale from 0 *(not at all)* to 4 *(extremely often).* The GSI displays good internal consistency (α=.92-.96) and high test-retest reliabilities after one week (α=.90-.93; Franke, 2000). In the present study the GSI was used; Internal consistency in this study's sample was very high (α=.96).

The PANAS (Positive and Negative Affect Schedule, Watson, Clark & Tellegen, 1988) consists of ten aspects of positive affect (*interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, active*) and ten aspects of negative affect (*distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, afraid).* Participants rate the extent to which they generally experience each emotion on a scale from 1 (*very slightly or not at all)* to 5 (*extremely).* Internal consistency coefficients for both subscales were above .84 in the original validation sample (Watson et al., 1988) and above .82 in the current sample.

2.3 Statistical Analysis

The hypotheses were tested by structural equation modeling (SEM), utilizing the maximum likelihood estimation method (Tomarken & Waller, 2005; Little, Bovaird & Widaman, 2006). The present study utilized the approach for modeling latent variable interactions that was presented by Little and colleagues (2006) and was found to provide stable and reasonable estimates (e.g. model fit and standard errors). Little's approach is an extension of the residual centering procedure, which was designed to address the problem of multicollinearity in regression analysis (see Little et al., 2006 for details).

In the current study, all latent variables were derived from parcels (groups of items), with the exception of the interaction terms. Parcels reduce the amount of free parameters to be estimated, and thus improve the parameter-to-sample ratio. They are more stable indicators than are items (Bandalos & Finney, 2001; Little, Cunningham & Shahar, 2002). Items were randomly assigned to the parcels, and the mean of the item scores was calculated for each parcel. Random assignment of items to parcels has been shown to be beneficial when items measure a common construct (Landis, Beal, & Tesluk, 2000). According to Little and colleagues (2002) two to four parcels per latent construct should be created, depending on the number of original items. Based on these recommendations and considering the study's sample size, the latent mindfulness and psychopathological symptoms variables were measured with three parcels; the UDE, positive affect and negative affect with two parcels each. The latent interaction term was derived from the resulting six product terms (see Little et al., 2006 for details).

Tests were conducted to determine the appropriateness of two models. In the first model (correlation model), the linear relationships between all constructs of interest were determined. All latent variables were allowed to freely correlate with each other. The moderational hypotheses were examined in another model testing the interaction on psychopathological symptom load, positive affect and negative affect. Following current recommendations in SEM literature, the RMSEA, SRMR, CFI and TLI were evaluated (Hu & Bentler, 1999; MacCallum & Austin, 2000; Yu, 2002). Good fit of the model to the data is indicated when the RMSEA value $\leq$.05, the SRMR value <.08 and the CFI and TLI values $\geq$.97 (Hoyle & Panter, 1995; Schermelleh-Engel, Moosbrugger & Müller, 2003). Moderation hypotheses can be accepted when the tested model has an adequate fit to the data and the interaction term is significant. Although the inferential

chi-square statistic is associated with drawbacks (e.g. dependence on sample size, violation of assumptions) and generally no longer used to evaluate model fit, it will be reported here because it is needed for computation of all descriptive goodness-of-fit measures. Statistical analyses were computed using SPSS 18.0 and MPLUS 6.

3. Results

3.1 Correlation Model

In our first model, the correlation pattern between the latent first order variables was determined. The descriptive fit of the model was good (RMSEA=.04, TLI=.99, CFI=.99, SRMR=.02). Results of the inferential χ^2-test were: $\chi^2(44, N=376) =68.30$, $p <.05$. The parcels standardized loadings on the construct that they intended to measure ranged from .77 to .94. All latent variables showed substantial and significant correlations in the expected direction (Table I). Mindfulness was negatively associated with psychopathology, negative affect and UDE and positively associated with positive affect. Additionally, higher levels of UDE were associated with higher levels of mental health.

-- Table I --

3.2 Moderation hypotheses

The second model was utilized to test the hypothesis that mindfulness moderates the effect of distressing experiences on psychopathology, negative affect and positive affect (Figure 1). The overall descriptive fit of this model was good (RMSEA=.02, NNFI=.99, CFI=.99, SRMR=.03), and the standardized loadings of parcels on latent constructs ranged from .48 to .94. Results of the inferential χ^2-test were: $\chi^2(111, N=376) =134.27, p=.07$. The interaction between mindfulness and distressing events was significant for psychopathological symptom load (-.19, $p<.001$) and for negative affect

(-.18, p<.01), thus supporting the moderating role of mindfulness. There was no interaction for positive affect. The variance of the dependent variables explained by the predictors (R^2) was .58 for psychopathological symptom load, .35 for negative affect and .24 for positive affect.

