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Latinos, Anxiety, and Cognitive Behavioral Therapy: A Systematic Review

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Abstract

This systematic review examined intervention studies that used Cognitive Behavioral Therapy (CBT) to treat anxiety among Latinos. PsychINFO, Social Work Abstracts, PubMed, and Medline were searched for manuscripts published between January 1995 through July 2016 as part of a registered review protocol (PROSPERO) following PRISMA guidelines. Studies were included if they were an intervention study that used CBT to treat anxiety in predominately U.S. Latino adult samples. Risk of bias was assessed using two National Heart, Lung, and Blood Institute quality assessment tools. Overall, 4 studies met inclusion criteria. Results supported CBT interventions to be efficacious for Latinos with anxiety and CBT interventions with cultural adaptations to address some barriers to treatment. Limitations and implications of these results are discussed.
Key words: Cognitive Behavioral Therapy, anxiety, Latinos, treatment cultural adaptation.

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Novelty and Significance

What is already known about the topic?

- Cognitive Behavior Therapy (CBT) is an efficacious intervention for the treatment of anxiety disorders.
- CBT has been culturally adapted for the treatment of behavioral health disorders in a variety of different ways.
- There is a paucity of intervention research that has been conducted with Latinx individuals with anxiety.

What this paper adds?

- A comprehensive systematic review of anxiety intervention research with Latinx populations.
- The results showed that cultural adaptations to CBT are common.
- The results showed that it remains unclear if cultural adaptations provide superior results to CBT for Latinx populations.

Anxiety disorders are the most prevalent mental health disorders (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012), effecting an estimated 40 million adults in the United States (USDHHS, 2015) and one in fourteen persons globally at any given time (Baxter, Scott, Vos, & Whiteford, 2014). Anxiety disorders are debilitating (Bandelow & Michaelis, 2015; Combs & Markman, 2014; Stein, Scott, Jonge, & Kessler, 2017) and exacerbate existing health conditions such as asthma and diabetes (El-Gabalawy, Mackenzie, Pietrzak, & Sareen, 2014). Although highly treatable, most individuals (over two-thirds), who experience anxiety symptoms do not receive any form of treatment (Gallo, 2013; USDHHS, 2015). While anxiety disorders impact individuals from all ethnic backgrounds (Kessler *et alia*, 2012), some ethnic groups are more impacted by anxiety than others (Kim *et alia*, 2011). Latinos are one such group (Marques, Robinaugh, LeBlanc, & Hinton, 2011).

Latinos constitute approximately 17.3% of the U.S. population (Stepler & Brown, 2016) and while the evidence suggests that this group is substantially impacted by anxiety (Alegría, Mulvaney-Day, Torres, Polo, Cao, & Canino, 2007; Alegría *et alia*,

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2008) the exact prevalence rates of anxiety among this group is unknown. The equivocal state of the research on prevalence rates of anxiety disorders among Latinos (Chavira & Letamendi, 2015) may be a result of skewed, unrepresentative, and inconclusive population estimates (Alegría *et alia*, 2007; Cabrera-Nguyen, 2014) and therefore Latinos are often underdiagnosed (Lewis Fernández *et alia*, 2016) and undertreated for anxiety (Cook, Trin, Li, Hou, & Progovac, 2017). Despite experiencing anxiety, Latinos underutilize behavioral health services (Salas Wright, Kagotho, & Vaughn, 2014) even though empirically supported treatments (ESTs) and cultural adaptations of behavioral health interventions for anxiety disorders exist (Shea, Cachelín, Gutiérrez, Wang, & Phimphasone, 2016; Chavira *et alia*, 2014). This low rate of service utilization is further exacerbated for some Latinos subgroups, such as Latino immigrants (Lee & Matejkowski, 2012).

Latinos are the largest and fastest growing minority population in the United States (U.S. Census Bureau, 2015), but their behavioral health needs are often unmet (Tran *et alia*, 2014). Latinos are at an increased risk of developing behavioral health issues and having decreased access to services because of social and economic disparities (Bridges *et alia*, 2014; Cho, Kim, & Vélez Ortiz, 2014; Ramos Cortés, Wilson, Kunik, & Stanley, 2017). The lack of Spanish-speaking clinicians and resources is also particularly problematic as Latinos can have limited English language skills (Benuto & Leany, 2017; Kim, 2011). These barriers disadvantage Latinos in accessing quality services, upwards mobility, and their overall well-being (Andrade & Viruell Fuentes, 2011; Salas Wright, Robles, Vaughn, Córdova, & Pérez Figueroa, 2014).

