Original Article

Mindfulness-Based Stress Reduction for Posttraumatic Stress Symptoms: Building Acceptance and Decreasing Shame

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Abstract

Mindfulness-based psychotherapies are associated with reductions in depression and anxiety. However, few studies address whether mindfulness-based approaches may benefit individuals with posttraumatic stress symptoms. The current pilot study explored whether group mindfulness-based stress reduction therapy reduced posttraumatic stress symptoms, depression, and negative trauma-related appraisals in 9 adult participants who reported trauma exposure and posttraumatic stress or depression. Participants completed 8 sessions of mindfulness-based stress reduction treatment, as well as pretreatment, midtreatment, and posttreatment assessments of psychological symptoms, acceptance of emotional experiences, and trauma appraisals. Posttraumatic stress symptoms, depression, and shame-based trauma appraisals were reduced over the 8-week period, whereas acceptance of emotional experiences increased. Participants' self-reported amount of weekly mindfulness practice was related to increased acceptance of emotional experiences from pretreatment to posttreatment. Results support the utility of mindfulness-based therapies for posttraumatic stress symptoms and reinforce studies that highlight reducing shame and increasing acceptance as important elements of recovery from trauma.

Keywords

mindfulness, trauma, shame, acceptance

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Mindfulness-based stress reduction is an intervention aimed at reducing distress and improving well-being through the practice of mindfulness.[1] Mindfulness is often defined as paying attention to the immediate experience in a nonjudgmental way, a presence of mind achieved through cultivating a "present-moment" awareness, and an acceptance of moment-to-moment experience.[2] Awareness and acceptance of transitory moments may allow one to replace automatic thoughts and automatic reactivity to events with conscious and healthier responses.[3] Mindfulness-based stress reduction is rooted in core concepts of attention, awareness, nonjudgment, and compassion. Mindfulness-based stress reduction teaches mindfulness through a series of experiential practices, such as attentively scanning the body, sitting with awareness of the breath, and mindful walking and yoga.[1] Mindfulness-based stress reduction has been applied to myriad populations with empirical evidence suggesting a host of benefits, including decreased stress, anxiety, negative affect, and depression[4,5]; reductions in anxious and depressive symptoms in adults[6,7]; improved coping and well-being[5]; and increased immune function and quality of life.[8]

Preliminary studies have indicated that mindfulness-based stress reduction can assuage posttraumatic stress symptoms and depression in adults exposed to trauma[9,10]; however, mindfulness-based stress reduction has yet to be well-established as an effective treatment for individuals with posttraumatic stress. Some mindfulness researchers have advised against using mindfulness-based stress reduction for posttraumatic stress symptoms or posttraumatic stress disorder on the grounds that mindfulness practice could theoretically exacerbate trauma symptoms.[11] However, Dutton et al[12] observed that traumatized individuals found mindfulness-based stress reduction feasible and acceptable and noted that participants commonly reported

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benefits such as increased self-empowerment, self-acceptance, and self-care, as well as decreased reactivity and distress. Researchers have reported benefits from other mindfulness-based therapies such as mindfulness-based cognitive therapy.[13]

If mindfulness-based stress reduction were to be established as an effective treatment for posttraumatic stress, patients would have an additional option if current evidence-based treatments for posttraumatic stress such as cognitive processing therapy[14] and prolonged exposure[15] are unavailable or do not match their individual preferences and needs.[16,17] Additional research is needed to establish whether mindfulness-based stress reduction is an effective treatment for posttraumatic stress and to identify any potential iatrogenic effects.

Mechanisms of Mindfulness-Based Stress Reduction

Mindfulness-based stress reduction may improve symptoms via several pathways, including increasing the capacity to accept and tolerate difficult experiences,[18-20] the ability to shift attention and perceptions,[21,22] mindfulness,[23] self-efficacy,[24] the relaxation response,[25] and emotion regulation.[26] Facilitating acceptance of negative feelings may help reduce tendencies to avoid or suppress thoughts and may thereby reduce negative emotions.[27] Mindfulness-based stress reduction also promotes positive reappraisal, which in turn decreases stress and anxiety,[28] although trauma-specific appraisals have not been investigated.