-- Figure 1 --

To interpret the result, the significant interactions were plotted by giving the predicting variables the values corresponding to their -1 (low) and +1 (high) standard deviation (Figures 2 and 3). The slopes show the expected pattern and are hence consistent with the moderation hypothesis: Psychopathological symptom load and negative affect are less related to UDE in individuals reporting a higher level of mindfulness than they are in individuals reporting lower levels of mindfulness.

-- Figures 2&3 --

Nevertheless, the empirical results per se cannot exclude an alternative interpretation of the significant interaction. In fact, in the tested model mindfulness and UDE have statistically equivalent roles. Thus mindfulness may also be viewed as the predictor, UDE as the moderator and the interaction term as measure of the moderating effect of UDE on the relationship of mindfulness to psychopathological symptoms and negative affect. To examine this alternative interpretation , we plotted the interactions for the possible moderating role of UDE on psychopathological symptom load (Figure 4; analogous for negative affect). The plots revealed a negative slope for high UDE and a slightly negative slope for low UDE. This would mean that participants reporting higher mindfulness generally show less psychopathological symptoms load and negative affect and that this effect is more pronounced in individuals with higher UDE. Thus, mindfulness would be more helpful in individuals that are more frequently

exposed to distressing events.

-- Figure 4 --

4. Discussion

As empirical evidence for the positive influence of mindfulness on mental health continues to accumulate, the need to ascertain *how* mindfulness exerts its influence becomes increasingly relevant (Shapiro et al., 2006). We proposed that mindfulness facilitates disengagement from the lack of fulfillment of avoidance tendencies (i.e., disengagement from the occurrence of UDE). In other words, we proposed that mindfulness improves the ability to adaptively cope with the experience of aversive situations. Therefore, the aim of this study was to clarify whether mindfulness facilitates coping with unavoidable distressing experiences (UDE), hence reducing the detrimental influence of these experiences on mental health.

Results confirmed the hypothesis that level of psychopathological symptom load becomes less dependent on UDE as mindfulness levels increase. With regard to global affect, mindfulness moderated the relationship of UDE to negative affect, but not to positive affect. Because of the study's large sample size, the failure to find a moderating effect of mindfulness on the association between UDE and positive affect does not seem to result from a lack of statistical power. Therefore, the moderating role of mindfulness seems to be applicable only to the relationship of UDE to diminished well-being and mental health. This is consistent with findings from two experimental studies that showed mindfulness induction to be more effective than other strategies (distraction, rumination and worrying) in reducing induced negative mood but equal to other strategies with respect to changes in positive mood (Arch & Craske, 2006; Broderick, 2005). Nevertheless, an alternative interpretation of the results cannot be excluded in

which UDE rather than mindfulness would play a moderation role. As expected, in the present sample higher levels of mindfulness were related to less negative affect and psychopathological symptom load. According to the alternative interpretation, this negative relationship would be more pronounced in individuals higher in UDE. This alternative view of the interaction effect is in line with the study's hypothesis. Accordingly, the beneficial effect of mindfulness in coping with UDE may find its best expression when the occurrence of such events is considerable.

Altogether, findings from the current and previous studies suggest that higher levels of mindfulness facilitate a reduction in negative reactions to UDE. Thus, mindfulness might serve as a protective factor with emotion-regulatory properties, contributing to more-effective coping and hence more efficient recovery from perceptions of occurrence of distressing (and likely avoided) events. This confirms previous results showing that mindfulness mitigates negative reactivity tendencies (Feltman, Robinson & Ode, 2009) and is associated with more benign appraisal of and coping with stress experiences (Weinstein, Brown & Ryan, 2008). Furthermore, results of this study support the hypothesis that mindfulness influences mental health not only through a positive influence on global affect, but also-mindfulness may prevent the formation of psychopathological symptoms in the face of personally relevant disappointments and perceived failures.