Culture is an increasingly important consideration in the behavioral health field. Influencing help-seeking and health behaviors, culture impacts how behavioral health providers communicate with and deliver services to their clients (Cabassa & Baumann, 2013). Although improving, the overall participation rate of minorities in clinical research has been lacking (U.S. Department of Health and Human Services, 2015). This has raised the issue of the appropriateness of certain behavioral health practices that are used with minority populations (Pineros Leano *et alia*, 2017), such as cultural adaptations. Interventions aimed at treating Latinos often include cultural adaptations (i.e. adaptations to cognitive behavioral therapy, panic control therapy and exposure therapy: van Loon, van Schaik, Dekker, & Beekman, 2013) and these adaptations are thought to be essential for use with minority populations (Barrera, Castro, Strycker, & Toobert, 2013). While Latinos may present culture specific issues in therapy and are thought to benefit from adaptations to the therapy (Hinton, Hofmann, Rivera, Otto, & Pollack, 2011), empirical research needs to be conducted with predominantly (e.g. at least over 50% of the sample) Latino samples to examine the efficacy of anxiety interventions and their associated cultural adaptations.

The efficacy of CBT to treat anxiety is highly supported (Simos & Hoffman, 2013), but intervention studies that have examined the cultural appropriateness of CBT specifically for Latinos is lacking (Carter, Mitchell, & Sbrocco, 2012). CBT without cultural adaptations is effective for English speaking and acculturated Latinos (Benuto & Bennett, 2015; Benuto & O'Donohue, 2015; Chavira *et alia*, 2014), but emerging evidence has suggested CBT with cultural adaptions may be more appropriate for treating diverse subgroups of Latinos, such as immigrants (Hinton *et alia*, 2011). To date, there is no complete synthesis of outcome data for CBT and of the cultural adaptations used with CBT for Latinos with anxiety disorders, despite the importance and relevance of this information in the successful treatment of Latino clients.

This study intends to present 1) a systematic review of Cognitive Behavioral Therapy (CBT) intervention studies aimed to reduce anxiety among Latinos and 2) a description of the cultural adaptations used in the included studies treatment interventions (if adaptations were used) to enhance treatment adherence and outcomes.

Method

Search Strategy and Inclusion Criteria

This systematic review was conducted using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRIMSA) guidelines. As such, this review was registered with PROSPERO (CRD42017070243) to ensure research efforts were not being duplicated. Next, a search was conducted with the PsychINFO, PsychARTICLES, Social Work Abstracts, PubMed, and Medline databases using the keywords: anxiety, anxiety disorder, Cognitive Behavioral Therapy, Cognitive Behavior Therapy, Behavior Therapy, CBT, Latino, Latina, Hispanic, Mexican, and Chicano.

The eligibility criteria for included studies were as follows, 1) peer-reviewed articles published between January 1995 and June 2017; and studies that 2) identified using a CBT intervention to treat anxiety or anxiety symptoms; 3) assessed anxiety symptoms using a standardized measure; 4) employed a randomized controlled trial (RCT) design, a quasi-experimental design, or a one-group pre/post-test design; 5) had a sample of at least 50% Latino adults (over 18 years old); and 6) the sample was being treated in the United States. The timeframe criteria for the search was selected because of the influx of Latin American immigrants coming to the U.S. in the mid-1990's (Passel & Suro, 2005; Pineros Leano *et alia*, 2017), and the sample requirement of at least 50% Latino adults was selected to ensure the results being drawn from the intervention studies were based upon a representative sample of Latinos. Once the studies were identified in the databases, they were imported to Covidence, a systematic review software program. The first and third authors were assigned to be the primary independent reviewers, the second author was assigned to resolve discrepancies. Next, duplicates were removed and a title and abstract search was conducted by the primary reviewers to further narrow the results. Finally, the primary reviewers independently reviewed the full articles for inclusion (including conducting a quality and risk of bias assessment), with discrepancies being resolved by the second author.

