

## Cognitive–Behavioral Therapy for Depression and Anxiety Disorders in Rural Settings: A Review of the Literature

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Depression and anxiety disorder prevalence rates are similar across urbanicity levels, yet rural Americans are less likely to receive mental health treatment. Barriers related to availability, accessibility, and acceptability of care in rural areas have been well documented. Cognitive–behavioral therapy (CBT) is gold-standard, evidence-based care for these mental health conditions, though its delivery in rural settings has not been systematically assessed. We reviewed the existing literature to identify adaptations made to CBT for depression and anxiety disorders for rural delivery, and to examine the effect of CBT delivered in the rural context on depression and anxiety. We also assessed the studies' methodological rigor. Sixteen articles published between 2000 and 2012 met review criteria, all of which adapted CBT for rural delivery. Common adaptations included technology-assisted treatment, delivery in non-mental-health settings, and services offered by nontraditional and less experienced providers. Results suggest CBT for depression and anxiety delivered with adaptations in rural areas is effective; however, less than 20% of the studies reviewed reported on fidelity to standard CBT. This article reviewed the limited literature that has tested CBT for depression and anxiety disorders in the rural context. Given the existing literature's low methodological rigor, results must be interpreted with caution. Findings suggest that adaptations are needed to address barriers to care in rural communities, but little is known about how adaptations impact fidelity or outcomes. We synthesize the current knowledge, provide recommendations for bolstering future research, and discuss implications of rural residents' lack of access to standard CBT.

*Keywords:* cognitive–behavioral therapy, access to care, depression, anxiety disorders, treatment effectiveness

Depression and anxiety disorders are among the most common mental illnesses (Kessler et al., 1994, 2005) and represent a significant public health concern (Murray & Lopez, 1996; Walker, McGee, & Druss, 2015). Persons with depression or anxiety disorders consistently report functional impairment across multiple life domains, including employment, family and social relationships, and general health, and depression and anxiety disorders cost an estimated \$95 billion per year in the United States alone (Marciniak et al., 2005; P. S. Wang, Simon, &

Kessler, 2003). Epidemiologic studies suggest that almost 20% of Americans experience major depressive disorder during their lifetime (Blazer, Kessler, McGonagle, & Swartz, 1994; Kessler et al., 1994, 2003, 2005) and that, as a class, anxiety disorders affect approximately one in four Americans over the life course (Kessler et al., 1994, 2005). Rural Americans experience depression and anxiety disorders at rates similar to their urban counterparts (Blazer et al., 1994; Kessler et al., 1994; Probst et al., 2006; J. L. Wang, 2004), and some research suggests that mental health deteriorates as rurality increases (Hauenstein et al., 2006).

Despite the high prevalence of depression and anxiety disorders, only one third of persons with diagnosable disorders seek treatment (Katz, Kessler, Lin, & Wells, 1998; Kessler et al., 2005). Rural residents are significantly less likely to receive any mental health treatment than urban residents (Fortney, Rost, Zhang, &

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Warren, 1999; P. S. Wang et al., 2005). Despite decades of research developing and testing efficacious psychosocial interventions for depression and anxiety disorders, rural residents are unlikely to receive evidence-based mental health treatment or guideline concordant care (Fortney, Harman, Xu, & Dong, 2010; Hartley, Bird, & Dempsey, 1999; Hauenstein & Pedada, 2007; P. S. Wang et al., 2005, 2006). This disparity persists because of factors related to the availability, accessibility, and acceptability of mental health services in rural communities (Hogan, 2003).

Rural residents face a multitude of barriers to care, the most significant of which may be the shortage of mental health providers (Ellis, Konrad, Thomas, & Morrissey, 2009; Gamm, Stone, & Pittman, 2003; Sawyer, Gale, & Lambert, 2006). In fact, mental health professionals are concentrated in high-population, urban areas, with 80% of masters-level social workers (MSWs) and 90% of psychologists and psychiatrists practicing exclusively in metropolitan areas of the United States (Ellis et al., 2009; Sawyer et al., 2006). As a result, over 60% of rural Americans live in designated mental health provider shortage areas (Health Resources and Services Administration, 2017).

Barriers to mental health treatment in rural communities, including the lack of mental health professionals, are exacerbated by high and persistent poverty rates (Proctor, Semega, & Kollar, 2016; U.S. Department of Agriculture Economic Research Service, 2017), a high proportion of uninsured or underinsured persons (Eberhardt, Ingram, & Makuc, 2001; Mueller, Patil, & Ullrich, 1997; National Advisory Committee on Rural Health and Human Services, 2014), and travel burden (Amundson, 2001; Gjesfjeld, Weaver, & Schommer, 2012; Hogan, 2003). High poverty rates (Proctor et al., 2016), employment rates that have not rebounded to prerecession rates (U.S. Department of Agriculture Economic Research Service, 2017), and continued challenges accessing health insurance, even with passage of the Affordable Care Act (Newkirk & Damico, 2014), create substantial cost barriers for rural residents in need of mental health treatment. Further, the lack of local providers creates a travel burden, as rural residents often have to access care outside of their home communities. This travel burden often requires reliable personal transportation,

funds for gas, time off of work, and/or arranging child care coverage. Collectively, these represent substantial challenges for rural residents in need of mental health treatment.

Even when mental health treatment is available, rural Americans often choose not to seek services. Values traditionally held by rural Americans, such as self-reliance and independence, lead to the belief that psychiatric distress is a personal weakness rather than a medical illness (Buckwalter, 1991; Hill & Fraser, 1995; Rost, Fortney, Fischer, & Smith, 2002; Shreffler, 1999; Weinert & Long, 1987), contributing to high levels of shame and stigma around mental illness and mental health treatment (Rost, Smith, & Taylor, 1993; Stamm, 2003). Rural residents' perceived lack of anonymity also deters help seeking (Logan, Stevenson, Evans, & Leukefeld, 2004; Rost et al., 2002; Smalley et al., 2010). The low population density in rural communities results in close-knit, limited social networks, making it difficult for rural persons to obtain care without drawing attention to themselves. Additionally, rural residents perceive cultural dissimilarities between themselves and mental health providers, who are often not from the community (Rost et al., 1993), and exhibit a preference for informal networks of care, commonly seeking help from clergy, neighbors, friends, and family to deal with psychiatric distress (Fox, Blank, Rovnyak, & Barnett, 2001; Fox, Merwin, & Blank, 1995; Merwin, Hinton, Dembling, & Stern, 2003; Merwin, Snyder, & Katz, 2006; Norquist & Regier, 1996). These factors suggest that mental health services offered in specialty settings may not be acceptable to many rural residents.

### Cognitive–Behavioral Therapy

Cognitive–behavioral therapy (CBT) is an evidence-based treatment for both depression and anxiety disorders, and has been identified as the gold standard of care for these mental illnesses (Weaver, Himle, Steketee, & Muroff, 2014). CBT uses problem-focused cognitive and behavioral strategies guided by empirical science and derived from theories of learning and cognition (Craske, 2010). These interventions are delivered within a collaborative context in which therapists and clients work together to identify problems, set goals, develop intervention strategies, and evaluate the effec-

tiveness of those strategies (Dobson & Dobson, 2009). CBT utilizes a combination of behavioral and cognitive intervention strategies aimed at changing behavior patterns and dysfunctional thoughts (Weaver et al., 2014). Three of the most common CBT intervention strategies include cognitive restructuring, behavioral activation, and exposure (Dobson & Dobson, 2009). Cognitive restructuring, which involves intervention strategies to help clients recognize, evaluate, and effectively respond to dysfunctional, negative, or distorted thoughts, is employed for clients experiencing depression and/or anxiety disorders. Behavioral activation, including strategies that encourage clients to increase the quantity and quality of positively reinforced behavior in a scheduled, monitored way, is more relevant for clients with depression. Exposure, which encourages clients to confront a feared stimulus in order to manage physiological anxiety and decrease fears, is utilized for clients with anxiety disorders (Dobson & Dobson, 2009).

CBT has been shown to effectively treat depression and anxiety disorders in group and individual formats (e.g., Butler, Chapman, Forman, & Beck, 2006; Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012), among diverse populations (e.g., Ayers, Sorrell, Thorp, & Wetherell, 2007; Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004; Compton et al., 2004; Horrell, 2008; Schraufnagel, Wagner, Miranda, & Roy-Byrne, 2006; Scogin, Welsh, Hanson, Stump, & Coates, 2005; Wilson & Cottone, 2013), across a variety of treatment settings, and when delivered by non-mental-health professionals (e.g., Brown & Schulberg, 1995; Hoagwood & Erwin, 1997; Rose & Perz, 2005; Roy-Byrne et al., 2005). Further, there is growing evidence indicating that CBT can be effectively delivered with technology, with computerized CBT (cCBT) and CBT delivered via videoconferencing garnering empirical support (e.g., Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010; Antonacci, Bloch, Saeed, Yildirim, & Talley, 2008; Kaltenthaler et al., 2006; Simpson, 2009).

### Purpose of Literature Review

Given CBT's strong evidence base, it is likely that the intervention would help persons experiencing depression and anxiety in rural

areas, yet substantial barriers to care experienced by rural populations indicate adaptations making CBT more accessible and acceptable may be necessary. No identified work has reviewed modifications made to CBT for depression and anxiety disorders delivered among rural residents or in rural settings, and the effectiveness of CBT for depression and anxiety disorders delivered in the rural context has not been systematically assessed. As a result, a literature review focused on documenting the current state of knowledge related to CBT for depression and anxiety among adults in the rural context is warranted. Findings have the potential to increase our understanding of factors that reduce barriers to care and influence the acceptability of treatment among rural populations.

