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Review

A meta-analytic investigation of the impact of mindfulness-based interventions on post traumatic stress

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HIGHLIGHTS

- Mindfulness-based treatments are effective in ameliorating symptoms of PTSD.
- Mindfulness-based treatments for PTSD increase mindfulness.
- Longer mindfulness interventions are more efficacious.

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ABSTRACT

A number of studies have investigated the impact of mindfulness-based interventions on symptoms of post-traumatic stress (PTSD) compared to control conditions. The current meta-analysis consolidated findings from 18 studies reporting results for 21 samples of participants. Across studies, mindfulness-based treatments compared to control conditions were effective in ameliorating symptoms of PTSD, with Hedges' $g = -0.44$. Hedges' g was -0.59 for comparison of mindfulness-based interventions to waitlist control conditions. Changes in mindfulness may underpin the effect of mindfulness-based interventions on PTSD symptoms and thus the meta-analysis examined findings regarding increases in mindfulness. The 12 studies that assessed mindfulness found that the interventions significantly increased mindfulness, Hedges' $g = 0.52$. Moderator analyses indicated that interventions with longer mindfulness training were more efficacious in reducing symptoms of PTSD. Across studies, gender, age, veteran status, or length of time between the intervention and assessment of PTSD symptoms did not moderate the impact of mindfulness-based interventions. The results provide a foundation for future research directions and have implications for work with those impacted by trauma.

1. Introduction

Posttraumatic stress disorder (PTSD), which occurs as a result of exposure to severe stressors such as combat, domestic violence, threat of death, or natural disaster (American Psychiatric Association, 2013), is increasingly being treated with therapies intended to increase mindfulness (Banks, Newman, & Saleem, 2015). Some theorists and researchers have proposed that increasing mindfulness may aid individuals in dealing with the involuntary intrusive memories, emotional distress, and avoidance that characterize PTSD (Banks et al., 2015), while others have argued that increasing mindfulness may exacerbate symptoms of PTSD (Lustyk, Chawla, Nolan, & Marlatt, 2009). With the results of a substantial number of randomized controlled studies examining the effectiveness of mindfulness-based treatments for PTSD now available, a meta-analysis consolidating the results of these trials and examining moderating factors influencing results will aid in clarifying the usefulness of mindfulness-based treatments for PTSD.

1.1. Treatments for PTSD

PTSD symptoms are responsive to psychotherapy interventions (Ehring et al., 2014; Watts et al., 2013). For example, Watts et al. (2013) reported significant meta-analytic effect sizes across studies for the attenuating impact of various therapies, including cognitive therapy, exposure therapy, and eye movement desensitization, on PTSD symptoms. In a meta-analysis of psychological treatments for PTSD among survivors of childhood abuse, Ehring et al. (2014) reported significant meta-analytic effects across studies for cognitive behavior therapy, eye movement desensitization, and other therapies such as interpersonal and emotion-focused therapy.

A systematic review by Banks et al. (2015) collated information from studies examining the impact of mindfulness-based approaches,

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Table 1
Characteristics of included studies.