Study Selection

As shown in Figure 1, there were 305 records originally identified; 272 records remained after duplicates were removed. All 272 records were screened against the inclusion and exclusion criteria through an examination of their titles and abstracts. The primary reviewers agreed upon 240 articles during screening (88% inter-coder reliability), and conflicts were reviewed by the second author. Overall, 56 articles met the criteria for full text review. These articles were assessed by the primary reviewers using the eligibility checklist (described in section 2.1) as a guide. Discrepancies about articles required a review and discussion between all three authors until a consensus was reached. Overall, 52 studies were excluded for not meeting eligibility criteria (See Figure 1 for reasoning), and the full text review search yielded a total of 4 included studies. The 4 included studies were subjected to a quality and risk of bias assessment, where the studies' quality and risk of bias were assessed using a relevant assessment

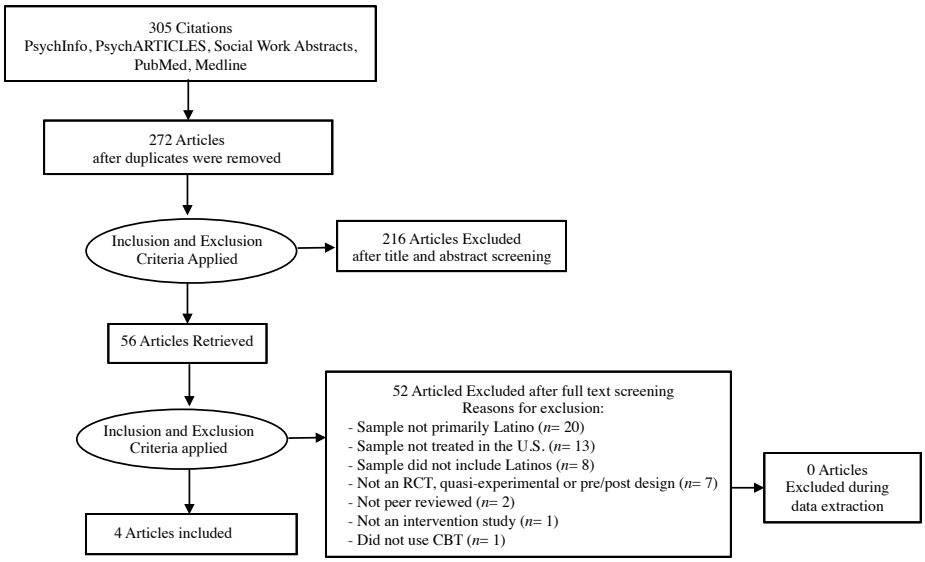

Figure 1. PRISMA Flow Diagram.

tool (described in section 2.4). The references listed in the included studies were then reviewed by the primary reviewers to identify any additional studies that met inclusion criteria. There were no additional studies identified during this process. Thus, overall there were a total of 4 included studies in this review.

Data Extraction

Table 1 summarizes the characteristics of each study that were collected to determine the effectiveness of CBT interventions for anxiety with Latinos. Table 2, using the content model developed by Castro, Barrera, and Martínez (2004), categorizes the cultural adaptations used in each study: cognitive informational adaptations, affective-motivational adaptations, and environmental adaptations. Data extraction on the effectiveness of the cultural adaptations were conducted and compared by the primary reviewers, with discrepancies reviewed and discussed by all three reviewers until a consensus was reached.

Risk of Bias Assessment

This review's inclusion criteria required the included studies to employ a randomized controlled trial (RCT), quasi-experimental, or one-group pre/post-test design. Therefore, this review utilized different risk of bias assessment tools depending on the design to ensure the methodological quality of the studies: 1) the National Heart, Lung, and Blood Institute's (NHLBI) Quality Assessment Tool for Before-After (Pre-Post) Studies with No Control Group; and 2) the NHLBI's Quality Assessment of Controlled Intervention Studies assessment. These NHLBI tools are used to evaluate studies on aspects such as a) sampling strategy, representativeness, size, and power; b) design quality including randomization and blinding procedures, c) validity and reliability of measures, d) drop-out rates, and e) outcomes factors (NHLBI, 2014). The primary reviewers rated each

study on the criteria provided for the studies design and a qualitative quality rating (i.e. good, fair, or poor) was given based on the NHLBI guidance listed for each criterion, with inter-rater reliability being 93%.