### Objectives

The goal of this article is to review empirical literature testing CBT for depression and anxiety delivered for rural populations and in rural settings. Specifically, we address this goal by identifying and synthesizing (a) the variety and types of adaptations researchers have used to enhance CBT for depression and anxiety disorders, (b) the clinical effectiveness of CBT among this underserved population, and (c) the methodological rigor of studies of CBT for depression and anxiety delivered in the rural context.

### Method

#### Defining Rural

The inconsistent operationalization of *rural* has been a long-standing criticism and limitation of rural-focused research. Rural areas are most often characterized by low population density and relative isolation from urban areas (Goreham, 2008). However, population-based definitions create an inconsistent and simplistic conceptualization of rural settings (Bigbee & Lind, 2007; Gesler, Rabiner, & DeFriese, 1998). Many rural scholars acknowledge that in addition to low population density, rural areas share social, economic, and cultural elements, including fewer economic resources, dense social networks, and an emphasis on the importance of self-reliance and self-sufficiency (Dengerink & Cross, 1982; Mulder et al., 2000).

Rural residents have more traditional values, tend to be more conservative, and are more likely to assign traditional gender roles than urban peers (Bescher-Donnelly & Smith, 1981; Pruitt, 2008; Snyder & McLaughlin, 2004; Struthers & Bokemeier, 2003). Many rural communities experience high rates of persistent, intergenerational poverty, in part because of lack of diversity in local economies and scarce, scattered job opportunities (Joliffe, 2004; McLaughlin & Coleman-Jensen, 2008). Although these broad factors typify rural life, rural residents are not a homogenous group (Mulder et al., 2000). National and regional differences in demographics, development, and economic base contribute to diversity of rural areas and suggest an important level of analysis to consider when studying and defining rurality.

Despite researchers' acknowledgment of rurality as a complex concept, studies almost exclusively employ population-based definitions. Even when employing a population-based conceptualization of rurality, a universally accepted definition and classification system does not exist. As a result, there is variability in the way rural is operationalized in research, making comparisons across studies difficult. This documented limitation notwithstanding, instead of imposing selection criteria based on one operationalization of rural, this review includes all articles that self-identified their sample or intervention site as "rural" or "remote."

### Identification of Studies

The literature was systematically reviewed between February and April 2015 using relevant electronic databases, including PsycINFO, PUBMED, Web of Science, and Google-Scholar. No date restrictions were imposed. Searches were completed using combinations of the following key words: "rural," "remote," "cognitive-behavioral therapy," "CBT," "depression," "depressed," "MDD," "mood disorder," "anxiety disorders," "anxiety," "OCD," and "PTSD." Articles were selected for inclusion in this review if (a) the sample or intervention delivery site was identified as rural or remote; (b) the intervention was a CBT-based program and included at least one core treatment element (e.g., behavioral activation, cognitive restructuring, exposure); (c) the primary aim of the intervention study was to reduce the

symptoms or incidence of depression and/or anxiety disorders, and the primary outcome measure was symptoms or diagnosis of the targeted disorder; (d) study participants were adults; and (e) the study was published in a peer-reviewed, English-language journal. All relevant CBT-based intervention studies meeting criteria were included, with no restrictions based on research design.

After identifying articles that met inclusion criteria, we manually searched the reference lists to identify additional intervention studies testing CBT for depression and/or anxiety disorders among rural populations and in rural areas. We screened 1,167 titles and abstracts. Thirty-eight full-text articles were retained and examined. Each author independently assessed these articles for inclusion. Twenty-two articles were excluded because they were case studies or protocol papers ( $n = 7$ ), did not include depression and/or anxiety as a primary outcome ( $n = 3$ ), did not adequately describe the CBT-based intervention and treatment components ( $n = 3$ ), were not CBT-based interventions ( $n = 1$ ), or did not identify the sample, a subsample, or setting as rural or remote ( $n = 8$ ; see Figure 1). Therefore, 16 peer-reviewed articles met criteria and are included in our analysis. The authors independently identified and classified intervention adaptations and independently rated the methodological rigor of the 16 articles meeting inclusion criteria. If there was disagreement, the authors met to discuss independent findings and reach consensus.

### Analysis

The 16 studies meeting inclusion criteria, organized by disorder, are outlined in Table 1, with outcomes briefly described. We assessed each study to identify adaptations made to CBT for depression and anxiety disorders when delivered among rural populations or in rural settings.

Adaptations were categorized as addressing practical, psychological, or cultural barriers to care in the rural context (see Table 2), following Grote, Swartz, and Zuckoff's (2008) classification system. Practical barriers represent pragmatic challenges to accessing mental health treatment, such as a lack of local providers and/or inconvenient clinic locations, cost, lack of insurance coverage, limited time

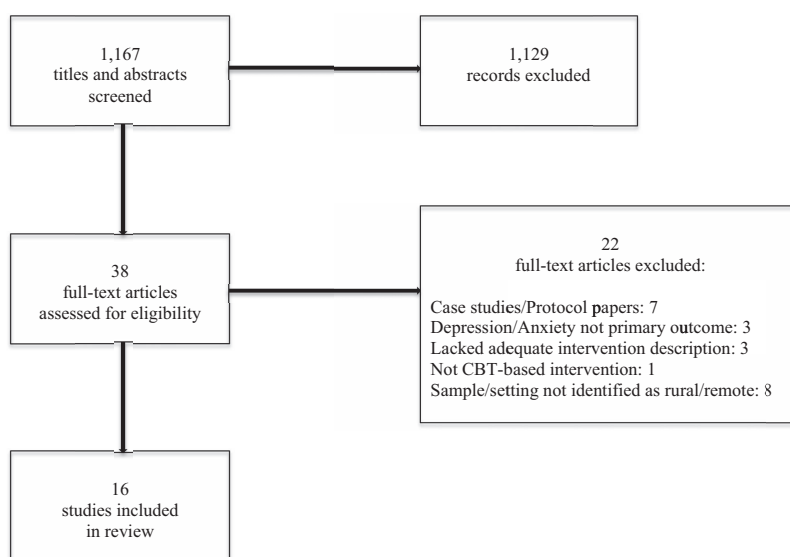


Figure 1. PRISMA study flow diagram of the literature search.

and competing priorities, loss of pay from missing work, transportation problems, and childcare difficulties. Psychological barriers to care may include the stigma of mental illness, previous negative treatment experiences, and the burden of mental health needs. Cultural barriers refer to cultural insensitivity or ignorance of clinicians as well as the burden associated with living in poverty, particularly navigating multiple social problems and chronic stressors while trying to meet basic needs (Grote et al., 2008). We acknowledge that this classification system is porous, allowing for a single adaptation to be categorized as addressing more than one type of barrier. Despite this limitation, organizing adaptations made for the rural context among studies included in this review provides a starting point to guide our thinking about treatment modifications that may be most relevant in rural settings.

Additionally, we assessed each study's methodological rigor via seven research quality indicators adapted from the Cochrane Collaboration (Higgins & Green, 2009) and the Jadad Scale (Jadad et al., 1996) for use with vulnerable, underserved populations (Levy & O'Hara, 2010; see Table 2). Quality indicators include the presence of a control condition, random assignment, assessors blinded to participants'

treatment condition, adequate assessment of treatment fidelity, an intent-to-treat sample, adequate attrition data, and adequate outcome data. Adequate attrition data was defined as including either the average number of sessions attended by participants or the total number of participants who did not complete treatment. Adequate outcome data was characterized by including the level of detail needed to calculate symptom effect sizes. Each indicator of methodological rigor was scored using a dichotomous, yes–no ranking system. One point was awarded for each quality indicator present in the study design. If articles did not mention a given indicator, it was assumed to be missing from the study design and was awarded 0 points. The sum score of quality indicators range from zero (0) to seven (7) and provides an overall Methodological Rigor Score for each study.