Mindfulness-based stress reduction may promote capacities that facilitate trauma recovery, including increased attention, acceptance, relaxation, and alignment with the present moment, which in turn may reduce posttraumatic stress symptoms such as avoidance, numbing, hyperarousal, and intrusive thoughts. Because avoidance perpetuates posttraumatic stress and depressive symptoms,[29,30] decreasing avoidance may assuage posttraumatic stress and depressive symptoms. Conversely, acceptance has been negatively associated with avoidance symptoms of posttraumatic stress[31] and positively associated with posttraumatic recovery.[32,33] Vujanovic et al[34] reported that participants' self-reported abilities to accept thoughts and feelings without judgment were incrementally negatively related to posttraumatic stress disorder symptoms, even after controlling for extent of trauma exposure and negative affect. Acceptance may also help reduce negative cognitive appraisals and associated emotions, such as self-blame and shame, that are associated with posttraumatic stress.[35-39] In addition, whereas prolonged exposure and cognitive processing therapy target specific psychological symptoms (eg, avoidance) and emotions in a set sequence, mindfulness-based stress reduction provides general tools for managing an array of emotions and cognitions and may therefore be especially suited for the heterogeneous psychological presentations of individuals exposed to trauma.[40,41]

Current Study

The primary goal of this pilot study was to ascertain whether mindfulness-based stress reduction reduces posttraumatic stress symptoms and depression among survivors of trauma. A secondary goal was to explore changes in acceptance and negative trauma-related appraisals, such as shame and self-blame, as they relate to posttraumatic stress and depressive symptoms.

Method

Participants

Thirty-seven individuals underwent a phone screen to determine eligibility. Of the 16 individuals who met eligibility criteria and were available to attend assessments and mindfulness-based stress reduction group meetings, 15 individuals agreed to participate. Fourteen participants (11 female, 3 male) gave consent to participate in the study and attended individual pretreatment assessment sessions, whereas 1 individual did not show to assessment or treatment sessions. Of these, 3 opted not to participate in mindfulness-based stress reduction (2 of these individuals noted difficulties with other activities and transportation, and the third did not provide a reason), and 1 individual withdrew following the pretreatment assessment. Thus, 10 participants (9 female, 1 male) attended mindfulness-based stress reduction sessions. Follow-up data were available for 9 of 10 participants. The average participant age was 44 years (standard deviation = 18 years). Four participants identified as Caucasian, 3 identified as African American, 1 identified as Asian, and 1 identified as other. All participants had completed at least some college, and 8 held college degrees. Three participants worked part-time or occasionally, 3 were retired, 2 were unemployed, and 1 participant received disability. The average monthly income was US$1400, and ranged from US$0 to US$3800.

Measures

Patient Health Questionnaire-9. The PHQ[42] is a 9-item highly sensitive instrument for identifying individuals with current (probable) major depressive disorder. For the present sample, $\alpha = .86$.

The Beck Depression Inventory. The Beck Depression Inventory–II[43] was used to measure cognitive, affective, and physiological depression symptoms during each assessment. For the current sample, internal consistency was strong ($\alpha = .92$ at pretreatment, $\alpha = .95$ at midtreatment, and $\alpha = .97$ at posttreatment).

The Posttraumatic Stress Disorder Symptom Checklist. The Posttraumatic Stress Disorder Symptom Checklist[44] was used to assess posttraumatic stress symptoms for both screening and assessment purposes. Measure items address core symptoms of posttraumatic stress disorder, including intrusive thoughts and memories, avoidance of trauma-related places, people, or thoughts, hyperarousal and hypervigilance, and numbing. In the present sample, $\alpha = .87$ at pretreatment, $\alpha = .89$ at midtreatment, and $\alpha = .93$ at posttreatment.

