

Evidence-Based Psychological Treatments for Late-Life Anxiety

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This project identified evidence-based psychotherapy treatments for anxiety disorders in older adults. The authors conducted a review of the geriatric anxiety treatment outcome literature by using specific coding criteria and identified 17 studies that met criteria for evidence-based treatments (EBTs). These studies reflected samples of adults with generalized anxiety disorder (GAD) or samples with mixed anxiety disorders or symptoms. Evidence was found for efficacy for 4 types of EBTs. Relaxation training, cognitive-behavioral therapy (CBT), and, to a lesser extent, supportive therapy and cognitive therapy have support for treating subjective anxiety symptoms and disorders. CBT for late-life GAD has garnered the most consistent support, and relaxation training represents an efficacious, relatively low-cost intervention. The authors provide a review of the strengths and limitations of this research literature, including a discussion of common assessment instruments. Continued investigation of EBTs is needed in clinical geriatric anxiety samples, given the small number of available studies. Future research should examine other therapy models and investigate the effects of psychotherapy on other anxiety disorders, such as phobias and posttraumatic stress disorder in older adults.

Keywords: late-life anxiety, evidence-based treatment, generalized anxiety disorder

Psychotherapy research has received prominent attention in recent years and is characterized by growing methodological sophistication and scientific rigor. Consistent with the move toward evidence-based medicine, the field of psychotherapy research has begun to define criteria for evidence-based treatments (EBTs), also known as empirically supported treatments (Chambless & Hollon, 1998). Research on EBTs for older adults is in its initial stages, and research on EBTs for anxiety in older adults lags even further behind. The aim of this article is to identify and describe EBTs for late-life anxiety based on a comprehensive review of the literature.

A strong argument for the exploration and implementation of EBTs is to promote and offer choice in effective anxiety treatments. Benzodiazepine use remains high among older adults despite the risk of adverse events such as falls and cognitive decline (Klap, Unroe, & Unutzer, 2003; Mamdani, Rapoport, Shulman, Herrmann, & Rochon, 2005; Paterniti, Dufouil, & Alperovitch, 2002). Safer selective serotonin reuptake inhibitor (SSRI) medications are available and appear to be effective for geriatric anxiety in the short term, but insufficient data exist on long-term risks and benefits (Katz, Reynolds, Alexopoulos, & Hackett, 2002; Lenze, Mulsant, Shear, et al., 2005; Schuurmans et al., 2006). Many older

adults prefer not to take anxiolytic medications because of side effects or a reluctance to add medications to a sometimes extensive medication regime (Wetherell, Kaplan, et al., 2004). Thus, the availability of effective psychosocial treatments as an alternative to or in combination with pharmacotherapy for late-life anxiety remains an important priority.

Relevance of Anxiety Among Older Adults

Estimated prevalence rates of anxiety in older individuals range greatly because of the heterogeneity of the older adult population and the confounds of medical comorbidity, medication use, and functional status, which challenge diagnostic nosology. In addition, varying assessment approaches and methods of case identification may explain the diversity of prevalence rates. Community prevalence rates of diagnosable anxiety disorders range from approximately 2% to 19% (Flint, 1994). The best estimate appears to be approximately 10%, with GAD and phobias as the most common conditions (Beekman et al., 1998; Flint, 1994; Kessler et al., 2005). Medically ill older populations have been found to have much higher rates of anxiety disorders (e.g., Tolin, Robison, Gaztambide, & Blank, 2005). Some evidence suggests that as many as 20% of older persons experience clinically significant anxiety symptoms that do not necessarily meet criteria for a specific anxiety disorder (Himmelfarb & Murrell, 1984).