## Results

Sixteen studies published between 2000 and 2012 met inclusion criteria for this review. The articles represent 1,193 participants, 805 of whom were recruited from rural or remote areas. Six studies (37.5%) tested CBT for depression (Craig, Judd, & Hodgins, 2005; Dwight-Johnson et al., 2011; Mohr, Carmody, Erickson, Jin, & Leader, 2011; Mohr, Hart, & Marmar, 2006;



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**Table 1**  
*CBT Intervention Studies for Depression or Anxiety Disorders Delivered for Rural Residents and/or in Rural Settings*

Study	Sample	Treatment protocol	Control group	Diagnostic/symptom inclusion criteria	Engagement/attrition	Results	
						Clinical outcomes	Effect size
<p>Depression</p> <p>Craig, Judd, and Hodgins (2005)</p>	<p><i>N</i> = 16</p> <p>Target population: Women with children under 1 year of age receiving community health services</p> <p>Sample characteristics: mean age = 28.4</p> <p>Setting: rural Victoria Australia</p>	<p>Overview: 9-week group CBT intervention (Milgrom et al., 1999), modified to be locally relevant</p> <p>Key CBT components: Activity scheduling (behavioral activation), identifying automatic thoughts and challenging thoughts and behaviors (cognitive restructuring); weekly homework</p> <p>Providers: Trained community health workers</p>	None	<p>Measure: Edinburgh Post-Natal Depression Scale (symptom)</p>	12.5% dropout rate	<ul style="list-style-type: none"> <li>• Significant improvement in mean depression and anxiety scores</li> <li>• Improvement in anxiety symptoms maintained at 3-month follow-up</li> </ul>	Not reported
<p>Dwight-Johnson et al. (2011)</p>	<p><i>N</i> = 101</p> <p>Target population: Latino participants recruited from a rural health center serving farm workers</p> <p>Sample characteristics: 78% women; mean age = 39.8</p> <p>Setting: rural Washington state</p>	<p>Overview: 8-session CBT (Simon et al., 2004) delivered by telephone, adapted patient workbook to be culturally specific and translated to Spanish</p> <p>Key CBT components: Emphasized behavioral activation and cognitive strategies for identifying, interrupting, and distancing self from negative thoughts; homework</p> <p>Providers: Spanish-speaking Latinx with social work background</p>	Enhanced usual care	<p>Measure: Patient Health Questionnaire-9 (PHQ-9; symptom)</p>	44% completed 6 or more CBT sessions	<p>Compared with the enhanced usual care condition, participants in the CBT group experienced:</p> <ul style="list-style-type: none"> <li>• Significantly greater reductions in depression scores</li> <li>• Significantly greater maintenance of gains at 3-month follow-up</li> <li>• Significantly more treatment satisfaction</li> </ul>	Not reported
<p>Mohr, Carmody, Erickson, Jin, and Leader (2011)</p>	<p><i>N</i> = 85</p> <p>Target population: Patients of VA community-based outpatient clinics</p> <p>Sample characteristics: 9.4% women; 78.8% White; mean age = 55.9</p> <p>Setting: rural California and rural Illinois</p>	<p>Overview: 16 sessions of telephone-based CBT (Beck et al., 1996) over 20 weeks, with adapted patient workbook (Mohr, Hart, &amp; Marmar, 2006) supporting education about depression and CBT theory</p> <p>Key CBT components: Behavioral activation, cognitive restructuring</p> <p>Provider: Licensed psychologists</p>	Treatment as usual	<p>Measure: Mini International Neuropsychiatric Interview (MINI; diagnosis); Patient Health Questionnaire-2 (symptom)</p>	78% completed all 16 weeks of treatment, with no missed sessions	<ul style="list-style-type: none"> <li>• Significant effect of time on depressive symptoms</li> <li>• No significant treatment effects</li> <li>• No significant interaction effects of Time × Treatment</li> </ul>	<i>d</i> = .16–.39

Table 1 (continued)

Study	Sample	Treatment protocol	Control group	Diagnostic/symptom inclusion criteria	Engagement/attrition	Results	
						Clinical outcomes	Effect size
Mohr, Hart, and Marmor (2006)	N = 8 Target population: Patients of a Department of Veterans Affairs community-based outpatient clinic Sample characteristics: 100% White; 100% Male; mean age = 56.75 Setting: rural northern California	Overview: 8 weekly sessions of telephone-based CBT (Beck et al., 1996), with patient workbook supporting education about depression and CBT theory Key CBT Components: Behavioral activation, cognitive restructuring Provider: doctoral-level psychologists	None	Measure: Structured Clinical Interview for DSM-IV Disorders (SCID; diagnosis); Beck Depression Inventory (BDI; symptom)	0% dropout rate	<ul style="list-style-type: none"> <li>Significant reduction in depressive symptoms posttreatment</li> <li>Significant difference in diagnostic status posttreatment</li> </ul>	Not reported
Porter, Spates, and Smitham (2004)	N = 37 Target population: Adults seeking services from 4 rural public mental health clinics Sample characteristics: 89% women; 92% White; mean age = 44 Setting: rural United States	Overview: 10 weekly sessions of Behavioral Activation Group Therapy (Jacobson et al., 1996), with adapted "hands on" manual to guide treatment Key CBT concept: Behavioral activation Providers: Licensed staff therapists practicing at the public mental health clinics	Waitlist control	Measure: Structured Clinical Interview for DSM-IV Disorders (SCID; diagnosis); Beck Depression Inventory (BDI; symptom); Revised Hamilton Rating Scale for Depression (RHRSD; symptom)	18.9% dropped out pre-treatment; 86.7% of remaining 30 participants completed treatment	<ul style="list-style-type: none"> <li>Significant reduction in depressive symptoms from pre-treatment to 3-month follow-up for both intervention and waitlist groups</li> <li>Significant change in diagnostic status; 73.1% of participants no longer met criteria for major depressive disorder at posttreatment and 3-month follow-up</li> </ul>	Not reported
Swartz et al. (2002)	N = 12 Target population: Women initiating treatment at a community mental health clinic Sample characteristics: 92% White; mean age = 36 Setting: rural Pennsylvania	Overview: 16 weekly sessions of CBT-based intervention with supportive approach, delivered in an administrative conference room in a supermarket Key CBT components: Behavioral activation, cognitive restructuring Provider: Social worker and registered nurse	None	Measure: Structured Clinical Interview of DSM-IV Disorders (SCID; diagnosis); Hamilton Rating Scale for Depression (HRSD; symptom severity)	50% dropout rate	<ul style="list-style-type: none"> <li>Significant reduction in depressive symptoms among treatment completers</li> <li>High levels of treatment satisfaction, with all completers preferring supermarket to traditional treatment setting</li> </ul>	Not reported

(table continues)

Table 1 (continued)

Study	Sample	Treatment protocol	Control group	Diagnostic/symptom inclusion criteria	Engagement/attrition	Results	
						Clinical outcomes	Effect size
Depression and anxiety Griffiths, Blignault, and Yellowlees (2006)	N = 18 Target population: Adults treated at a public mental health service Sample characteristics: 80% women Setting: rural North Queensland, Australia	Overview: 6–8 weekly sessions of CBT delivered via videoconference, with content varied by disorder Key CBT components: Psychoeducation, straight thinking, structured problem solving, and graded exposure Provider: Psychologist delivered treatment via videoconference with face-to-face case manager support	None	Measure: International Classification of Disease (ICD-10, Australian modification)	16.70% dropout rate	<ul style="list-style-type: none"> <li>Significant symptom improvement</li> <li>Symptom reduction was associated with greater acceptability of telemedicine and significant improvement in case manager ratings of client mental health</li> </ul>	Not reported
Scogin et al. (2007)	N = 134 Target population: Older adults living in rural Alabama Sample characteristics: 83% women; 57% African American; mean age = 75.4 Setting: rural Alabama	Overview: 16 sessions of in-home CBT (Thompson et al., 1995) for older adults, adapted to include in-session cue cards, slowing down the pace of treatment, and simplifying homework assignments Key CBT components: Behavioral activation, cognitive restructuring, relaxation techniques Provider: MSW-level clinicians without prior CBT experience	Minimal support control condition	Measure: Symptom Checklist-90-Revised (SCL-90-R)	Overall dropout rate = 25% CBT group; 27% dropout rate Control group; 22% dropout rate	<ul style="list-style-type: none"> <li>CBT condition experienced greater reduction of depression and anxiety over time than the control condition</li> <li>African American participants showed stronger treatment response compared with White participants</li> </ul>	$d = .46$
Zust (2000)	N = 27 Target population: Women receiving WIC Sample characteristics: 67% had history of intimate partner violence (IPV) Setting: rural Midwestern county	Overview: 20-week group cognitive therapy program designed for women (INSIGHT; Gordon, 1995); uses holistic model that considers spiritual, physical, and emotional components Key CBT components: Uncovering and reevaluating irrational beliefs, reframing negative thoughts Provider: Public health nurse	None	Measure: Signs of depression observed by a public health nurse	Overall dropout rate: 37% Women who experienced IPV; 50% dropout rate Women who did not experience IPV; 11% dropout rate	<ul style="list-style-type: none"> <li>Nonsignificant reduction in depressive and anxiety symptoms for all participants</li> <li>Greater reduction in anxiety among women who never experienced IPV</li> <li>Almost twice the reduction in depressive symptoms among women who had experienced IPV</li> </ul>	Not reported



Table 1 (continued)

Study	Sample	Treatment protocol	Control group	Diagnostic/symptom inclusion criteria	Engagement/attrition	Results	
						Clinical outcomes	Effect size
Generalized anxiety disorder Mewton, Wong, and Andrews (2012)	N = 588 Target population: Primary care patients Sample characteristics: 43.2% rural; 71.4% female; mean age = 39.5 Setting: Australia	Overview: Six sessions of internet-based CBT (iCBT); session content presented through illustrated story in which character gains mastery over GAD symptoms with the help of a clinician Key CBT components: Psychoeducation, behavioral activation, cognitive restructuring, problem solving, graded exposure, relapse prevention, assertiveness skills, and homework Provider: Not applicable/Internet-based	None	Measure: Primary care physician prescribed iCBT and patient completed at least one session	Overall sample: 55.1% completers Rural subsample: 37.7% completers	<ul style="list-style-type: none"> <li>• Significant reduction in GAD symptoms over time</li> <li>• Over 60% of moderate-to-severe GAD cases met criteria for remission upon treatment completion</li> </ul>	$d = .40-1.01$
Panic disorder (w/ or w/out agoraphobia) Boucharde et al. (2004)	N = 21 (n = 11 rural; n = 10 urban) Target population: Adults referred by professionals working in mental health clinics Sample characteristics: Rural subsample: 64% women, mean age = 38.8 Urban subsample: 80% women, mean age = 37.1 Setting: Ottawa, Canada	Overview: 12 weekly CBT sessions (Barlow & Cerny, 1998; Clark & Salkovski, 1987) delivered via videoconference to rural participants and delivered face-to-face to urban participants Key CBT components: Cognitive restructuring, interoceptive exposure, and exposure to agoraphobic situations Provider: Trained therapists with a minimum of 1 year experience with treatment protocol	Nonequivalent waitlist control	Measure: Structured Clinical Interview for DSM-IV Disorders (SCID)	Not reported	<ul style="list-style-type: none"> <li>• Significant improvement in panic symptoms, agoraphobic cognition, and self-efficacy to control a panic attack in both the rural videoconferencing and urban face-to-face groups</li> <li>• Gains were maintained at 6-month follow-up</li> <li>• Rural videoconference participants reported more panic attacks per week, pretreatment and had greater reduction in panic frequency than urban face-to-face group</li> </ul>	$\eta^2 = .44-.76$ ; Cohen's $f = .89-1.81$