The current study has a number of limitations. First, due to the use of self-reports, results might be susceptible to social desirability biases. Furthermore, the validity of self-report measures of mindfulness has been questioned (Grossman, 2008). In contrast, the use of self-reports is preferable for measurement of UDE, as an individual's *perceived* level of distress in relation to experiencing an event is more relevant to

subjective well-being and mental health than any theoretical 'true' or 'actual' level of distress (Grawe, 2006). The second major limitation is the cross-sectional design, which does not allow unequivocal conclusions regarding causality. Finally, the use of a non-clinical sample precludes generalizing the findings to clinical populations. Future research should address the above limitations through the use of additional measures, longitudinal designs and clinical populations.

However, the current study has substantial merits; it adds to the literature by being the first study to investigate the relationship of mindfulness to UDE. It also includes a comparatively large sample, as well as sophisticated statistical methods that control for measurement error. The results provide strong support for the beneficial effects of mindfulness in preventing the deterioration of mental health when reacting to UDE.

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Table I. Correlations between Latent Variables (Correlation Model)

	FMI	*UDE*	*BSI*	*PANP*
UDE.	-.39**			
BSI	-.37**	.73**		
PANP	.44**	-.36**	-.46**	
PANN	-.31**	.55**	.69**	-.40**

Notes: FMI=Freiburg Mindfulness Inventory, UDE=Unavaoidable Distressing Experiences, BSI=Brief Symptom Inventory, PANP=Positive affect subscale of the Positive and Negative Affect Schedule (PANAS), PANN=Negative affect subscale of the PANAS. Significance level: **$p<.01$

Figure Caption

Figure 1. Interaction Model: Psychopathological Symptom Load, Positive and Negative

Affect

One-headed arrows are regression coefficients; double-headed arrows are correlations.

Results of the standardized solution are reported. FMI=Freiburg Mindfulness Inventory,

UDE=Unavoidable Distressing Experiences

*p<.05, **p<.01, ***p<.001

Figure 2. Interaction Effect Between Mindfulness and UDE on Psychopathological

Symptom Load.

The low and high scores used for the independent variables correspond to their +/-1

standard deviations. The values on the y-axis correspond to the mean value

(M=0.00) and standard deviations (SD=0.47) of the latent variable GSI.

Figure 3. Interaction Effect Between Mindfulness and UDE on Negative Affect.

The low and high scores used for the independent variables correspond to their +/-1

standard deviations. The values on the y-axis correspond to the mean value

(M=0.00) and standard deviations (SD=0.50) of the latent variable negative affect

PANAS.

Figure 4. Alternative Interpretation of the Interaction Effect between Mindfulness

and UDE on Psychopathological Symptom Load.

The low and high scores used for the independent variables correspond to their +/-1