Table 1. Characteristics of included studies.

	Feldman *et alia* (2016)***	Green *et alia* (2006)**	Hinton *et alia* (2011)**	Hovey *et alia* (2014)**
Design	RCT	RCT	Pre/Post	Pre/Post
Sample	*N*= 48 Latinos	*N*= 267 (134 Latina women).	*N*= 12 Caribbean Latina women.	*N*= 6 Mexican women.
Intervention	CBPT or MRT groups with no control.	Antidepressant medication, CBT, or referral groups.	CA-CBT or AMR groups, with no control.	Culturally responsive CBT group.
Anxiety measure	SCID-I-RV Patient Edition; PDSS; ASI; AGOR; BSQ.	SLESQ; PTSD module of the SCID for DSM-IV–Non-Patient Version.	PTSD checklist; (SCL-90-R); Nervios scale; Emotion Regulation scale.	PAI Anxiety Scale.
Assessment time points	Baseline, 4 week, 8 week, and 3-month follow-up.	Baseline and 12-month interview.	Pretreatment, posttreatment, and 3-month follow up.	Pretreatment, posttreatment, and 6-month follow up.
Effect size	CBPT baseline/mid/post= -0.50.	Not reported.	PTSD checklist *d*= 1.6; SCL *d*= 1.1; Nervios scale *d*= 1.0; Emotion regulation scale *d*= 2.0.	Pretreatment to follow-up *d*= .72.
Findings	Both groups showed reductions in PD severity and improvements on anxiety measures.	The rate of PTSD decreased in each group with no significant differences across treatments except number of symptoms endorsed from baseline to 12-months.	The CA-CBT group was more effective, with larger clinical improvements on PTSD severity, anxiety, specific Latino idioms of distress, and emotion regulation abilities.	Clinically significant change and functioning for anxiety symptoms posttreatment reported for 50% of sample.

Notes: ***= High risk of bias; **= Moderate risk of bias; *= Low risk of bias; HARS= Hamilton Anxiety Rating Scale; SCID-I = Structured Clinical Interview for DSM-IV Axis I Disorders; PDDS= Panic Disorder Severity Scale; ASI= Anxiety Sensitivity Index-3; AGOR= Agoraphobia Cognitions Questionnaire; BSQ= Body Sensations Questionnaire; SLESQ= Stressful Life Events Screening Questionnaire; SCL-90-R= Anxiety Subscale of the Symptom Checklist-90-R; PAI= Personality Assessment Inventory.

Table 2. Cultural adaptations described in included CBT intervention studies.

		Feldman *et alia* (2016)***	Green *et alia* (2006)**	Hinton *et alia* (2011)**	Hovey *et alia* (2014)**
Cognitive Informational	Literacy Adjustment	**x**	**x**	**x**	**x**
	Spanish Language	**x**	**x**	**x**	**x**
Affective Motivational	Spanish Sayings				
	Latino Values	**x**			**x**
	Migration Experience				
Environmental	Snacks				
	Child-care		**x**		
	Transportation		**x**		
	Flexible Schedule		**x**		
	Intervention Alteration		**x**		

RESULTS

A total of four studies (Feldman *et alia*, 2016; Green *et alia*, 2006; Hinton *et alia*, 2011; Hovey, Hurtado, & Seligman, 2014) were identified and included in this systematic review; these four studies were diverse in terms of study design, sample, and anxiety symptom measurements (See Table 1 for characteristics of the included studies). There were two studies that utilized an RCT design and these studies had larger samples (from 48 participants to 267 participants) and interventions that ranged from 8 weeks to 12 weeks. There were two studies that utilized a pre/post/follow-up design and these studies had smaller samples (from 6 participants to 12 participants), but incorporated harder to reach populations (i.e. migrant farmworkers, treatment resistant

behavioral health clients seeking primary care services), and the interventions ranged from 6 sessions to 14 sessions.