(table continues)

Table 1 (continued)

Study	Sample	Treatment protocol	Control group	Diagnostic/symptom inclusion criteria	Engagement/attrition	Results	
						Clinical outcomes	Effect size
Deacon and Abramowitz (2006)	N = 10 Target population: Adults who self-selected to receive a brief intervention due to rural residence and lack of access to local CBT provider Sample characteristics: 80% women; mean age = 38.4 Setting: rural United States	Overview: Brief, intensive CBT based on Telch & Schmidt's (1990) 12-session protocol, modified for delivery over 2 consecutive days; enhanced with client workbook for anxiety and panic (Barlow & Craske, 2000) to read before treatment Key CBT components: Exposure to interoceptive and external stimuli Provider: Doctoral-level therapist	None	Measure: Mini International Neuro psychiatric Interview (MINI); Panic Disorder Severity Scale (PDSS); Panic symptom); Panic and Agoraphobia Scale (PAS; symptom); Anxiety Sensitivity Index-Revised (ASIR; symptom)	0% dropout rate	<ul style="list-style-type: none"> <li>Significant reductions in symptoms of panic, agoraphobia, anxiety, and depression</li> <li>Substantial reduction in each dimension of PD assessed by clinicians using PDSS</li> <li>Majority of patients experienced clinically significant change on measures of anxiety, body vigilance and depression</li> </ul>	<ul style="list-style-type: none"> <li><math>d = 1.73</math> for PDSS; <math>d = 1.43</math> for PAS; <math>d = 2.69</math> for ASIR</li> </ul>
Hayward, MacGregor, Peck, and Wilkes (2007)	N = 35 Target population: Persons aged 16 and older referred by providers or self-referred, had telephone access, and lived in remote and rural areas Sample characteristics: 66% women Setting: rural Scotland	Overview: Computer-guided CBT (FearFighter) for panic/phobic anxiety; patients had unlimited access to the treatment program for 10 weeks and were provided information about using the program and who to contact in case of difficulties or emergencies Key CBT components: Cognitive restructuring; exposure; anxiety management Provider: computer-based CBT; telephone support during normal office hours available	None	Measure: Symptoms of phobic anxiety or panic assessed via a Screening Questionnaire administered by psychologist by phone	25.7% dropout rate	<ul style="list-style-type: none"> <li>Significant improvement in symptoms of anxiety, social anxiety disorder, agoraphobia, and depression</li> <li>Significant improvement in as patients' ratings of global clinical impairment</li> <li>Change occurred from baseline to posttreatment, with little further gains from posttreatment to follow-up</li> </ul>	<ul style="list-style-type: none"> <li>BL to PT: <math>d = .39-1.46</math>; PT to follow-up: <math>d = .03-.53</math></li> </ul>

Table 1 (continued)

Study	Sample	Treatment protocol	Control group	Diagnostic/symptom inclusion criteria	Engagement/attrition	Results	
						Clinical outcomes	Effect size
PTSD Germain, Marchand, Bouchard, Drouin, and Guay (2009)	N = 48 (n = 32, face-to-face condition; n = 16, video-conference condition) <i>Target population:</i> Adults living in Montreal, Canada, with participants in videoconference condition recruited from rural and remote areas <i>Sample characteristics:</i> Face-to-face control condition: 59% women, mean age = 42 Videoconference condition: 62.5% women, mean age = 43 <i>Setting:</i> Montreal, Canada	<i>Overview:</i> 16–25 weekly sessions of CBT <i>Key CBT components:</i> Cognitive restructuring, progressive relaxation, imaginary and in vivo exposure, and relapse prevention strategies <i>Provider:</i> Psychologists	Nonrandomized control	<i>Measure:</i> Structured Clinical Interview for DSM-IV Disorders (SCID; diagnosis)	Overall dropout rate: 41.7% Videoconference condition: 50% dropout rate Face-to-face condition: 37.5% dropout rate	<ul style="list-style-type: none"> <li>• Significant decrease in severity and frequency of PTSD symptoms over time</li> <li>• No significant differences between conditions over time</li> <li>• 81% of participants in videoconference condition and 75% of participants in face-to-face condition no longer met diagnostic criteria for PTSD posttreatment</li> </ul>	$\eta^2: .31-.64$
Marchand et al. (2011)	N = 68 (n = 44 urban, face-to-face condition; n = 24 rural videoconference condition) <i>Target population:</i> Adults living in urban Montreal, Canada or in remote region outside of Montreal <i>Sample characteristics:</i> 64% women; mean age = 42.1 <i>Setting:</i> Montreal, Canada, and remote region outside of Montreal, Canada	<i>Overview:</i> 16–25 weekly sessions of CBT for PTSD <i>Key CBT components:</i> Psychoeducation, cognitive restructuring, problem solving, progressive relaxation, imaginary and in-vivo exposure, and relapse prevention <i>Provider:</i> Psychologists	Nonrandomized control	<i>Measure:</i> Structured Clinical Interview for DSM-IV Disorders (SCID; diagnosis)	Overall: 70.6% completers; Urban, face-to-face condition: 72.7% completers Rural, videoconference condition: 66.7% completers	<ul style="list-style-type: none"> <li>• Nearly half of participants in each condition no longer met diagnostic criteria for PTSD at posttreatment</li> <li>• Symptoms significantly improved over time across conditions</li> <li>• No significant treatment or interaction effects</li> </ul>	$\eta^2$ of time effect: .13–.37

Table 1 (continued)

Study	Sample	Treatment protocol	Control group	Diagnostic/symptom inclusion criteria	Results		
					Engagement/attrition	Clinical outcomes	Effect size
OCD Taylor et al. (2003)	N = 33 Target population: Adults living in rural areas of British Columbia, Canada  Sample characteristics: 76% women; 91% White; mean age = 38 Setting: rural British Columbia, Canada	Overview: 12 weekly CBT sessions delivered by telephone and supplemented with a self-help book (Schwartz, 1996)  Key CBT components: Cognitive restructuring Provider: doctoral-level psychologist who supervised bachelor's-level research assistants	Nonrandom waitlist control	Measure: Structured Clinical Interview for DSM-IV Disorders (SCID; diagnosis)	Overall dropout rate: 21.2% Waitlist control condition: 16.7% dropout rate Immediate treatment condition: 26.7% dropout rate	<ul style="list-style-type: none"> <li>• Significant reductions in obsessions, compulsions, as well as distress and impairment in social and occupational functioning</li> <li>• Reductions maintained at 3-month follow-up</li> <li>• 40%–50% of participants across conditions no longer met diagnostic criteria for OCD after treatment</li> </ul>	$d = 1.07$ (BL to PT for completers)

Porter, Spates, & Smitham, 2004; Swartz et al., 2002); three studies (18.8%) tested the effect of CBT for depression and anxiety (Griffiths, Blignault, & Yellowlees, 2006; Scogin et al., 2007; Zust, 2000); and seven studies (43.8%) tested CBT for anxiety disorders (Bouchard et al., 2004; Deacon & Abramowitz, 2006; Germain, Marchand, Bouchard, Drouin, & Guay, 2009; Hayward, MacGregor, Peck, & Wilkes, 2007; Marchand et al., 2011; Mewton, Wong, & Andrews, 2012; Taylor et al., 2003).

All 438 participants in tests of CBT for depression and depression and anxiety were recruited from rural or remote communities, whereas six of the seven studies examining CBT for anxiety disorders included both rural and urban participants. One study (6.3%) focusing on generalized anxiety disorder (GAD) included 588 participants, 254 (43.2%) of whom identified as rural residents (Mewton et al., 2012). Three studies (18.8%) representing 66 participants examined the effect of CBT on panic disorder (PD) with or without agoraphobia (Bouchard et al., 2002; Deacon & Abramowitz, 2006; Hayward et al., 2007). Fifty-six participants (84.8%) in these three studies were recruited from rural or remote areas. Another two studies (12.5%) representing 68 participants examined CBT for posttraumatic stress disorder (PTSD; Germain et al., 2009; Marchand et al., 2011). Twenty-five participants (35.3%) lived in rural or remote areas. One study of CBT for obsessive compulsive disorder (OCD; 6.3%) included 33 participants, all recruited from rural or remote areas (Taylor et al., 2003).