standard deviations. The values on the y-axis correspond to the mean value
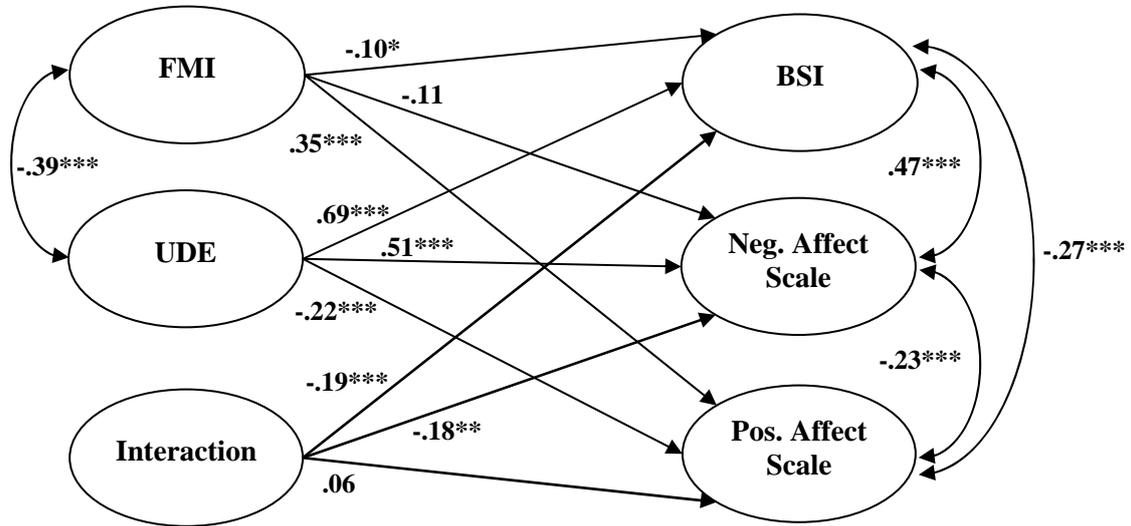
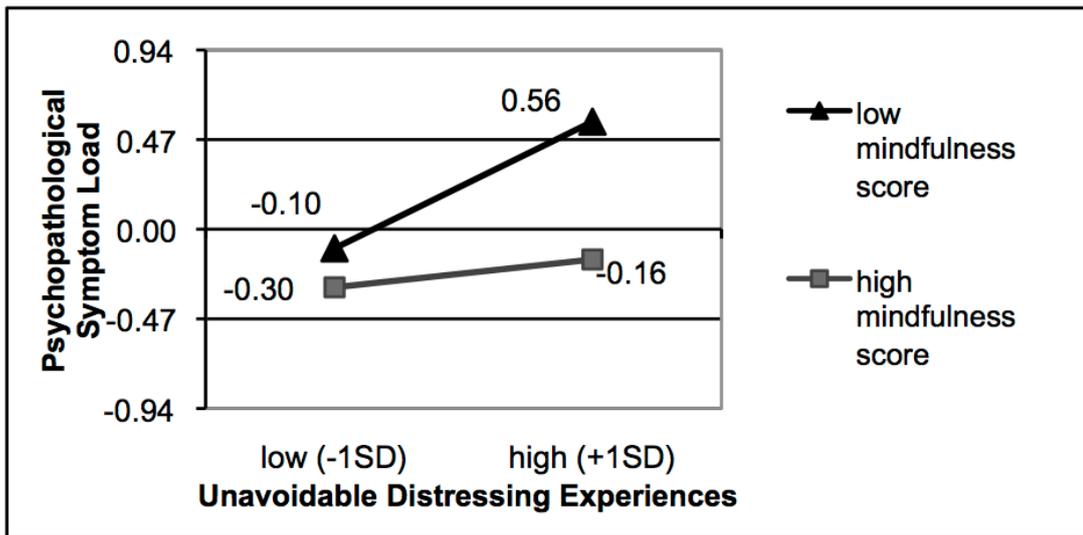(M=0.00) and standard deviations (SD=0.47) of the latent variable GSI.
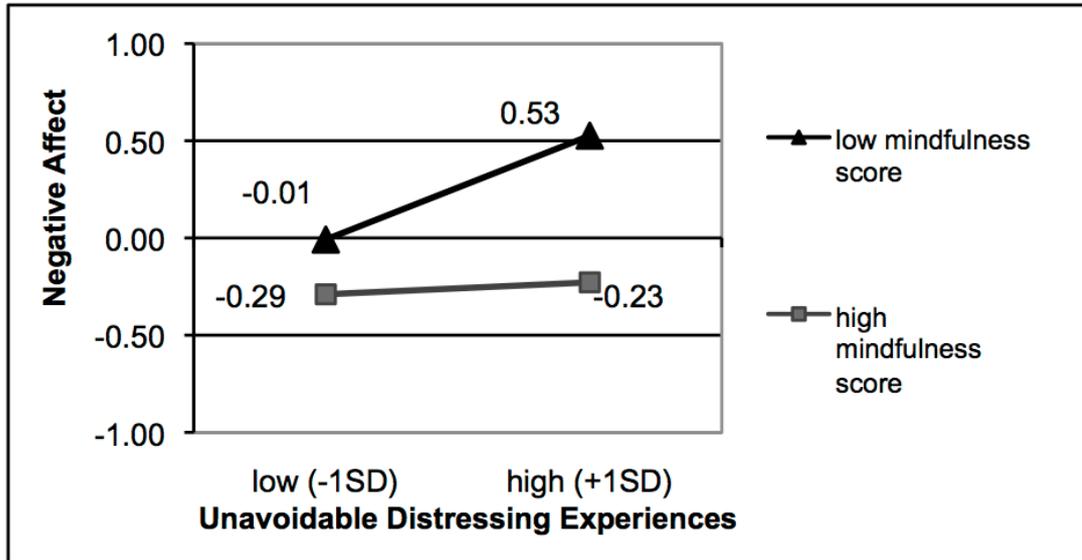
Figure 1

Figure 2

Figure 3

Figure 4