Anxiety disorders and symptoms in older adults are associated with a number of negative consequences. Physical complications (such as increased physical disability and impairment in activities of daily living) and decreased senses of well-being and life satisfaction have been linked to anxiety in older adults (Brenes, Guralnik, Williamson, Fried, & Penninx, 2005; Brenes, Guralnik, Williamson, Fried, et al., 2005; Brenes et al., in press; De Beurs et al., 1999; Lenze et al., 2001; Wetherell, Thorp, et al., 2004). Anxiety is also associated with increased mortality and greater risk of coronary artery disease in men (Kawachi, Sparrow, Vokonas, &

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Weiss, 1994; Van Hout et al., 2004). In addition, patients with anxiety problems often overutilize medical services (De Beurs et al., 1999; Stanley, Roberts, Bourland, & Novy, 2001).

Evidence suggests that 38% to 46% of older adults with depression have comorbid anxiety disorders (Beekman et al., 2000; Lenze et al., 2000), whereas 15% to 30% of older adults with anxiety disorders have comorbid depression (Beekman et al., 2000; van Balkom et al., 2000). Two investigations have found that the most common lifetime pattern of comorbidity was GAD preceding depression (Lenze, Mulsant, Mohlman, et al., 2005; Schoevers, Deeg, van Tilburg, & Beekman, 2005). Thus, the development and dissemination of effective anxiety treatments for older adults can be viewed as a secondary prevention effort to reduce the incidence of late-life depression. Because overwhelming evidence indicates that anxiety among older adults is a common and serious problem, EBTs should be standard clinical practice.

Four recent reviews (Mohlman, 2004; Nordhus & Pallesen, 2003; Wetherell, Lenze, & Stanley, 2005; Wetherell, Sorrell, Thorp, & Patterson, 2005) have examined psychotherapy for geriatric anxiety. These reviews vary in their focus (e.g., GAD vs. all anxiety disorders) and their inclusion and exclusion criteria. The purpose of the current project was to conduct a review of the geriatric anxiety treatment outcome literature using specific coding criteria to identify and compare different types of EBTs.

Method

In 1995, the American Psychological Association's Division 12 first convened a committee to identify EBTs for psychological disorders (Chambless, 1996). The procedures and criteria for identifying EBTs have evolved over time and have expanded beyond the general adult population to subgroups such as children and older individuals (Chambless & Hollon, 1998; Chambless & Ollendick, 2001). The present review defines EBTs according to a procedural and coding manual developed to identify EBTs (Weisz & Hawley, 2001). Studies were included in the present review if (a) participants were 55 years of age or older; (b) they had subjective complaints of anxiety or carried a *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., *DSM-IV*; American Psychiatric Association, 1994) anxiety disorder diagnosis; (c) the study design consisted of a randomized, controlled trial in which an intervention was compared with a wait list, minimal contact, usual care, alternative intervention, or attention placebo condition; and (d) at least one objectively evaluated anxiety outcome measure was reported. Studies that recruited community volunteers who did not specifically report anxiety were excluded. Two separate reviewers examined each study with reference to the coding procedures. Any discrepancies were resolved by consensus conference. Please see Yon and Scogin (2007) in this special section for more detail on the methods used to identify and classify EBTs. Possible EBTs were identified by searching the Cochrane Database, Medline, and PsycINFO. Reference lists were reviewed, and experts in the field of geriatric mental health were consulted. Only studies that were published before December 2005 were included in this review.

Results

Seventy-seven geriatric anxiety studies were initially obtained and reviewed. Of those, 60 were not included because they did not (a) meet EBT inclusion criteria, (b) provide information critical for coding, or (c) include appropriate control conditions. Ultimately, 17 studies met all EBT criteria and are described in the present report. Note that these 17 studies are described in 16 articles (Mohlman et al., 2003, described 2 separate studies), which are marked by an asterisk in the references section. These studies are presented in Tables 1, 2, and 3, organized by treatment type. The tables list only the 15 studies that found support for treatment interventions. Some are listed under more than one treatment. The studies provide support for four treatments (note that some studies tested more than one treatment), cognitive-behavioral therapy (CBT and cognitive therapy [CT], 10 studies; CBT; 9 studies), relaxation training (4 studies), cognitive therapy (1 study), and supportive therapy (3 studies) for anxiety disorders or subjective anxiety symptoms in older adults. The important distinction between CBT and cognitive therapy in the studies reviewed is that CBT included relaxation training as well as cognitive restructuring, whereas cognitive therapy did not include a relaxation component.