Ten of the 16 studies required a clinical diagnosis for inclusion (Bouchard et al., 2004; Deacon & Abramowitz, 2006; Germain et al., 2009; Griffiths et al., 2006; Marchand et al., 2011; Mohr et al., 2006, 2011; Porter et al., 2004; Swartz et al., 2002; Taylor et al., 2003), whereas four utilized eligibility criteria based solely upon symptom measures (Craig et al., 2005; Dwight-Johnson et al., 2011; Hayward et al., 2007; Scogin et al., 2007). Two studies determined eligibility based on clinical judgment (Mewton et al., 2012; Zust, 2000).

Of the 16 studies reviewed, half ( $n = 8$ ; 50%) were conducted in the United States (Deacon & Abramowitz, 2006; Dwight-Johnson et al., 2011; Mohr et al., 2006, 2011; Porter et al., 2004; Scogin et al., 2007; Swartz et al., 2002; Zust, 2000). Four studies were conducted in Canada (25%; Bouchard et al., 2004; Germain et al., 2009;



Table 2 (continued)

Study	Adaptations to standard care <sup>a</sup>		Control?	Random assignment?	Blind assessors?	Treatment fidelity adequately assessed?	Intent-to-treat sample?	Adequate attrition data reported?	Adequate outcomes reported?	Methodological rigor score
	Practical	Cultural								
Mohr, Carmody, Erickson, Jin, and Leader (2011)	Treatment delivered by telephone, which addresses lack of health professionals/services in rural areas and accessibility barriers (e.g., cost, travel burden)	Psychological Telephone delivery to address stigma; activity pacing, time management, planning and organization, assertiveness and anger management training, and training aimed at increasing intimacy added as needed to standard CBT	Y	Y	N	Y	Y	Y	Y	6
Mohr, Hart, and Marmor (2006)	Treatment delivered by telephone, addressing lack of health professionals/services in rural areas and accessibility barriers (e.g., cost, travel burden)	Psychological Telephone delivery to address stigma; activity pacing, time management, planning and organization, anger management, and training aimed at increasing intimacy added as needed to standard CBT	N	N	N	N	N	Y	Y	2
Porter, Spates, and Smitham (2004)	Group format maximized clinicians' ability to provide services to greater number of patients in region where access is limited	Cultural Group format may enable social support and normalize experiences with depression in rural areas with fewer resources, chronic stress, and culturally endorsed explanations of symptoms	Y	N	N	N	N	Y	Y	3



Table 2 (continued)

Study	Adaptations to standard care <sup>a</sup>		Control?	Random assignment?	Blind assessors?	Treatment fidelity adequately assessed?	Intent-to-treat sample?	Adequate attendance/attrition data reported?	Adequate outcomes reported?	Methodological rigor score
	Practical	Psychological								
Swartz et al. (2002)	Delivery in supermarket; free childcare available; treatment setting located close to public transportation. These adaptations address lack of mental health providers and services in rural areas, as well as cost, travel burden, child care concerns	Treatment delivered in administrative conference room of supermarket to reduce stigma in rural areas	N	N	N	N	N	Y	Y	2
Depression and anxiety Griffiths, Blignault, and Yellowlees (2006)	Treatment delivered via videoconferencing, supported by case manager who attended each session, addressing lack of mental health professionals in rural areas		N	N	N	N	N	Y	Y	2
		Case manager provided additional emotional support as needed and reinforced CBT strategies through face-to-face interaction, few community								

(table continues)

Table 2 (continued)

Study	Practical	Psychological	Cultural	Control?	Random assignment?	Blind assessors?	Treatment fidelity adequately assessed?	Intent-to-treat sample?	Adequate attendance/attrition data reported?	Adequate outcomes reported?	Methodological rigor score
Scogin et al. (2007)	Treatment delivered in-home, which reduces cost and travel burden associated with accessing care	In-home delivery to address stigma; cognitive modifications for older adults, including in-session cue cards/memory aids, slower pace, and simplified homework assignments; behavioral aspects were emphasized due to low literacy and cognitive impairments among participants to better address mental health burdens	Encouraged inclusion of intervention facilitator (family member or friend) to assist with CBT which may mobilize social support in areas with fewer resources and preference for informal help seeking	Y	Y	Y	Y	Y	Y	Y	7
Zust (2000)	Treatment delivered at local WIC office; transportation and child care provided as needed; group sessions scheduled based on time preferences and perceived common interests of women. These adaptations address the lack of mental health providers and services in rural areas, cost, transportation burden, and childcare concerns	Delivery at WIC office to address stigma; focus on validating participants' thoughts, feelings and experience, with attention to abuse history, which may help reduce burden associated with mental health needs	Holistic model considered spiritual, physical, and emotional components, which likely integrates and supports rural women's preferred coping strategies	N	N	N	N	N	Y	Y	2

Table 2 (continued)

Study	Adaptations to standard care <sup>a</sup>		Control?	Random assignment?	Blind assessors?	Treatment fidelity adequately assessed?	Intent-to-treat sample?	Adequate attendance/attrition data reported?	Adequate outcomes reported?	Methodological rigor score
	Practical	Psychological								
Generalized anxiety disorder Mewton, Wong, and Andrews (2012)	Treatment delivered via Internet-based program; brief, 6-session format. This addresses lack of mental health professionals and services in rural areas, cost, travel burden, and time constraints	Computer delivery to address stigma	N	N	N	N	Y	Y	Y	3
Panic disorder (w/ or w/out agoraphobia) Bouchard et al. (2004)	Treatment delivered via videoconferencing to rural participants, which addresses lack of mental health professionals and services available in rural areas		Y	N	N	N	N	N	Y	2
Deacon and Abramowitz (2006)	Treatment delivered in brief, intensive format over 2 consecutive days to address lack of mental health professionals and services in rural settings		N	N	N	N	N	Y	Y	2

(table continues)

Table 2 (continued)

Study	Adaptations to standard care <sup>a</sup>		Control?	Random assignment?	Blind assessors?	Treatment fidelity adequately assessed?	Intent-to-treat sample?	Adequate attendance/attrition data reported?	Adequate outcomes reported?	Methodological rigor score
	Practical	Cultural								
Hayward, MacGregor, Peck, and Wilkes (2007)	Treatment delivered via computer-based CBT program; study provided laptops to participants who did not have access to a computer. This addressed lack of mental health professionals and services in rural areas, travel burden, and cost	Psychological Computer-based delivery to address stigma	N	N	N	N	N	Y	Y	2
PTSD Germain, Marchand, Bouchard, Drouin, and Guay (2009)	Treatment delivered via videoconference for rural participants, which addresses lack of mental health professionals and services available in rural areas	Mixed CBT program involving anxiety management training, relapse prevention, and exposure; this may emphasize positive coping skills for participants with fewer community resources for help and substantial barriers to care	Y	N	N	N	N	Y	Y	3
Marchand et al. (2011)	Treatment delivered via videoconference for rural participants, addressing the lack of mental health professionals and services available in rural areas	Mixed CBT program involving anxiety management training and exposure; this may emphasize positive coping skills for participants with fewer community resources for help and substantial barriers to care	Y	N	Y	Y	Y	Y	Y	6

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Table 2 (continued)

Study	Adaptations to standard care <sup>a</sup>		Control?	Random assignment?	Blind assessors?	Treatment fidelity adequately assessed?	Intent-to-treat sample?	Adequate attendance/attrition data reported?	Adequate outcomes reported?	Methodological rigor score
	Practical	Psychological								
OCD Taylor et al. (2003)	Treatment delivered via telephone, which addresses lack of mental health professionals and services in rural areas, cost, and travel burden	Telephone delivery to address stigma	Y	N	N	N	N	Y	Y	3
						Treatment based primarily on response prevention with less emphasis on exposure; this may emphasize positive coping skills for participants with few community resources for help and substantial barriers to care				

<sup>a</sup> Adaptations classified based on Grote, Swartz, and Zuckoff's (2008) typology for barriers to care; Practical adaptations = modifications to address pragmatic barriers to care such as lack of local providers and/or inconvenient clinic locations, cost, lack of insurance coverage, limited time/competing priorities, transportation problems, childcare difficulties; psychological adaptations = stigma of mental illness, previous negative treatment experiences, and the burden of mental health needs; cultural adaptations = cultural insensitivity or ignorance of clinicians, as well as the burden associated with living in poverty, particularly navigating multiple social problems and chronic stressors while trying to meet basic needs. There is overlap across categories, as a single adaptation may address more than one barrier.

Marchand et al., 2011; Taylor et al., 2003), three in Australia (18.8%; Craig et al., 2005; Griffiths et al., 2006; Mewton et al., 2012), and one in the United Kingdom (6.3%; Hayward et al., 2007).

### Adaptations

All 16 studies included in this review utilized at least one type of adaptation (e.g., practical, psychological, cultural) when delivering CBT for depression and anxiety disorders for rural residents or in rural settings (see Table 2).