Authors (year/study) Comparison (groups)	*N*	Mean age	%Female[a]	Population (veteran/ other)	Pre-diag. PTSD[b]	Int. type[c]	Int. trauma-specific[d]	Int. length (hours)	Assess period[e] (weeks)	PTSD measure[f]	Control group type[g]	ES for PTSD[h]	ES for mindfulness[i]
Bormann, Thorp, Wetherell, and Golshan (2008)	29	56.0	0	Veteran	Y	Other	NTS	9.0	0	CAPS	WL	− 0.33	0.72
	29	56.0	0	Veteran	Y	Other	NTS	9.0	0	PCL	WL	− 0.72	0.72
Bormann, Thorp, Wetherell, Golshan, and Lang (2013)	146	57.0	3	Veteran	Y	Other	NTS	9.0	0	CAPS	P	− 0.34	NR
	146	57.0	3	Veteran	Y	Other	NTS	9.0	0	PCL	P	− 0.34	NR
Bränström, Kvillemo, and Moskowitz (2012)	58	51.8	99	Other	N	MBSR	NTS	16.0	24	Other (SR)	WL	− 0.11	0.46
Catani et al. (2009)	31	11.9	45	Other	Y	Other	NTS	9.0	24	Other (Sched.)	A	− 0.09	NR
Garland, Roberts-Lewis, Tronnier, Graves, and Kelley (2016)[j]	180												
Comparison 1 (MB/CBT)	128	37.1	0	Other	Y	Other	NTS	20.0	0	PCL	A	− 0.37	0.73
Comparison 2 (MB/TAU)	116	38.1	0	Other	Y	Other	NTS	20.0	0	PCL	A	− 0.36	0.55
Gordon et al. (2008)	78	16.3	76	Other	Y	Other	TS	24.0	0	Other (Sched.)	WL	− 1.22	NR
Heffner et al. (2016/Michigan)[k]	65												
Comparison 1 (AM/TAU)	46	NR	17	Veteran	Y	Other	TS	12.0	1	CAPS	A	− 0.04	0.64
	46	NR	17	Veteran	Y	Other	TS	12.0	1	PCL	A	− 0.10	0.64
Comparison 2 (TM/TAU)	43	NR	17	Veteran	Y	Other	NTS	12.5	1	CAPS	A	− 0.48	0.40
	43	NR	17	Veteran	Y	Other	NTS	12.5	1	PCL	A	− 0.65	0.40
Heffner et al. (2016/New York)	44	NR	11	Veteran	Y	Other	NTS	6.0	1	CAPS	WL	− 0.50	0.01
	44	NR	11	Veteran	Y	Other	NTS	6.0	1	PCL	WL	− 0.35	0.01
Heffner et al. (2016/*S. Carolina*)	17	NR	0	Veteran	Y	Other	TS	10.0	1	CAPS	A	− 0.07	1.15
	17	NR	0	Veteran	Y	Other	TS	10.0	1	PCL	A	− 0.92	1.15
Heffner et al. (2016/Texas)	33	NR	9	Veteran	Y	Other	TS	8.0	1	CAPS	A	0.46	0.54
	33	NR	9	Veteran	Y	Other	TS	8.0	1	PCL	A	0.32	0.54
Kearney et al. (2013)	47	52.0	21	Veteran	Y	MBSR	NTS	27.0	16	PCL	A	− 0.41	0.66
Kearney et al. (2016)	55	49.9	15	Veteran	N	MBSR	NTS	27.0	24	Other (Sched.)	A	− 0.47	0.72
Kelly and Garland (2016)	39	41.5	100	Other	N	MBSR	TS	20.0	0	PCL	WL	− 0.92	NR
Kim et al. (2013)	22	46.3	95	Other	Y	Other	NTS	16.0	8	PCL	WL	− 1.31	NR
Mitchell et al. (2014)	38	44.4	100	Other	Y	Other	NTS	15.0	4	PCL	WL	0.02	− 0.04
Niles et al. (2012)	24	52.0	0	Veteran	Y	MBSR	NTS	3.5	0	CAPS	A	− 0.72	NR
	24	52.0	0	Veteran	Y	MBSR	NTS	3.5	6	PCL	A	− 0.02	NR
Polusny et al. (2015)	116	58.5	16	Veteran	Y	MBSR	TS	26.5	8	CAPS	A	− 1.08	0.67
	116	58.5	16	Veteran	Y	MBSR	TS	26.5	8	PCL	A	− 0.76	0.67
Possemato et al. (2016)	62	46.4	13	Veteran	Y	MBSR	NTS	6.0	0	CAPS	P	− 0.12	NR
	62	46.4	13	Veteran	Y	MBSR	NTS	6.0	4	PCL	P	− 0.12	NR
Seppälä et al. (2014)	19	28.6	0	Veteran	N	Other	NTS	21.0	52	PCL	WL	− 0.96	NR

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