The Acceptance and Action Questionnaire–Version II. The Acceptance and Action Questionnaire–Version II[45] is a self-report measure of experiential acceptance or the willingness to experience private events without making efforts to modify those events as one pursues important life goals and values. The inverse of experiential acceptance, experiential avoidance, refers to the tendency to reduce or eliminate private experiences at the cost of pursuing valued life outcomes. The Acceptance and Action Questionnaire–Version II is a revised version of the Acceptance and Action Questionnaire–Version I,[46] the original measure of experiential acceptance. Versions of the

Acceptance and Action Questionnaire have demonstrated convergent validity with other measures of psychopathology. Sample items on the Acceptance and Action Questionnaire–Version II include "It's OK if I remember something unpleasant," "I'm afraid of my feelings," "My thoughts and feelings do not get in the way of how I want to live my life." Preliminary data on the Acceptance and Action Questionnaire–Version II suggest adequate reliability and convergent validity.[45] Internal consistency for the total scale was sufficient in the current sample at pretreatment ($\alpha = .75$), midtreatment ($\alpha = .77$), and posttreatment ($\alpha = .83$).

The Child Trauma Questionnaire. The Child Trauma Questionnaire[47] was used to determine patients' exposure to emotional, physical, and sexual abuse using the standard cutoff scores of $\geq$13 for emotional abuse, $\geq$10 for physical abuse, and $\geq$8 for sexual abuse. The measure indicated strong internal consistency ($\alpha = .90$ for sexual abuse, $\alpha = .95$ for physical abuse, and $\alpha = .93$ for emotional abuse).

The Life Events Checklist. The Life Events Checklist[48] is a 17-item questionnaire that asks participants whether they have experienced potentially traumatic events in the respondent's lifetime. The Life Events Checklist queries exposure to 16 events known to be related posttraumatic stress disorder or other psychological distress. The measure has good validity and adequate psychometric properties.

The Trauma Appraisal Questionnaire. The Trauma Appraisal Questionnaire[49] is a 54-item instrument that assesses appraisal processes among individuals who have experienced traumatic events. The measure yields 6 subscales (fear, betrayal, anger, shame, alienation, and self-blame). These subscales have been shown to be both meaningfully and independently related to posttraumatic stress symptoms and to overall mental health. The measure has been used successfully in both student and community samples and has demonstrated excellent reliability and validity.[49] In the current sample, the measure indicated strong internal consistency across all 6 subscales and 3 measurements (all αs > .80).

Mindfulness Practice Log. Participants were asked to record the number of minutes they practiced mindfulness exercises between each session. Separate tallies were made for minutes of body scan, walking meditation, sitting mediation, other mindfulness practices, and total minutes of mindfulness practice.

Procedure

Potential participants were recruited with signs and flyers hospital clinics, through emailed information from the hospital's physicians and psychologists, and postings on hospital Web sites. As such, all potential participants were either self-referred or provider-referred. All participants completed a brief phone screening to evaluate whether they met the criteria of either (*a*) exposure to at least one traumatic event on the Life Events Checklist or (*b*) exposure to childhood abuse as indicated by standard criteria on the Child Trauma Questionnaire. Inclusion criteria also required either a score of $\geq$30 on the Posttraumatic Stress Disorder Symptom Checklist or a preliminary diagnosis of depression following screening with the Patient Health Questionnaire-9. We used the Patient Health Questionnaire-9 for screening for depression because it is a well-validated measure that is shorter and more suited for telephone screening than the Beck Depression Inventory–II. The study criterion of elevated posttraumatic stress disorder or depressive symptoms reflects the heterogeneity of psychological responses following trauma or abuse,[40,41] as well as the high rates of depression among adult abuse survivors.[50,51] Additional inclusion criteria were (*a*) age 18 years or older; (*b*) if currently taking analgesic or psychotropic medication, stabilization for at least 4 weeks; and (*c*) access to a home telephone or comparable form of communication. Following telephone screening, eligible participants were scheduled for a pretreatment assessment. Consenting participants were enrolled in a Mindfulness-Based Stress Reduction Program based on the work of Kabat-Zinn.[1] Participants completed the Beck Depression Inventory–II, Posttraumatic Stress Disorder Symptom Checklist, Trauma Appraisal Questionnaire–20, and Acceptance and Action Questionnaire–Version II at pretreatment, midtreatment, and posttreatment assessment sessions. The midtreatment assessment sessions occurred between weeks 3 and 4 for all participants except 1 individual who completed the midtreatment assessment between weeks 4 and 5. Mindfulness practice logs were completed weekly following the first mindfulness session.