**Practical adaptations.** Practical adaptations most frequently included the use of

technology to overcome the lack of specialty mental health providers able to deliver CBT in rural areas. Ten of the 16 studies (62.5%) made technology-related practical adaptations to standard face-to-face CBT (see Table 3), using telephone ( $n = 4$ ; 25%; Dwight-Johnson et al., 2011; Mohr et al., 2011; Mohr et al., 2006; Taylor et al., 2003), videoconferencing ( $n = 4$ ; 25%; Bouchard et al., 2004; Germain et al., 2009; Griffiths et al., 2006; Marchand et al., 2011), and computer-based ( $n = 2$ ; 12.5%; Hayward et al., 2007; Mewton et al., 2012) delivery. Technological adaptations were most common among studies testing CBT

Table 3  
*Common Adaptations to CBT for Depression and Anxiety Delivered Among Rural Populations or in Rural Settings*

Adaptation	All studies ( $n = 16$ )		Depression studies ( $n = 6$ )		Depression and anxiety studies ( $n = 3$ )		Anxiety studies ( $n = 7$ )		Adaptation type		
	$n$	%	$n$	%	$n$	%	$n$	%	Practical	Psychological	Cultural
	Use of technology	10	62.5	3	18.8	1	6.3	6	37.5	x	x
Telephone-based treatment	4	25.0	3	18.8	0	.0	1	.0			
Video conferencing	4	25.0	0	.0	1	6.3	3	18.8			
Computer/Internet-based CBT	2	12.5	0	.0	0	.0	2	12.5			
Delivery by nontraditional or less-experienced providers	5	31.3	2	12.5	2	12.5	1	6.3	x	x	
Bachelor-level research assistants	1	6.3	0	.0	0	.0	1	6.3			
Case managers	1	6.3	0	.0	1	6.3	0	.0			
Community health workers	1	6.3	1	6.3	0	.0	0	.0			
MSWs without prior CBT experience	1	6.3	0	.0	1	6.3	0	.0			
MSW students	1	6.3	1	6.3	0	.0	0	.0			
Face-to-Face delivery in non-mental-health settings	4	25.0	2	12.5	2	12.5	0	.0	x	x	
Community health center	1	6.3	1	6.3	0	.0	0	.0			
Supermarket	1	6.3	1	6.3	0	.0	0	.0			
WIC office	1	6.3	0	.0	1	.0	0	.0			
In-home delivery	1	6.3	0	.0	1	.0	0	.0			
Group format	3	18.8	2	12.5	1	6.3	0	.0	x		x
Increased emphasis on symptom management	3	18.8	0	.0	0	.0	3	18.8			x

*Note.* CBT = Cognitive-behavioral therapy; MSWs = Master's-level social workers; WIC = Women, infants, and children.



for anxiety disorders. Griffiths and colleagues (2006), the only study delivering CBT for depression and anxiety via videoconference, incorporated case manager support.

Another practical adaptation included training nontraditional or less experienced providers to deliver or support treatment, often under the supervision of more experienced clinicians ( $n = 5$ ; 31.3%). Nontraditional and less experienced providers included trained community health workers (Craig et al., 2005), case managers (Griffiths et al., 2006), MSWs without prior CBT experience (Scogin et al., 2007), MSW students (Dwight-Johnson et al., 2011), and bachelor's-level research assistants (Taylor et al., 2003). In addition to delivery by nontraditional or less experienced providers, one quarter ( $n = 4$ ; 25%) of the studies included in this review delivered face-to-face CBT for depression and anxiety disorders in non-mental-health settings within targeted rural communities. These locations included a community health center (Craig et al., 2005); supermarket (Swartz et al., 2002); Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) office (Zust, 2000); and participants' homes (Scogin et al., 2007).

Three of the studies (12.5%) testing CBT for depression (Craig et al., 2005; Porter et al., 2004) and depression and anxiety (Zust, 2000) delivered CBT using a group format.

**Psychological adaptations.** Eleven of the 16 articles reviewed (68.8%) made psychological adaptations to CBT for depression and anxiety disorders delivered in rural settings or among rural residents. Psychological adaptations were most commonly related to reducing stigma often associated with mental health treatment among rural populations. Previously described adaptations associated with using technology and delivering CBT in non-mental-health settings to reduce practical barriers, also addressed stigma as a deterrent to help seeking. These adaptations allowed rural participants to obtain treatment within their own homes via telephone (Dwight-Johnson et al., 2011; Mohr et al., 2006, 2011; Taylor et al., 2003), computer-based (Hayward et al., 2007; Mewton et al., 2012), or face-to-face (Scogin et al., 2007) treatment, and to seek help at nonstigmatizing community settings, such as community health centers (Craig et al., 2005), supermarkets

(Swartz et al., 2002), and WIC clinics (Zust, 2000).

Additionally, two studies included psychological adaptations to focus more on behavioral strategies and less on cognitive restructuring (Porter et al., 2004; Scogin et al., 2007). Porter and colleagues (2004) used behavioral activation group therapy alone, whereas Scogin and colleagues (2007) emphasized behavioral strategies and developed cognitive modifications for older adults living in rural areas, including in-session cue cards, memory aids, and simplified homework assignments.

Two studies of CBT for depression for rural veterans (Mohr et al., 2006, 2011) made psychological adaptations focused on increasing intimacy and providing assertiveness training, which may be particularly relevant to addressing burden associated with mental health needs, given the high value placed on independence and self-reliance among rural populations.

**Cultural adaptations.** Cultural adaptations for delivery in the rural context were incorporated by nine studies (56.3%) testing CBT for depression and anxiety disorders in rural settings and among rural populations. Cultural adaptations focused on addressing aspects of the rural context, such as a lack of cultural sensitivity among providers, fewer social and community resources, and multiple social problems (e.g., persistent poverty, unemployment) that can result in chronic stress and negatively impact mental health, while also emphasizing the development of social support and coping strategies. Cultural adaptations also acknowledged the experiences of rural residents as well as their culturally endorsed understanding of mental health problems.

Five studies included cultural adaptations that focused on increasing social support for rural residents with depression and anxiety (Craig et al., 2005; Porter et al., 2004; Griffiths et al., 2006; Scogin et al., 2007; Zust, 2000). Three of these studies employed group CBT (Craig et al., 2005; Porter et al., 2004; Zust, 2000), whereas Scogin and colleagues' (2007) study encouraged including a family member or friend as an intervention facilitator to assist with CBT, and Griffiths and colleagues (2006) incorporated face-to-face contact with case managers as part of CBT for depression and anxiety delivered via videoconferencing.

Common cultural adaptations for the rural context also included increased emphasis on developing skills and strategies for symptom management and relapse prevention (Germain et al., 2009; Marchand et al., 2011; Taylor et al., 2003). One study attended to culturally endorsed coping strategies (Zust, 2000).

Finally, two studies made cultural adaptations addressing aspects of the rural context impacting specific subpopulations of interest. Dwight-Johnson and colleagues' (2011) study of rural Latinx with depression included modified treatment examples and homework exercises to reflect situations relevant to the target population. Craig and colleagues' (2005) study testing CBT for women with postpartum depression incorporated educational components tackling underlying societal beliefs and attitudes promoting unrealistic concepts (e.g., perfect mother) that are commonly held by rural women.

### Effectiveness

Fourteen of the 16 studies meeting review criteria (87.5%) found CBT for depression and anxiety effective for addressing the targeted disorder or associated symptoms. All of the studies testing CBT for anxiety disorders (i.e., GAD, PD, PTSD, OCD; Bouchard et al., 2004; Deacon & Abramowitz, 2006; Germain et al., 2009; Hayward et al., 2007; Marchand et al., 2011; Mewton et al., 2012; Taylor et al., 2003) reported that CBT had a significant effect on participants' symptoms. The majority of studies testing the effect of CBT for depression ( $n = 5$ ; 83.3%; Craig et al., 2005; Dwight-Johnson et al., 2011; Mohr et al., 2006; Porter et al., 2004; Swartz et al., 2002) and for depression and anxiety ( $n = 2$ ; 66.7%; Griffiths et al., 2006; Scogin et al., 2007) also found a significant decrease in symptoms.

Although most studies reported statistically significant differences in outcomes as a result of CBT, either when compared with a control/comparison condition via randomized controlled trials and quasi-experimental designs or when assessed over time via preexperimental one group pre/posttest designs, statistical significance does not give insight to the size of the effects. Nine of the studies (56.3%) included in this review reported effect sizes. Six studies used Cohen's  $d$  to report effect sizes (Deacon &

Abramowitz, 2006; Hayward et al., 2007; Mewton et al., 2012; Mohr et al., 2011; Scogin et al., 2007; Taylor et al., 2003). Cohen's  $d$  indicates the standardized difference between two means. A Cohen's  $d$  of 0.2 is considered a small effect, 0.5 suggests a medium effect, and 0.8 indicates a large effect (Cohen, 1988). Studies included in this review reported Cohen's  $d$  effect sizes ranging from 0.03 to 2.69, suggesting variability in the effect of CBT across studies. However, the majority of studies reporting Cohen's  $d$  had effect sizes in the medium to large range. Eta squared was used to demonstrate effect sizes in three studies (Bouchard et al., 2004; Germain et al., 2009; Marchand et al., 2011). Eta squared, the most frequently reported effect sizes for analysis of variance, indicates the proportion of total variability in the dependent variable that is accounted for by variation in the independent variable (Maxwell, Camp, & Arvey, 1981). Intervention effects assessed via eta squared ranged from 0.13 to 0.76, and an effect of time assessed via eta squared ranged from 0.13 to 0.37. This suggests medium to large effects sizes for CBT for depression and anxiety delivered in rural settings.

### Attrition

Given substantial barriers to mental health treatment experienced by rural residents, it is imperative to examine attrition among participants across the 16 studies reviewed. All but one study reported attrition information ( $n = 15$ ; 93.8%), with 10 studies reporting dropout rates and five studies reporting completion rates. Dropout rates across the 10 studies ranged from 0% to 50%, with an average of 23.2%. The average completion rate across the five studies was 66.9%, ranging from 44% to 86.7%.