CBT

Nine studies reported in eight published articles found support for CBT for late-life anxiety (see Table 1; please note this table also includes CT). Two studies did not provide support for CBT. Typical CBT protocols included education about anxiety, self-monitoring, relaxation training, exposure to anxiety-provoking thoughts and situations using systematic desensitization, and cognitive restructuring. Some protocols also included problem-solving-skills training, behavioral activation, sleep hygiene, reflective listening, life review, and memory aids. CBT was conducted in both individual and group formats. Outcome measures included the Spielberger State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), Worry Scale (Wisocki, Handen, & Morse, 1986), Hamilton Anxiety Rating Scale (Hamilton, 1959), Penn State Worry Questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990), Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988), Symptom Checklist-90 (SCL-90; Derogatis, 1977), Fear Questionnaire (Marks & Mathews, 1979), and GAD severity ratings and "average percent of the day spent worrying" from the Anxiety Disorders Interview Schedule (Di Nardo, Brown, & Barlow, 1994).

Note that the first two studies listed in Table 1 describe the use of CBT in mixed anxiety samples, including older adult participants with GAD, subjective anxiety symptoms, panic disorder, social phobia, and anxiety disorder not otherwise specified. Barrowclough et al. (2001) found significant effects for CBT relative to supportive therapy. Gorenstein and colleagues (2005) found that medication management (MM) plus CBT did not yield greater reductions in worry, state, or trait anxiety when compared with MM alone, although CBT did show an advantage over MM on some SCL-90 subscales. By contrast, Ingersoll and Silverman (1978) found no changes due to CBT, whereas the Somatization Subscale on the SCL-90 decreased in the comparison life review condition. Hyer et al. (1990) found no significant effects from a

Table 1
Cognitive-Behavioral and Cognitive Therapy for Late-Life Anxiety

Author	Sample	Conditions	Manual	Length of treatment	Outcome measures	Findings
Barrowclough et al. (2001)	$N = 55$, mean age = 72, met criteria for panic disorder (51%), social phobia (2%), GAD (19%), or anxiety disorder not otherwise specified (28%).	Condition 1: CBT. Condition 2: ST.	CBT based on disorder specific models: Clark (1988), Wells (1997), and Beck et al. (1985).	8–12 sessions of individual, home-delivered therapy	BAI, HAMA, STAI-T	CBT group reduced self-reports of anxiety and depression significantly more than ST immediately following treatment and during follow-up.
Gorenstein et al. (2005)	$N = 42$, mean age = 68, met criteria for GAD (55%), GAD with panic (9%), panic disorder (17%), anxiety disorder not otherwise specified (19%).	Condition 1: CBT-MM. Condition 2: MM.	CBT based on Gorenstein et al. (1999).	13 individual sessions	STAI-S, STAI-T, PSWQ, SCL-90 Anxiety and OC	CBT-MM experienced significantly more improvement than MM alone in phobic anxiety and OC. No difference in worry, state, or trait anxiety.
Keller et al. (1975) ^a	$N = 30$, mean age = 68, subjective reports of anxiety.	Condition 1: CT. Condition 2: WL.	CT based on Ellis and Harper (1961).	4 weeks, 2 hr group session per week	STAI-T, STAI-S	CT group showed significant declines in irrational thinking and anxiety, whereas WL did not.
Mohlman et al. (2003)	Study 1: $N = 27$, mean age = 66, met criteria for GAD. Study 2: $N = 15$, mean age = 67, met criteria for GAD.	Study 1: Condition 1: CBT with problem-solving skills training, daily structure, and sleep hygiene. Condition 2: WL. Study 2: Condition 1: Enhanced CBT with memory aids. Condition 2: WL.	CBT based on Gorenstein et al. (1999).	13 individual sessions	BAI, SCL-90, Trait worry, STAI-T, GAD severity	Study 1: No immediate differences between CBT and WL. CBT group significantly reduced GAD severity at 6-month follow-up, whereas WL did not. Study 2: Enhanced CBT group showed significant reduction in anxiety-worry and global severity relative to WL.
Mohlman and Gorman (2005)	$N = 32$, mean age = 69, met criteria for GAD, had intact EF, improved EF, impaired EF.	Condition 1: CBT. Condition 2: WL.	CBT based on Gorenstein et al. (1999).	13 individual sessions	BAI, PSWQ, STAI-Trait	Intact and improved EF showed significantly greater decrease than the WL on worry. Improved EF showed significantly greater decrease than the impaired EF and WL on STAI-Trait.
Stanley et al. (1996)	$N = 48$, mean age = 68, met criteria for GAD.	Condition 1: CBT. Condition 2: ST.	CBT based on Borkovec and Costello (1993) and Craske et al. (1992).	14 group sessions	GAD severity, percentage of day worrying, PSWQ, WS, STAI-T, HAMA, FQ	CBT and ST groups both significantly reduced worry, anxiety, and depression. Gains maintained at 6-month follow-up.
Stanley, Beck, et al. (2003)	$N = 85$, mean age = 66, met criteria for GAD.	Condition 1: CBT. Condition 2: minimal contact control.	CBT based on Borkovec and Costello (1993), Bernstein and Borkovec (1973), and Craske et al. (1992).	15 group sessions	PSWQ, WS, GAD severity, STAI-T, HAMA	CBT group showed significant improvement on measures of worry, anxiety, and QOL relative to control. Gains maintained at 12-month follow-up.