Analyses

All analyses were conducted in SPSS version 20.[52] Descriptive statistics and correlations were computed to characterize properties of the study variables. Treatment outcomes were assessed with a series of repeated-measures analyses of variance. Reliable Change Indices were computed following the example of Jacobson and Truax.[53]

Results

Participants reported being exposed to an average of 6 traumatic events (standard deviation = 2). Seven of the 9 participants screened positive for childhood abuse on the Child Trauma Questionnaire.[47] Six participants met the criteria of Bernstein et al[47] for emotional abuse; 4 participants met criteria for childhood physical abuse; and 5 participants met criteria for childhood sexual abuse. Six participants met inclusion criteria by receiving a probable posttraumatic stress disorder diagnosis using a cutoff score of $\geq$30;[54] the remainder met criteria by screening positive for depression using the Patient Health Questionnaire-9. Table 1 provides means and standard deviations of participants' Posttraumatic Stress Disorder Symptom Checklist, Beck Depression Inventory–II, Acceptance and Action Questionnaire–Version II, and Trauma Appraisal Questionnaire shame-based trauma appraisals at pretreatment, midtreatment, and posttreatment assessments, and Figure 1 provides a graph of these values. Mean scores were centered at 50 to ease interpretation of change.

Posttraumatic Stress Disorder Symptom Checklist mean scores decreased over the course of the mindfulness-based stress reduction intervention (Table 1), and a repeated-measures analysis of variance indicated that these within-subject differences were statistically significant, $F(2, 7) = 18.22$, $P < .01$. The effect sizes at midtreatment and posttreatment indicated moderate decreases in posttraumatic stress (Cohen's $d = -.70$ and $-.73$ respectively). Beck Depression Inventory–II mean scores also decreased over the course of treatment. The within-subject differences in depression severity were statistically significant, $F(2, 7) = 5.26$, $P < .04$. The pretreatment to midtreatment effect

Table 1. Means and Standard Deviations of PTS, Depression, Acceptance, and Shame Over the Course of MBSR Treatment.

Assessment Time Point	Pretreatment	Midtreatment	Posttreatment
PCL-C (PTS)	34.11 (14.21)	24.00 (14.53)	22.89 (16.35)
BDI-II (Depression)	23.78 (13.31)	19.50 (15.32)	15.94 (15.78)
AAQ-II (Acceptance)	29.89 (7.75)	36.56 (9.40)	39.59 (9.56)
TAQ Shame-based appraisals	19.89 (9.16)	17.22 (8.47)	14.33 (6.50)

Abbreviations: PTS, posttraumatic stress symptom; MBSR, mindfulness-based stress reduction; PCL-C, Posttraumatic Stress Disorder Symptom Checklist; BDI-II, Beck Depression Inventory–II; AAQ-II, Acceptance and Action Questionnaire–Version II; TAQ, Trauma Appraisal Questionnaire.

was small (Cohen's $d = -.30$) and increased to a moderate effect by posttreatment ($d = -.54$).

Acceptance and Action Questionnaire–Version II scores increased over the course of treatment (Table 1). A repeated-measures analysis of variance indicated that these within-subject differences in acceptance were statistically significant, $F(2, 7) = 22.13$, $P < .01$. Large effects were observed at midtreatment and posttreatment (Cohen's $d = .77$ and 1.11, respectively).

Trauma Appraisal Questionnaire shame-based trauma appraisal scores decreased over the course of the mindfulness-based stress reduction intervention. A repeated-measures analysis of variance indicated that these within-subject differences were significant, $F(2, 7) = 5.03$, $P < .05$. The effect size at midtreatment was small (Cohen's $d = .30$), but was moderate at posttreatment (Cohen's $d = .70$). Scores on Trauma Appraisal Questionnaire subscales that reflected betrayal, self-blame, fear, alienation, and anger did not show statistically significant within-subject differences across the course of treatment.