Participants in the included studies were being treated with CBT interventions for different anxiety disorders: PTSD (Hinton *et alia*, 2011), anxiety (Hovey *et alia*, 2014), Panic Disorder with or without agoraphobia (Feldman *et alia*, 2016), and concurrent Major Depressive Disorder and PTSD (Green *et alia*, 2006). Three out of four studies had samples that were completely comprised of Latina women, with the majority of studies including the subethnicity of participants (which included Caribbean Latinos-Puerto Rican and Dominican, as well as those of Mexican descent), and only one study describing the sample as simply "Latinos". All studies recruited samples who reported knowing minimal to no English.

Although all studies used standardized measures to assess for anxiety symptoms, the measures varied substantially, and no two studies used the same measure/s. For instance, two studies used the Structured Clinical Interview for DSM-IV, but one study reported using the research/bilingual patient edition, while the other reported using only the PTSD module from the non-patient edition.

The risk of bias for each study was based on the NHLBI Quality Assessment tools (i.e. the Quality Assessment of Controlled Intervention Studies and the Quality Assessment Tool for Pre-Post Studies with No Control Group) and is provided in Table 1. One study (Feldman *et alia*, 2016) had high drop-out rates and therefore received a "poor" quality rating and a "high" risk of bias rating. The NHLBI Quality Assessment guidelines state that any study with a differential dropout rate of 15% or higher has serious potential for bias and instructs that the study receive a "poor" quality rating and "high" risk of bias rating. Three studies, two with low sample size (Hinton *et alia*, 2011; Hovey *et alia*, 2014) and one with inadequate reporting (Green *et alia*, 2006), received a "fair" quality rating and a "moderate" risk of bias rating.

The first aim of this review was to determine if CBT is considered an effective treatment intervention for anxiety among Latinos. Overall, CBT was supported to be an effective treatment for anxiety among Latinos for two reasons. First, all CBT intervention groups were successful in producing a reduction in anxiety symptoms. While studies reported a range of reduction in anxiety symptoms for their sample, between 35%-100% of participants in the studies experienced clinically significant changes in anxiety symptoms and severity scores. For instance, the Green *et alia* (2006) study reported 35% of participants to have successful symptom reduction with CBT, which resulted in 93 out of their 267 participants with initial comorbid PTSD and depression at baseline no longer meeting criteria for PTSD at the end of treatment. Second, CBT intervention groups were successful in producing clinically significant functioning for comorbid anxiety disorders, such as demonstrating improvement on both PTSD and anxiety severity scores (Hinton *et alia*, 2011). While this review generally supported CBT to be more effective than the control or other intervention conditions, results from the Feldman *et alia* (2016) study demonstrated that participants in both conditions of their study (CBPT and MRT) improved on all measures of anxiety, and some study results were conflicting and had implications for treatment planning. For example, no studies agreed on the most effective CBT format to offer to Latinos. While Hovey *et alia* (2014) described group CBT to be highly effective, more consistent with Latino values, less stigmatizing, and to increase participant social interactions, Green *et alia* (2006) reported that individual CBT sessions were preferred among their participants. Second, although CBT was determined to be effective in the treatment of anxiety, there

were other treatment options that also produced positive results in these studies, such as the medication conditions (treating comorbid MDD and PTSD: Green *et alia*, 2006) and MRT conditions (Feldman *et alia*, 2016).

The second aim of this review was to describe if and how cultural adaptations were used in CBT with Latinos. As shown in Table 2, all studies incorporated cultural adaptations and there were different combinations of cultural adaptations to treatment used in the included studies, which have been categorized using Castro *et alia*'s (2004) framework: cognitive information processing adaptations, affective motivational adaptations, and environmental adaptations. Castro *et alia* (2004) argued that cultural adaptations should be deep structure (core values, beliefs, norms, etc.) changes and should be guided by a sound conceptual framework.

Because all study samples were comprised of participants with minimal English proficiency, all studies employed adaptations to accommodate their participant's literacy and language levels. Most commonly, this adaptation involved translating assessment and treatment materials from English to Spanish as well as having a bilingual provider conduct treatment in Spanish. While all studies employed different adaptations, and had slightly different goals for incorporating these adaptations, all studies ultimately used these adaptations to increase treatment engagement with the Latino population. For instance, Hinton *et alia* (2014) wanted to ensure engagement of their participants with low levels of formal education, while Hovey *et alia* (2014) were concerned with bridging the cultural gap between the therapist and the clients.