Table 1 (continued)

Author	Sample	Conditions	Manual	Length of treatment	Outcome measures	Findings
Stanley, Hopko, et al. (2003)	<i>N</i> = 12, mean age = 71, met criteria for GAD.	Condition 1: CBT with problem-solving skills training and sleep hygiene. Condition 2: usual care.	Stanley et al. (2004).	8 individual sessions	GAD severity, PSWQ, BAI	CBT group showed significantly more improvement on GAD severity, worry, and depression ratings than usual care.
Wetherell et al. (2003)	<i>N</i> = 75, mean age = 67, met criteria for GAD.	Condition 1: CBT. Condition 2: discussion group focused on worry topics. Condition 3: WL.	CBT based on Craske et al. (1992).	12 group sessions.	GAD severity, percentage of day worrying, PSWQ, HAMA, BAI	CBT group showed significantly more improvement on GAD severity, worry, depression, and QOL than WL. CBT equivalent to discussion group on all but one measure of worry. Gains maintained at 6-month follow-up.

Note. GAD = generalized anxiety disorder; CBT = cognitive-behavioral therapy; ST = supportive therapy; BAI = Beck Anxiety Inventory; HAMA = Hamilton Anxiety Rating Scale; STAI-T = State-Trait Anxiety Inventory—Trait; MM = medication management; STAI-S = State-Trait Anxiety Inventory—State; PSWQ = Penn State Worry Questionnaire; SCL-90 = Symptoms Checklist-90; OC = obsessive-compulsiveness; CT = cognitive therapy; WL = waiting list; EF = executive functioning; WS = Worry Scale; FQ = Fear Questionnaire; QOL = quality of life.

^a Please note that Keller et al. (1975) is CT only.

CBT protocol that included life review relative to a waiting list control condition.

There is stronger support for CBT in older GAD samples. Seven studies in six articles (the remainder of studies in Table 1) found support for CBT for samples in which all of the older adult participants met criteria for GAD. One study compared CBT with both a waiting list and an attention placebo. All comparisons supported CBT, typically compared with a waiting list or other minimal contact control condition. In some of these studies, improvement was also found on measures of depressive symptoms and quality of life, and gains were maintained at 6- to 12-month follow-up intervals (Stanley, Beck, & Glassco, 1996, Stanley, Beck, et al., 2003; Wetherell, Gatz, & Craske, 2003). One study demonstrated strong support for an enhanced CBT protocol that included memory aids and strategies such as between-sessions telephone calls to increase homework compliance (Mohlman et al., 2003). In a follow-up study, Mohlman and Gorman (2005) divided study participants into three groups: intact, improved, and impaired executive functioning (EF). The intact and improved EF groups showed significantly greater decreases in worry as compared with individuals in the waiting list condition. The improved EF group showed a significantly greater decrease in trait anxiety than the impaired EF and waiting list groups.