Individual Response to Treatment

Seven of the 9 participants exhibited reductions in Posttraumatic Stress Disorder Symptom Checklist scores from pretreatment to posttreatment, and 3 of these reached a level of reliable change as defined by a Reliable Change Index[53] of 17.61 or greater. Two individuals evidenced decreased Posttraumatic Stress Disorder Symptom Checklist scores at midtreatment, which later rebounded to pretreatment levels. One participant evidenced a 4-point increase on the Posttraumatic Stress Disorder Symptom Checklist, and 1 participant evidenced a 2-point increase. Neither of these participants evidenced reliable increases of Posttraumatic Stress Disorder Symptom Checklist scores according to the Reliable Change Index.[53]

Seven of 9 participants also had decreased Beck Depression Inventory–II scores from pretreatment to posttreatment. Three of these participants demonstrated reliable change as evidenced by reduction scores of 11.67 or greater. Although 1 participant evidenced a 5-point increase in Beck Depression Inventory–II scores from pretreatment to posttreatment, this change was not reliably worse.

Table 2 presents participants' reports of mindfulness practice over the course of the study. Although assigned out of session

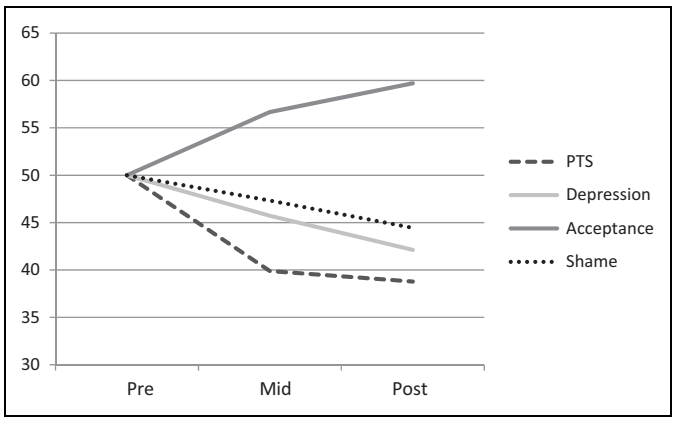

Figure 1. PTS, depression, acceptance, and shame across time (Pretreatment means set to 50).

Abbreviation: PTS, posttraumatic stress symptom.

Raw data are centered at 50 for ease of interpretation.

mindfulness practice varied from session to session, paired sample t tests revealed significant pretreatment to posttreatment increases in total minutes of mindfulness practiced, $t(6) = 4.20$, $P < .01$. This suggests that participants found mindfulness practice to be acceptable and adhered to study recommendations. The total number of minutes of mindfulness practice was significantly and strongly associated with positive changes in Acceptance and Action Questionnaire–Version II scores from pretreatment to posttreatment ($r = .70$, $P < .05$). The total minutes of mindfulness practice was not significantly related to changes in posttraumatic stress ($r = -.25$, ns) or depression ($r = -.00$, ns).

Discussion

The aims of the current study were to evaluate whether posttraumatic stress symptoms and depression among survivors of trauma were reduced during a mindfulness-based stress reduction intervention. Pilot data were collected to ascertain the course of posttraumatic stress symptoms and depression among survivors of trauma participating in mindfulness-based stress reduction and to track potential mechanisms of change including increased acceptance and reduced negative trauma-related appraisals. Consistent with prior research,[9,10] the present results demonstrated significant reductions in overall levels of posttraumatic stress and depression symptoms. No participants evidenced reliable increases in posttraumatic stress or depressive symptoms over the course of mindfulness-based stress reduction; therefore, mindfulness-based stress reduction does not appear to be contraindicated for posttraumatic stress or depression. Comparison of effect sizes shows that mindfulness-based stress reduction had an even more potent effect on posttraumatic stress than on depressive symptoms in this sample. The current data, combined with previous studies of mindfulness-based interventions for participants exposed to trauma, suggest that individuals with posttraumatic stress can benefit from mindfulness-based stress reduction.

Table 2. Minutes of Mindfulness Practice Over the Course of MBSR Treatment.

	MBSR Week						
	1	2	3	4	5	6	7
Total	134.11	200.33	204.33	242.25	260.00	235.89	303.13
Body	66.89	40.00	82.56	43.13	45.00	39.44	50.63
Walking	18.89	15.83	43.67	43.00	68.75	37.78	38.13
Sitting	5.11	47.83	27.67	57.63	33.75	61.44	80.00
Other	43.22	96.67	50.44	98.50	112.50	97.22	134.38

Abbreviation: MBSR, mindfulness-based stress reduction.