Two out of four studies (Feldman *et alia*, 2016; Hovey *et alia*, 2014) utilized affective motivational adaptations that appealed to Latino values. These adaptations were described to be important in increasing participant comfort and trust, while decreasing stigma toward mental health. For instance, Hovey *et alia* (2014) emphasized the importance of culturally valued interactions during treatment, including validating participant's experiences by using simpatía (warmth or kindness), respeto (respect), and personalismo (personalization). The Hovey *et alia* (2014) study demonstrated how culturally valued interactions could be used to increase comfort and trust between the group leaders and group members when discussing topics, such as what child disciplinary tactics are acceptable in the United States (as opposed to what is acceptable in their home country). In a similar vein, the Feldman *et alia* (2016) study incorporated culturally relevant factors identified during focus groups held with Latinos in their studies treatment manual vignettes to increase the relevance of the treatment materials for Latinos.

Only one study (Green *et alia*, 2006) utilized environmental adaptations. These adaptations are generally incorporated to accommodate the needs of low income populations and reduce external barriers to treatment to increase their likelihood for attendance and adherence to treatment (Pineros Leano *et alia*, 2017). Green *et alia* (2006) included many environmental adaptations that provided support to attend treatment, including childcare, bus passes for transportation, and flexible scheduling. Furthermore, Green *et alia* (2006) altered the intervention to meet the preferences of the client, such as changing the therapy format from group therapy to individual therapy. Despite incorporating these adaptations, Green *et alia* (2006) reported that their participants still had trouble attending sessions regularly.

DISCUSSION

Anxiety disorders are highly prevalent (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012; USDHHS, 2015) and debilitating (Bandelow & Michaelis, 2015; Combs & Markman, 2014; Stein, Scott, Jonge, & Kessler, 2017) and although Latinos are substantially impacted by anxiety disorders (Marques, Robinaugh, LeBlanc, & Hinton, 2011), they underutilize behavioral health treatment. This low rate of service utilization is found to be considerably impacted by the presence of a combination of internal and external barriers (Cabassa *et alia*, 2010; Fripp & Carlson, 2017).

Cultural adaptations are thought to target some internal barriers to treatment by increasing social validity and making treatments more acceptable and relevant to Latinos (Cabassa & Baumann, 2013; Castro, Barrera, & Martínez, 2004), yet to date, the extent to which cultural adaptations improve treatment outcomes for Latinos had not been systematically examined. Via a systematic review of the literature, four studies were identified that met inclusion criteria. Though results supported CBT interventions to be efficacious for Latinos with anxiety and found cultural adaptations incorporated within CBT interventions to address some known barriers to treatment, there was limited information available to conclude that cultural adaptations employed produced superior gains to CBT without cultural adaptations. In 2006 Griner and Smith stated that greater specificity of adaptations to interventions would be beneficial for study replication and for determining which adaptations are most effective; the results from this systematic review of the literature suggests that minimal progress has been made in this regard for Latinos. In the spirit of the EST movement, more detailed intervention research is needed to rigorously evaluate treatment outcomes for cultural adaptations.

In this systematic review, CBT interventions produced varying levels of anxiety symptom reduction with Latinos. This finding provides support that CBT can produce clinically significant change in functioning for Latinos who have anxiety and contributes to the extant literature that supports CBT as an effective treatment for adults with anxiety disorders (Simos & Hofmann, 2013). Additionally, CBT interventions were found to produce greater change in anxiety symptoms than the no-treatment or control groups, consistent with research on CBT (Bisson & Andrew, 2008; Coull & Morris, 2011). Despite these positive findings CBT was not the only treatment condition that produced significant reductions in anxiety symptoms among Latinos; medication and MRT conditions also produced reductions in anxiety symptoms. These studies were simultaneously treating treatment resistant or comorbid depressive disorders and the results were presented in light of the reduction in anxiety symptoms and depressive symptoms. Research has suggested that Latinos prefer counseling plus medication in the treatment of depression (Green *et alia*, 2010), which may explain the acceptability and efficacy of these conditions as compared to just CBT for comorbid anxiety and depressive disorders. Thus, while there has been generally strong support for CBT in the treatment of anxiety disorders, CBT's relative efficacy to comparison treatments (i.e. relaxation therapy, supportive therapy, and/or psychopharmacology) remains unclear (for a review, Hofmann & Asnaani, 2012) and this systematic review parallels these findings. Although, given the widespread impairment of anxiety and the dearth of literature conducted on anxiety interventions among Latinos, the levels of improvement towards anxiety symptom reduction from this review suggest that CBT can reduce suffering and impairment with this population.