Three of the four studies (25%) that sampled both rural and urban participants reported attrition by urbanicity level (Bouchard et al., 2004; Germain et al., 2009; Mewton et al., 2012). Mewton and colleagues (2012) found rural participants receiving computer-based CBT for GAD had lower completion rates (37.7%) compared with the full sample (55.1%). Two studies testing the effect of CBT for PTSD compared videoconference delivery for rural participants with face-to-face delivery for urban participants and reported attrition by condition. Higher dropout rates (50% v. 37.5%; Germain et al.,

2009) and lower completion rates (66.7% v. 72.7%; Marchand et al., 2011) were reported among rural participants in the videoconference condition compared with urban participants receiving face-to-face treatment.

### Methodological Rigor

On average, the studies reviewed had low methodological rigor. Methodological rigor scores ranged from 2 to 7, with an average score of 3.25 across the 16 studies (see Table 2).

Less than 20% of studies reviewed ( $n = 3$ ; 18.8%) reported information about adapted interventions' fidelity to standard CBT (Marchand et al., 2011; Mohr et al., 2011; Scogin et al., 2007). Given that all studies included at least one adaptation for delivery in the rural context, this presents a critical concern, as adherence to standard CBT is largely unknown.

Only three studies (18.8%) included in this review were randomized controlled trials (Dwight-Johnson et al., 2011; Mohr et al., 2011; Scogin et al., 2007), whereas five studies (31.3%) utilized quasi-experimental designs with nonrandomized control or comparison conditions (Bouchard et al., 2004; Germain et al., 2009; Marchand et al., 2011; Porter et al., 2004; Taylor et al., 2003).

### Discussion

We identified 16 studies testing CBT for depression and anxiety disorders among rural populations and in rural settings. These studies, conducted between 2000 and 2012, all included at least one adaptation to CBT for delivery in the rural context. However, only three studies assessed these adapted interventions' fidelity to standard CBT. Findings suggest CBT for depression and anxiety is likely effective when delivered among rural populations and in rural settings, although results must be interpreted with caution, given the limited information on fidelity as well as the low overall methodological rigor of these studies.

Our review reinforces the notion that rural residents have been underserved, understudied, and largely ignored by mental health intervention and services researchers. Given the negative outcomes associated with depression and anxiety (Marciniak et al., 2005; Murray & Lopez, 1996; Walker et al., 2015; P. S. Wang et

al., 2003), the limited research testing CBT in rural areas further reflects an unacceptable access disparity and public health concern. Of the 16 articles reviewed, only one tested face-to-face CBT delivered in a specialty mental health setting (Deacon & Abramowitz, 2006). This treatment was not available in the rural community, but required clients to travel to an urban center where they would spend at least one night away from home in order to receive an intensive 2-day CBT intervention. As mental health professional shortages in rural communities have persisted for decades, we, as researchers and clinicians, must grapple with this reality and what it means for rural residents with mental health needs. Findings from this review provide an important first step in identifying adaptations to CBT that have been made to address the substantial practical, psychological, and cultural barriers to evidence-based mental health treatment experienced by rural residents. In this section, we discuss common adaptations that were made to CBT among the studies included in this review and outline directions for future research in this area.

### Common Adaptations

Our findings suggest adaptations to increase rural residents' access to CBT are being made, and that there are likely viable alternatives to face-to-face care delivered in specialty mental health settings, including technology-assisted treatment, delivery by less experienced and nontraditional providers, and services offered in non-mental-health settings. Providing group CBT and placing increased attention on symptom management and relapse prevention were also identified as potentially important adaptations for the rural context. Finally, results indicate that single adaptations may help to overcome multiple types of barriers (e.g., practical, psychological, cultural), suggesting the potential importance of prioritizing these adaptations in future research.

**Use of technology.** The use of technology has been identified as a key strategy for increasing rural populations' access to mental health treatment (Farrell & McKinnon, 2003; Hogan, 2003). This review suggests that technological adaptations are being made to CBT for depression and anxiety disorders when delivered in the

rural context. In fact, the use of technology was the most common adaptation across all studies reviewed (see Table 3). Studies in this review incorporated technology via telephone-assisted delivery, videoconferencing, and computer or Internet-based delivery. Technology-assisted CBT may overcome practical barriers, such as the lack of mental health professionals and services (Ellis et al., 2009; Gamm et al., 2003; Sawyer et al., 2006) and travel burden (Amundson, 2001; Gjesfeld et al., 2012; Hogan, 2003), as well as psychological barriers such as stigma (Fortney et al., 1999; Stamm, 2003).

Technology-assisted treatment, though common across studies, was used in six of the seven (85.7%) studies testing CBT for anxiety disorders. Computer and/or Internet-based CBT was used exclusively among studies focused on generalized anxiety disorders (Hayward et al., 2007; Mewton et al., 2012). Both of the studies testing computer-based CBT were found to be effective, which is consistent with a growing literature in this area (Andrews et al., 2010; Antonacci et al., 2008; Kaltenthaler et al., 2006; Simpson, 2009). Further, although there has been concern regarding rural residents' access to technology, this was not identified as an issue by either study. In fact, Hayward and colleagues (2007) allowed participants, all of whom were rural residents, to borrow computers as needed; however, access to computers was a problem for only 25% of participants. That said, this issue requires further study, as participants in these studies, who were referred by providers or self-referred, may have been more likely to participate because they already had access to devices and reliable Internet service. Mewton and colleagues (2012) reported that rural participants were almost twice as likely to discontinue Internet-based CBT than urban participants. Though literature suggests the acceptability of computer-based CBT (Kaltenthaler et al., 2008), this study raises questions about the acceptability of computer-based delivery in the rural context and suggests the need to tailor intervention content for those living in rural and remote areas.

Three studies of CBT for anxiety disorders compared videoconferencing for rural delivery with urban, face-to-face care (Bouchard et al., 2004; Germain et al., 2009; Marchand et al., 2011), and one study of CBT for depression and anxiety (Griffiths et al., 2006) provided video-

conferencing, with case manager support, to a sample of rural adults. Findings suggest that it is possible and effective to deliver CBT via videoconference to rural residents with anxiety disorders and mixed anxiety and depressive disorders. In fact, all three studies comparing a rural, videoconference condition with an urban face-to-face condition found no significant differences in effectiveness by delivery style. Results of two of these studies (Germain et al., 2009; Marchand et al., 2011) suggest a trend, in that the videoconference condition experienced higher dropout rates than the face-to-face condition. This may suggest that face-to-face treatment results in lower dropout because of increased therapeutic alliance; however, it also may indicate the need to further explore the acceptability of technological adaptations among rural populations.

Griffiths and colleagues (2006) specifically sought to increase the interpersonal connection for participants receiving videoconference-delivered CBT for depression and anxiety by incorporating face-to-face contact with case managers who provided additional support and reinforced intervention strategies. Literature suggests that face-to-face support enhances technology-assisted CBT (Gellatly et al., 2007; Spek et al., 2007; Williams & Martinez, 2008), and in this case, the authors speculated that face-to-face case manager support may have increased intervention acceptability and led to treatment gains with less than the standard number of CBT session (Griffiths et al., 2006). It also is likely that face-to-face support helped to address potential safety issues around using technology to provide depression treatment, given concerns around suicidal ideation.

Finally, telephone-based CBT emerged as a potentially important technological adaptation for the rural context. Results of three studies testing CBT for depression (Dwight-Johnson et al., 2011; Mohr et al., 2009, 2011) and one study testing CBT for OCD (Taylor et al., 2003) suggest telephone-based CBT is likely a safe delivery method despite geographic distances between the patient and provider. Three of the four studies of telephone-based CBT delivered among rural residents found it was effective (Dwight-Johnson et al., 2011; Mohr et al., 2009; Taylor et al., 2003), with two of these studies comparing the intervention with a control condition (Dwight-Johnson et al., 2011 [enhanced



usual care]; Taylor et al., 2003 [nonrandom waitlist control]). It is of note that all of these studies supplemented telephone-based CBT with patient workbooks. Finally, Dwight-Johnson and colleagues' (2011) study suggests telephone-based CBT for depression may be a strategy to reach particularly vulnerable, underserved subgroups within rural communities. Results of this study show that telephone-delivered CBT, adapted to be culturally relevant, was effective and acceptable in treating depression among low-income, rural Latinx.

**Delivery by nontraditional or less experienced providers and in non-mental-health settings.** Practically speaking, CBT delivered by nontraditional or less experienced providers and in non-mental-health settings offers an opportunity to make CBT available within rural communities despite the documented shortage of specialty mental health providers (Ellis et al., 2009; Gamm et al., 2003; Sawyer et al., 2006), and is likely to reduce the travel burden often associated with seeking care from providers outside of the local community (Amundson, 2001; Gjesfjeld et al., 2012; Hogan, 2003). CBT delivered by nontraditional providers may also decrease stigma and increase treatment acceptability among rural residents who have been found to perceive dissimilarities between themselves and specialty mental health providers (Rost et al., 1993). Further, some rural residents express concern about accessing specialty mental health treatment because of lack of anonymity and dense social networks in many rural communities (Logan et al., 2004; Rost et al., 2002; Smalley et al., 2010), and do not want to be seen walking into, or parked in front of, specialty mental health settings, for fear of judgment from others in the community.