In addition to reductions in posttraumatic stress and depressive symptoms, participants reported significant increases in acceptance of thoughts and emotions and significant decreases in shame-based trauma appraisals. The improvements found in acceptance were consistent with the only other known study to measure acceptance in mindfulness-based stress reduction for individuals exposed to trauma[9] and provide support for theoretical models that link nonacceptance of emotional experiences to posttraumatic stress symptoms. In terms of changes in trauma-related appraisals, shame emerged as the only appraisal category to show changes across the course of mindfulness-based stress reduction. These results correspond to recent work that highlights the role that shame may play in posttraumatic stress and depression following trauma.[38,55-58]

The finding that self-reported minutes of mindfulness practice per week were associated with positive changes in acceptance of emotional experiences from pretreatment to posttreatment suggests that practicing mindfulness skills may promote acceptance. However, the amount of minutes of weekly mindfulness practice was not related to posttraumatic stress or depressive symptoms. In addition, the results demonstrated that approximately 90% of the reduction in posttraumatic stress symptoms occurred within the first 3 sessions of mindfulness-based stress reduction. Although this pattern of results is consistent with sudden gains observed in treatments for posttraumatic stress disorder[59] and depression,[60] it diverges from theories of mindfulness-based stress reduction that propose that the practice of mindfulness meditation leads to increases in mindfulness, which in turn reduce stress.[61] The present data suggest that posttraumatic stress symptom reduction and increases in mindfulness may occur simultaneously. There may be a ceiling effect in terms of symptom improvement; however, it is also possible that continued practice may facilitate additional changes in acceptance and appraisals and the maintenance of treatment gains.

Limitations

The small sample size of the pilot study and lack of a control condition preclude any definitive conclusions regarding the efficacy of mindfulness-based stress reduction for trauma survivors and investigations of mindfulness-based stress reduction mechanisms. In addition, there were no follow-up assessments after mindfulness-based stress reduction completion to determine if symptom reductions were maintained. Future studies may provide additional information by using structured clinical interviews to determine posttraumatic stress disorder diagnoses.

Clinical Implications

Because trauma exposure leads to diverse psychological presentations,[62-64] effective interventions for trauma-related mental health difficulties could be enhanced by a functional analysis of traumatic stress that takes into account secondary reactions such as emotional acceptance and shame.[45] Many studies demonstrate the importance of trauma survivors' subjective appraisals regarding their trauma experiences and emotional responses.[14,65] Maladaptive appraisals are thought to contribute to the maintenance of posttraumatic stress over time.[66] The *DSM* description of posttraumatic stress disorder has recently been revised to include negative beliefs regarding oneself and the world as well as trauma-related emotions such as shame (*DSM-5*).[67] Results from the current study support clinical conceptualizations of posttraumatic stress that incorporate dimensions of shame and acceptance, and indicate that trauma survivors may benefit from clinical interventions that promote acceptance and decrease shame.

Conclusions

This pilot study provides a starting point for additional investigations of mindfulness-based stress reduction for survivors of trauma. The results indicate that mindfulness-based stress reduction can reduce posttraumatic stress and depression in individuals exposed to trauma. The current data also demonstrate that developing acceptance of emotional experiences and reducing shame may be important components of recovery for adult survivors of trauma.

Author Contributions

RG developed the idea for the current research, directed the study, co-wrote the initial draft, and prepared the revisions. JG contributed to the study design, conducted the statistical analyses, co-wrote the initial draft, and provided feedback on revisions. SAC served as project coordinator for the study, helped develop the study's methods, performed literature searches for the article, screened participants, conducted assessments, produced preliminary analyses, and provided comments on drafts of the article. JB served as a mentor for the project, guided the development of the study's hypotheses and methods, and offered comments regarding drafts of the article. BK helped develop and prepare the mindfulness-based stress reduction materials, drafted the article's description of mindfulness, led a mindfulness-based stress reduction intervention group, and provided feedback on the article. MH also helped develop and prepare the mindfulness-based stress reduction materials, led a mindfulness-based stress reduction intervention group, and provided comments on drafts of the article.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Ethical Approval

The study was reviewed and approved by the institutional review board at Rush University Medical Center. Participants provided informed consent.

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