The behavioral health field has a responsibility to respond to the growth of diversity in the U.S. in a culturally competent way (Bernal, Jiménez Chafey, & Domenech Rodríguez, 2009). Many contextual factors, such as social and economic disparities (Bridges *et alia*, 2014; Cho, Kim, & Vélez Ortiz, 2014; Ramos Cortes, Wilson, Kunik, & Stanley, 2017) are found to create barriers to treatment access for Latinos. In an effort to address these barriers in a culturally competent way, varying mechanisms, such as cultural adaptations, can be employed. The spirit of cultural adaptations is to increase social validity for the target population and thereby increase treatment acceptability, which theoretically should reduce disparities and produce superior results (Cabassa & Baumann, 2013). With the current focus of the field on empirically supported treatments (EST's), the efficacy of cultural adaptations to these interventions should be evaluated (Griner & Smith, 2006) so as to demonstrate exactly in what ways cultural adaptations produce superior gains to standard ESTs.

For Latinos, cultural adaptations that make the treatment more culture-centric by incorporating cultural beliefs, norms, and values and address disparities (Borrayo, Rosales, & González, 2016) should be rigorously evaluated to determine if they do indeed increase social validity, reduce disparities, and produce superior results. This is especially important in light of the research that suggests that lesser acculturated Latinos benefit from cultural adaptations (Hinton *et alia*, 2011). We noted three ways in which cultural adaptations were made in the included studies: these adaptations included cognitive information processing, affective motivational, and environmental adaptations.

Cognitive information processing characteristics include language, age, and developmental level (Castro *et alia*, 2004). Substantial research has highlighted language as a barrier to behavioral health treatment for Latinos (Lewis Fernández *et alia*, 2016; Benuto & Leany, 2017) and all included studies incorporated cognitive informational adaptations in an effort to address this barrier. The language barrier is thought to be particularly problematic because receiving help for behavioral health issues requires an expression of thoughts and feelings that is limited by language difficulties (Cho, Kim, & Vélez Ortiz, 2014). While no two studies incorporated their adaptation in exactly the same way (i.e. translating treatment materials from English to Spanish versus using a bilingual Promotera) and some were more detailed in their study than others if they were creating a Spanish language conceptual equivalent or Latino cultural equivalent (Castro *et alia*, 2004), it was unclear in what ways these adaptations contributed to treatment outcomes. While it is highly likely that language adaptations were necessary and ultimately led to better outcomes for clients in terms of increasing treatment relevance and acceptability among other variables, these items were not measured or reported in a detailed way. Future research should aim to measure, track, and report client outcomes as a result of individual cultural adaptations so that their role and contribution can be more clearly understood.

Latino service access and utilization (and thereby subsequent mental health) are effected by many items, including their level of ethnic identity, acculturation level, and their reported preference for interactions with other Latinos (Falgas *et alia*, 2017). Population characteristics and preferences are important factors for increasing relevancy and acceptability of the intervention for the target population (Castro *et alia*, 2010). Affective motivational adaptations are one way to address these cultural conflicts in intervention activities, yet, these adaptations were only incorporated in two studies by including "Latino values" within the intervention (see Table 2). The Latino subgroup is diverse in terms of nationality, immigration status, and acculturation level among many

other factors (Lewis Fernández *et alia*, 2016) and affective motivational adaptations should be employed to reflect this diversity and make the intervention activities more culturally relevant to these different factors.

Environmental adaptations involve addressing characteristics of the local community (Castro *et alia*, 2004). Latinos are reported to experience significant external barriers to treatment (e.g. lack of bilingual service providers, economic barriers due to high levels of poverty), yet only one study reported incorporating environmental adaptations. The Green *et alia* (2006) study described their participants as having "multiple demands" and being "working-poor women" and thus incorporated adaptations to their interventions to make the treatment more accessible, affordable, and relevant. Despite offering substantial remedies, their participants still had trouble accessing services and dropped out of the treatment conditions at high rates. This finding parallels the extant literature in that external barriers are not thought to be the only barriers preventing Latinos from accessing services; internal barriers, such as stigma or mental health literacy, are found to be considerably prohibitive as well (Benuto & Leany, 2017; Benuto & O'Donohue, 2015). Thus, although Green *et alia* (2006) did not describe how or when their participants took advantage of the environmental adaptations, these adaptations did not remedy barriers as intended. Therefore, this study contributes to the hypothesis that both external and internal barriers may prevent Latinos from accessing services.