Cognitive Therapy

Three studies examined the use of cognitive therapy with anxious older adults (see Table 1). One study found support for the use of cognitive therapy with anxious older adults (Keller et al., 1975; Table 1). In two of the studies, cognitive therapy was compared with relaxation training and pseudorelaxation or supportive therapy (DeBerry, Davis, & Reinhard, 1989; Sallis, Lichstein, Clarkson, Stalgaitis, & Campbell, 1983), and stronger support was

found for relaxation and pseudorelaxation as compared with cognitive therapy. All three studies were conducted in group format with participants who reported subjective anxiety symptoms but were not diagnosed according to *DSM* criteria. Cognitive therapy consisted of teaching participants to identify negative automatic thoughts, challenge them, and replace them with more rational, helpful thoughts. Some protocols also included assertiveness training or scheduled pleasant events. The STAI was used as the outcome measure in all three studies.

Relaxation Training

A total of four studies provide evidence for the efficacy of relaxation training (see Table 2). All included participants who reported subjective anxiety symptoms but were not diagnosed according to *DSM* criteria. Relaxation training typically included some combination of progressive muscle relaxation, deep breathing, meditation, and education about tension and stress. Four of the interventions were conducted in group format. Outcome measures included the STAI and SCL-90. Four of the five studies found support for relaxation training compared with a wait list or pseudorelaxation placebo control condition. One study, by Sallis and colleagues (1983; not listed in Table 2), actually found an increase in anxiety symptoms following relaxation training, and relaxation training did more poorly than supportive therapy. Other results from these studies suggest the importance of continued practice of relaxation skills in order to maintain benefits (DeBerry, 1981–1982, 1982).

Imaginal relaxation, in which participants are taught to imagine tensing various muscle groups rather than actually tensing them, appears to be as effective as standard tension-release progressive muscle relaxation and may be of particular benefit to older adults with musculoskeletal conditions or injuries that make tensing

Table 2
Relaxation Training for Late-Life Anxiety

Author	Sample	Conditions	Manual	Length of treatment	Outcome measures	Findings
DeBerry (1981-1982)	<i>N</i> = 10, ages 69–84, recent widows with subjective reports of anxiety.	Condition 1: PMR. Condition 2: pseudorelaxation.	Relaxation based on Wolpe (1969) and R. S. Lazarus (1966).	10 one-hr group sessions	STAI-S, STAI-T	PMR group showed significant improvement on state anxiety, muscle tension, sleep latency, nocturnal awakenings, and headaches, whereas pseudorelaxation did not. At 10-week follow-up, PMR showed gains on state anxiety.
DeBerry (1982)	<i>N</i> = 36, ages 63–79, mostly recent widows with subjective reports of anxiety.	Condition 1: PMR and imagery with follow-up. Condition 2: PMR and imagery without follow-up. Condition 3: pseudorelaxation.	Relaxation based on Wolpe (1969) and A. Lazarus (1972).	10 thirty-min group sessions	STAI-S, STAI-T	Both PMR groups showed significant improvement on state and trait anxiety, whereas pseudorelaxation did not. Gains maintained at 10-week follow-up.
DeBerry et al. (1989)	<i>N</i> = 32, mean age = 69, subjective reports of anxiety.	Condition 1: PMR and imagery. Condition 2: CT with assertiveness training. Condition 3: pseudorelaxation.	PMR and imagery based on Wolpe (1969), A. Lazarus (1972), and DeBerry (1982).	20 forty-five-min group sessions	STAI-S, STAI-T	PMR group demonstrated significant decrease in state anxiety, whereas pseudorelaxation and CT did not. Gains maintained at 10-week follow-up.
Scogin et al. (1992)	<i>N</i> = 71, mean age = 68, subjective reports of anxiety.	Condition 1: PMR. Condition 2: imaginal relaxation. Condition 3: WL	Relaxation based on Bernstein and Borkovec (1973) and Crist (1986).	4 individual sessions	STAI-S, STAI-T, SCL-90	PMR and imaginal relaxation groups significantly reduced state anxiety relative to WL. Gains maintained at 1-month follow-up.