Findings from this review are consistent with the broader literature demonstrating that CBT is effective across a range of settings and when delivered by non-mental-health professionals (e.g., Brown & Schulberg, 1995; Hoagwood & Erwin, 1997; Rose & Perz, 2005; Roy-Byrne et al., 2005). Results suggest that CBT for depression and anxiety disorders can be effectively delivered in the rural context by a range of nontraditional and less experienced providers, including bachelor's-level research assistants, community health workers, case managers, MSWs with no prior CBT experience, and MSW students. Further, findings suggest that

delivering CBT in novel, alternative settings in rural communities, such as a conference room of a supermarket (Swartz et al., 2002), a community health center (Craig et al., 2005), a WIC office (Zust, 2000), and in participants' homes (Scogin et al., 2007), is not only effective, but these settings may be more appealing to, and improve treatment engagement among, some rural residents. It is of note that of the articles reviewed, only one study of CBT for anxiety disorders adapted the intervention for delivery by nontraditional and less experienced providers and in non-mental-health settings (Taylor et al., 2003). It may be that face-to-face interventions and in-person support represent a more appealing strategy for delivering depression treatment in rural settings, given concerns related to suicidal ideation, noted above.

Given these results, as well as rural residents' preference to seek help from informal providers and systems of care (Fox et al., 1995, 2001; Merwin et al., 2003, 2006; Norquist & Regier, 1996), it seems particularly important to consider nontraditional providers and non-mental-health settings that may be potential conduits for CBT delivery. Increased attention should be paid to identifying locations in which rural residents naturally go for help when experiencing mental health needs, as well as both settings and potential providers that align with rural residents' known informal help-seeking preferences (Fox et al., 1995, 2001; Merwin et al., 2003, 2006). Finally, this review suggests the promise of in-home treatment for increasing rural residents access to care, particularly among rural older adults with co-occurring health needs and mobility challenges (Scogin et al., 2007).

**Group format.** Providing group CBT was identified as another common adaptation for the rural setting, used in about 20% of studies included in this review. Group CBT has practical utility for rural service delivery, as it allows more people in need to receive evidence-based treatment using fewer resources. This likely leads to greater efficiency, which is particularly important given the lack of available mental health professionals serving rural communities. Delivering group CBT also may address cultural barriers, as group treatment may enable social support from other members, while also normalizing participants' experience with depression and anxiety. Increasing social support

and normalizing rural residents' experience with mental illness may be particularly important in addressing stigma around mental health and treatment in the rural context, in which cultural values, such as independence and self-reliance, often support the belief that mental illness represents an individual deficit (Buckwalter, 1991; Hill & Fraser, 1995; Rost et al., 2002; Shreffler, 1999; Weinert & Long, 1987).

Three studies testing CBT for depression (Craig et al., 2005; Porter et al., 2004) or for depression and anxiety (Zust, 2000) suggest that delivering group CBT in rural areas is feasible and largely effective. Both Craig and colleagues' (2005) and Porter and colleagues' (2004) work found group CBT for depression to be effective, with treatment gains maintained at 3-month follow-up. Zust's (2000) intervention for depression and anxiety revealed a nonsignificant reduction in symptoms for all participants; however, the intervention seemed to have a differential impact on symptoms based on whether participants had experienced intimate partner violence.

Given the low population density in rural areas, the feasibility of group CBT may be questioned. Further, rural residents' concerns around stigma and lack of anonymity may impact the acceptability of group interventions. Studies included in this review suggest that although it may take longer to assemble groups, successful delivery of group depression treatment is possible and likely acceptable in rural settings. In fact, two of the three studies reported that about 90% of participants receiving group CBT for depression completed treatment (Craig et al., 2005; Porter et al., 2004). The dropout rate for participants in Zust's (2000) study who had not experienced intimate partner violence was 11%, also suggesting acceptability; however, 50% of participants who had experienced intimate partner violence dropped out, indicating treatment adaptations may be required for this subpopulation. Further, Craig and colleagues (2005) reported that group CBT for depression likely lessened stigma, enabled social support, and normalized new experiences among their sample of new mothers living in a rural community.

**Increased emphasis on symptom management and relapse prevention.** Three studies testing CBT for anxiety disorders included additional focus on symptom management and

relapse prevention (Germain et al., 2009; Marchand et al., 2011; Taylor et al., 2003). Taylor and colleagues' (2003) telephone-based CBT was based primarily on response prevention, with less focus on exposure, whereas Germain and colleagues (2009) and Marchand and colleagues (2011) delivered a mixed CBT program that involved anxiety management strategies and exposure. These cultural adaptations acknowledge the limited resources and chronic stressors often present in the rural context and are likely to bolster positive coping strategies among rural residents. Given the lack of available mental health services and substantial barriers to care, rural residents may not have access to timely follow-up care, or any care, if they notice signs of relapse. Building rural residents' internal capacity to understand and effectively utilize strategies related to symptom management and response prevention is likely to create a tool kit that can be utilized for self-help long after treatment ends.

### Future Research Directions

Collectively, the studies included in this review represent the early stage of a research trajectory aimed at adapting CBT to be effective, accessible, and acceptable in the rural setting. Although the majority of studies included in this review found CBT to be effective when delivered in the rural context, there is still much work to be done. Future research in this area would benefit from increased methodological rigor, including greater use of randomized controlled trial designs, comprehensive fidelity assessments of adapted interventions to standard CBT, and greater attention to reporting and understanding both effect sizes as well as the clinical significance of adapted interventions. It also would be helpful to manualize CBT adapted for the rural context so that other researchers can implement and replicate existing innovations. Further, there was little mention of sustainability across these studies. It is critical to engage with rural communities when adapting and testing CBT. Community-based intervention research may increase the likelihood of intervention feasibility, acceptability, and sustainability outside of research endeavors. To this end, future work would also benefit from focusing on intervention implementation within real-world settings. Finally, the studies included in this review had samples that were quite homogeneous (see Table 1).



Most study samples were majority women and majority White (among those reporting race), and all studies included in this review were conducted in Western countries. It is important to acknowledge the heterogeneity of rural populations in future research.

This review identified common adaptations made to CBT for depression and anxiety when delivered in rural setting. These adaptations suggest the potential of technology-assisted treatment, as well as delivery in non-mental-health settings and by nontraditional and less experienced providers, to increase access to CBT among rural populations. Both of these strategies assist in overcoming barriers to practical and psychological barriers to care. Given the promise of these approaches, it is important to consider future directions that may bolster these adaptations.

First, as access to technology continues to grow in rural areas, with expansions in broadband and wireless (e.g., 3G, 4G) Internet, it is likely that new innovations in technology-assisted CBT may be possible. Given the pervasiveness of smartphones, there may be opportunities to develop and test apps that deliver technology-assisted CBT, including rural-specific adaptations, and to utilize videoconferencing technology that is embedded within many smartphones to facilitate access to telemedicine.

Second, integrated care has been identified as a potentially important strategy for improving access to mental health care in rural communities (Hogan, 2003; Stamm, 2003). However, no studies in this review utilized an integrated care model to deliver CBT. Given that physical health providers are nonstigmatizing and primary care providers often act as frontline mental health providers in rural settings, it is critical to consider the integration of mental and physical health care as a strategy for adapting and delivering CBT for the rural context.

Third, it seems that training community health workers to deliver CBT for depression and anxiety in rural areas may be a particularly relevant innovation. One study included in our review (Craig et al., 2005) trained community health workers to deliver group CBT for new mothers with depression, and found the intervention was effective and acceptable. Identifying and training community health workers may help to address the lack of mental health professionals in rural communities, while providing care in a manner consistent with rural resi-

dents' help-seeking preferences. Additionally, training community health workers builds the community's internal capacity to address mental health needs among residents.

Fourth, the studies included in this review placed little emphasis on cultural adaptations to acknowledge experiences of rural residents as well as their culturally endorsed understanding of mental health and mental health treatment. For example, deeply entrenched cultural values, such as self-reliance and independence, may impact help-seeking preferences and may be important to incorporate into CBT, as these values likely shape rural residents' thoughts about their mental health needs, help seeking, as well as coping strategies.

### Limitations

Although we identify, discuss, and analyze all available published studies meeting our criteria that test the effect of CBT for depression and anxiety disorders among rural residents or in rural settings, these studies exhibit considerable heterogeneity as well as substantial variation in their methodological rigor. Therefore, it is difficult to compare results across studies. All 16 studies in this review modified or adapted CBT for rural service delivery, but only three assessed fidelity to standard CBT. This inhibits the ability to assess treatment effectiveness or isolate the impact of these adaptations on treatment outcomes. Second, on average, between 25% and 33% of participants in these studies dropped out or did not complete treatment. Although attrition is a known challenge of working with rural participants and in rural settings, those individuals who completed treatment may be qualitatively different from the entire population of rural residents with depression and/or anxiety disorders. Furthermore, these rural participants typically were provided incentives for participation that likely inflated attendance rates. Third, these studies often employed restrictive inclusion and exclusion criteria that limit their generalizability to "real world" implementation.

These limitations notwithstanding, our review suggests that barriers to care faced by rural residents can be understood and accommodated, and that CBT with adaptations is likely effective for rural residents experiencing depression and anxiety disorders. Our findings reinforce the need for more, rigorous research testing both the effectiveness and implementation of CBT with adaptations

for the rural context in order to ensure fidelity to standard CBT, and ensure adapted treatment is acceptable to rural residents with depression and anxiety and sustainable within the rural mental health service system.

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