The current review are not without limitations. First, the generalizability of the findings is limited. The current review argues that CBT interventions can be effective for use with Latinos with anxiety, but this finding is based on the synthesis of results from only four studies. Furthermore, the sample size of two out of the four studies was small and the participation of different subgroups of Latinos was limited. For instance, of the three studies that included subethnicity in their sample, only Puerto Rican, Dominican, and Mexican subgroups were represented (and in very small numbers). These factors represent serious issues for generalizability; more research is needed with diverse Latino subgroups and larger sample sizes. Furthermore, because subethnicity was a largely unavailable characteristic in the examined literature for this systematic review, we argue that subethnicity needs to be reported in studies. This characteristic is particularly relevant for studies that want to make claims about efficacy of specific treatments for Latinos (as an aggregate group).

While the findings of the current review are not without limitations, they do highlight some very important points. First, there is a paucity of CBT intervention research for anxiety that has been conducted with Latino participants. Out of the 272 potential CBT intervention study articles discovered for this review, only 24 studies explicitly reported including any Latino participants. It should be noted that some of the 272 potential studies had an "Other" category, which although indiscernible, likely included Latinos among other minority groups. Of the 24 studies that included Latinos, four included a predominantly Latino sample, with over 50% of participants identifying as Latino. The remaining 20 studies included less than 30% Latinos, with some including as few as 2 Latino participants. The dearth of research conducted with large samples of Latino participants is concerning and suggests the state of the literature to be underdeveloped. Future intervention research should include more diverse and larger numbers of Latino participants in their samples. Second, the current review was unable to evaluate cultural adaptations in a uniform way. None of the studies used the same cultural adaptation nor did they describe the adaptation and its outcome in the same level of detail. This made evaluating the cultural adaptation by specific criteria

difficult. We opted to examine the cultural adaptations by their relevance as a solution to known barriers to treatment and their contribution as a comprehensive solution. For instance, one study offered transportation and flexible scheduling and this was viewed as a more comprehensive solution to accessibility barriers than only offering transportation or flexible scheduling. Although all cultural adaptations were incorporated to make the treatment more accessible and relevant for Latinos, this review highlight the need for future research to describe their adaptations and treatment outcomes in more detail to allow for replication and a more systematized evaluation of their efficacy.

Finally, there are limitations of the current review that should be noted. First, the inclusion criteria required studies to include 50% or more Latinos in their samples. This criterion likely excluded some relevant studies that examined the efficacy of CBT for Latinos with anxiety. In fact, the current review excluded 20 studies, that despite having Latinos in their sample, were excluded for failing to include a more representative number of Latinos in their sample. Although, all 20 of the excluded studies included less than 30% of Latinos in their sample (with three studies including less than 5% of Latinos), and some simply listed a low percentage of "minority" participants, suggesting serious issues in representation. Second, the inclusion criteria required studies to have treated the sample in the United States. There is a chance that excluding studies conducted in Mexico, Latin America, or other heavily Latino populated countries could have omitted some relevant studies that examined the efficacy of CBT for Latinos. Although, the articles that were excluded for this reason were primarily from countries not generally believed to be heavily Latino populated: Iran, Australia, Norway, the Netherlands, and Sweden.

The current review supported CBT to be an effective treatment intervention to reduce anxiety for Latino populations. Additionally, cultural adaptations were determined to be important in reducing some barriers to treatment. Although many studies lacked detail of their cultural adaptations that would make replication possible, we argue that the listed cultural adaptations had value. For instance, it was clear the cognitive informational adaptations, such as offering Spanish language services, were necessary and should be included in CBT interventions with Latino clients. Importantly, this review highlighted that Latinos are not commensurately represented in intervention research and we suggest that future research should aim to include diverse, large numbers of Latinos in their sample to address this gap.

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