Note. PMR = progressive muscle relaxation; STAI-S = State-Trait Anxiety Inventory—State; STAI-T = State-Trait Anxiety Inventory—Trait; CT = cognitive therapy; WL = waiting list; SCL-90 = Symptoms Checklist-90.

painful (Scogin, Rickard, Keith, Wilson, & McElreath, 1992). Long-term follow-up suggests that effects can last for as long as a year after treatment (Rickard, Scogin, & Keith, 1994).

Supportive Therapy

Three studies included a supportive therapy condition, intended as an attention placebo for comparison with relaxation training or CBT (see Table 3). Supportive therapy protocols included reflective listening and validation of feelings. Two studies used group therapy, whereas one involved individual sessions in the patients' homes. Patients met criteria for GAD, panic disorder, social phobia, anxiety disorder not otherwise specified, or subjective anxiety symptoms. There was some evidence to support the use of supportive therapy, but there was no evidence that supportive therapy is more effective than CBT or relaxation training.

Discussion

The review revealed support for four psychotherapeutic treatments for subjective anxiety symptoms or anxiety disorders in older adults: CBT, cognitive therapy, relaxation training, and supportive therapy. CBT has been shown to work effectively for

GAD; evidence for the efficacy of CBT for subjective anxiety symptoms is weaker. Relaxation training has demonstrated efficacy in the treatment of subjective anxiety symptoms, particularly if long-term practice is encouraged. Evidence is not as strong for the efficacy of cognitive or supportive therapy when compared with attention placebos or alternative psychotherapy interventions.

Thus, the current review is consistent with other reviews that have reported that psychosocial interventions are moderately efficacious, but we found differences in treatment response based on type of EBT used. Although the overarching finding is that psychosocial interventions work to alleviate anxiety in some older patients, there is considerable room for improvement in study methodologies and treatment outcomes. Results from the anxiety studies of older adults that we reviewed do not appear to be as strong as for younger adult samples. In this we agree with Mohlman (2004) that it may be wise to augment current psychotherapies (designed for the general adult population) to enhance learning for older adults.

There are several important caveats to these findings. As our review indicates, data on EBTs are very limited for anxiety in later life. Of the 77 studies that were examined for this review, only 17 met inclusion criteria for further analysis because the others did

Table 3
Supportive Therapy for Late-Life Anxiety

Author	Sample	Conditions	Manual	Length of treatment	Outcome measures	Findings
Barrowclough et al. (2001)	<i>N</i> = 55, mean age = 72, met criteria for panic disorder (51%), social phobia (2%), GAD (19%), or anxiety disorder not otherwise specified (28%).	Condition 1: CBT. Condition 2: ST.	ST based on Woolfe (1989).	8–12 sessions of individual, home-delivered therapy	BAI, HAMA, STAI-T	CBT group reduced self-reports of anxiety and depression significantly more than ST immediately following treatment and during follow-up.
Sallis et al. (1983)	<i>N</i> = 38, mean age = 71, subjective reports of anxiety.	Condition 1: relaxation training. Condition 2: CT with pleasant events scheduling. Condition 3: ST.	ST based on Johnson (1972).	10 sixty-min group sessions	STAI-T	ST group significantly reduced trait anxiety. CT with pleasant events significantly reduced heart rate.
Stanley et al. (1996)	<i>N</i> = 48, mean age = 68, met criteria for GAD.	Condition 1: CBT. Condition 2: ST.	ST based on Borkovec and Costello (1993).	14 group sessions	GAD severity, percentage of day worrying, PSWQ, WS, STAI-T, HAMA, FQ	CBT and ST groups both significantly reduced worry, anxiety, and depression. Gains maintained at 6-month follow-up.

Note. GAD = generalized anxiety disorder; CBT = cognitive-behavioral therapy; ST = supportive therapy; BAI = Beck Anxiety Inventory; HAMA = Hamilton Anxiety Rating Scale; STAI-T = State-Trait Anxiety Inventory—Trait; CT = cognitive therapy; PSWQ = Penn State Worry Questionnaire; WS = Worry Scale; FQ = Fear Questionnaire.

not meet EBT criteria, had insufficient information for coding, or did not include appropriate control conditions. Although these studies statistically and qualitatively show the effectiveness of psychotherapy for late-life anxiety, their influence would likely be greater if they had included a greater number of participants and more detail, including sufficient information for the determination of whether treatments are EBTs.

Many studies used group rather than individual treatment. Given the diversity of anxiety-related thoughts and the complexity of the cognitive restructuring procedure, it is perhaps not surprising that group relaxation training appears to be more effective than group cognitive therapy. Individual cognitive therapy may be more efficacious because it allows a more idiographic approach to assessment and treatment. Moreover, the CBT protocols used to date have typically included only a limited number of elements that may not adequately address the range of symptoms and problems experienced by anxious older adults. Finally, no research to date has examined the mechanisms underlying successful psychotherapeutic treatment of late-life anxiety. For example, relaxation may work by decreasing muscle tension, increasing mindfulness, or both. Elucidating the mechanism of action could lead to the development of more effective treatments for anxiety in older adults.

Strengths and Limitations in the Research Literature

Although the research literature for late-life anxiety is in its infancy, several of the studies we reviewed had strong features.

Some studies included clinical samples assessed via structured diagnostic interviews, physiological measurement, assessment of research participants' cognitive status, random assignment to active treatments, treatment fidelity procedures, and follow-up assessments. However, none of the studies incorporated all of these strong components, and many limitations to the literature remain.

EBT data are limited or nonexistent for late-life anxiety disorders other than GAD, such as phobias, panic disorder, obsessive-compulsive disorder, and posttraumatic stress disorder. Although three studies in the present review included patients with panic disorder (Barrowclough et al., 2001; Gorenstein et al., 2005; Schuurmans et al., 2006), disorder-specific outcome data were not provided. We found only case reports and one study using a within-subjects design to examine treatment of late-life panic disorder (e.g., King & Barrowclough, 1991; Rathus & Sanderson, 1996; Swales, Solfvin, & Sheikh, 1996). We are aware of no published treatment outcome research with older adult samples on agoraphobia without panic disorder or on social phobia, and only a few case reports on other phobias (e.g., Fabian & Haley, 1991; Hussian, 1981; Lohr, Tolin, & Kleinknecht, 1996). The obsessive-compulsive disorder literature includes a handful of case reports and a retrospective description of older adults treated on an inpatient unit (e.g., Calamari, Faber, Hitsman, & Poppe, 1994; Carmin & Wiegartz, 2000; Carmin, Wiegartz, Yunus, & Gillock, 2002; Turner, Hersen, Bellack, & Wells, 1979). Finally, the posttraumatic stress disorder research available is also limited to case

reports and an uncontrolled study (e.g., Hyer, 1995; Hyer et al., 1990; Maercker, 2002; Moye, 1997; Thomas & Gafner, 1993). Given the high prevalence rates and negative consequences of anxiety in later life, much more work is needed in this area.

Therapeutic interventions for geriatric anxiety to date have mostly been limited to relaxation training and CBT. A few case studies have examined eye movement desensitization and reprocessing (Shapiro, 1995), and promising preliminary data have been reported for psychotherapy based on intolerance of uncertainty (Ladouceur, Leger, Dugas, & Freeston, 2004). Other approaches, such as problem-solving therapy (D'Zurilla & Nezu, 2001), metacognitive therapy (Wells, 1997), interpersonal therapy (Newman, Castonguay, Borkovec, & Molnar, 2004), life review (Haight, 2000), and acceptance-based therapies (Roemer & Orsillo, 2002), have not yet been investigated in older adults with anxiety. CBT protocols have also evolved over the years. For example, Mohlman is investigating an integration of CBT with EF training (Mohlman, 2004), and Wetherell and colleagues are currently testing a modular CBT protocol that allows the therapist and patient to choose the most relevant techniques (Wetherell, Sorrell, et al., 2005). Further research on combined treatment with psychotherapy and medication would also be greatly beneficial, given recent investigations showing the efficacy of SSRIs for late-life GAD (Katz et al., 2002; Lenze, Mulsant, Mohlman, et al., 2005; Schuurmans et al., 2006). A variety of therapeutic approaches other than conventional CBT may prove effective and could expand the range of possibilities for treatment of older adults with anxiety.

Another limitation of the current research literature is that studies have typically reported effects immediately following the treatment but have failed to examine long-term outcomes. Some relaxation studies have demonstrated that encouraging at-home practice led to longer term benefits, and some CBT studies have reported maintenance of gains at 6-month and 1-year follow-up periods. Given that anxiety tends to develop early in life and can remain stable over decades, research on long-term improvement in anxiety would appear to be a high priority.

Differences in study design also limit the comparability of studies. For example, outcome measures varied across studies. At present, there is no "gold standard" measure of geriatric anxiety. The most frequently used measure in psychotherapy research appears to be the STAI. Although this measure has generally demonstrated internal consistency, test-retest reliability, and convergent and divergent validity in samples of older people, the normative data for older people come from a small, demographically restricted sample (Himmelfarb & Murrell, 1983). Moreover, the STAI has been criticized for its lack of discriminant validity with measures of depression (Kabacoff, Segal, Hersen, & Van Hasselt, 1997). It may be preferable to include several outcome measures that assess different domains of anxiety, for example, somatic anxiety symptoms (e.g., Beck Anxiety Inventory) and pathological worry (e.g., Penn State Worry Questionnaire, Worry Scale). In addition, the Hamilton Anxiety Rating Scale should be included because it is typically used in pharmacological studies and would allow for a direct comparison between psychotherapy and medications.

Other factors limiting the comparability of studies in this review include differences in format (individual vs. group), as mentioned previously, and the heterogeneity of comparison conditions (waiting list vs. alternative treatment-attention placebo). Furthermore,

samples were typically homogeneous and restricted to young-old, active, healthy, Caucasian, well-educated individuals who were recruited from the community. This may limit generalizability to the broader population of older adults with anxiety. Additional research in medical, psychiatric, cognitively impaired, and racially diverse samples, as well as those in assisted living or nursing facilities, is needed.

Summary

Late-life anxiety has substantial negative consequences, both personal (e.g., decreased quality of life) and public (e.g., increased medical usage). Despite the limitations of the research literature, the existing evidence suggests that psychotherapy, particularly if it includes relaxation training, shows promise for older adults with anxiety. Given the evidence of the effectiveness of relaxation training, this low-cost, relatively easy to deliver intervention should be highlighted to health care and aging service providers, insurance companies, and other financing agencies as a reimbursable treatment.

Further work in this area is needed with respect to prevention, detection, and treatment. Anxiety is substantially less well researched than other forms of geriatric psychopathology. This is surprising because most epidemiological evidence suggests that anxiety is more common than depression in older adults (Beekman et al., 1995, 1998), and almost twice as many mental health Medicare claims are filed for anxiety disorders (38%) as for affective disorders (21%; Ettner & Hermann, 1997). This dearth of research may result from misconceptions about late-life anxiety on the part of mental health providers, such as the idea that anxiety is merely an epiphenomenon of depression or medical illness. These misconceptions are understandable given that older adults with anxiety disorders are three times less likely than older adults with affective disorders to seek treatment from mental health specialists (Ettner & Hermann, 1997). As evidence accumulates that late-life anxiety is a prevalent and serious condition, more attention will be paid to the development and dissemination of empirically based treatments. This review provides evidence both that effective psychotherapeutic treatments exist and that additional research is necessary to optimize outcomes for older adults with anxiety.

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