

CULTURALLY ADAPTED MENTAL HEALTH INTERVENTIONS: A META-ANALYTIC REVIEW

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There is a pressing need to enhance the availability and quality of mental health services provided to persons from historically disadvantaged racial and ethnic groups. Many previous authors have advocated that traditional mental health treatments be modified to better match clients' cultural contexts. Numerous studies evaluating culturally adapted interventions have appeared, and the present study used meta-analytic methodology to summarize these data. Across 76 studies the resulting random effects weighted average effect size was $d = .45$, indicating a moderately strong benefit of culturally adapted interventions. Interventions targeted to a specific cultural group were four times more effective than interventions provided to groups consisting of clients from a variety of cultural backgrounds. Interventions conducted in clients' native language (if other than English) were twice as effective as interventions conducted in En-

glish. Recommendations are provided for improving the study of outcomes associated with mental health interventions adapted to the cultural context of the client.

Keywords: multicultural, racial/ethnic, language, psychotherapy outcomes, meta-analysis

Mental health practitioners have a moral and ethical responsibility to provide effective interventions to all clients by explicitly accounting for cultural contexts and cultural values relevant to clients' well-being (Trimble & Fisher, 2006). The increasing cultural diversity of North America and the increasing visibility of cultural issues in the practice of psychology have helped the profession to recognize this responsibility (e.g., Lo & Fung, 2003; Sue & Sue, 2003). Mental health professionals are becoming more aware of multicultural issues and of the need to improve the accessibility and quality of mental health services for individuals from historically oppressed racial/ethnic groups (Sue, 1998). To address concerns regarding the availability and quality of mental health services to underserved racial/ethnic groups, many scholars in the field have urged that mental health interventions be adapted to clients' cultural contexts and values (e.g., Castro & Alarcon, 2002; Constantine, 2002; S. Sue, 2003).

Despite the consistent and widespread emphasis in the professional literature for psychologists to culturally adapt mental health interventions to better serve clients, the research literature regarding culturally adapted mental health interventions remains diffused. There are a host of opinions about what constitutes effective cultural adaptations, but there has been limited scrutiny of the empirical basis for those adaptations. In short, although psychologists may believe that it is beneficial to adapt mental health interventions to meet clients' needs, they may also believe that

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Work associated with this article was supported by grants from the David O. McKay School of Education and TP Industrials, Inc. and by the graduate research fellowship from Brigham Young University. We thank the student researchers who assisted with locating and coding the studies: Denise Albino, Brent Crandal, Laura Cummings, Todd Dunn, Karen Gochnour, Marissa Johnstun, Dan Mecham, Sarah Moffit, Jared Montoya, Michelle Moody, Haley Nicholas, and Megan Pratt.

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there is currently little empirical justification for doing so. As a result, they may do very little to modify their practices. With ever increasing attention to empirically supported treatments (Levant, 2005), it is increasingly essential to rigorously evaluate the effectiveness of cultural adaptations to those interventions. Therefore, the purpose of this meta-analysis is to summarize the empirical research literature regarding outcomes associated with cultural adaptations to mental health interventions.

Over the past three decades, many authors have noted that people of color tend to underutilize mental health services, seek therapy only when their problems have become severe, and drop out of therapy prematurely (e.g., Flaskerud & Hu, 1994; Zane, Enomoto, & Chun, 1994). There are several explanations for these trends. First, the cultural values of people of color may be incongruent with traditional mental health practices. Although few therapists overtly discriminate against clients of color, many therapists are not familiar with the cultural worldviews, lifestyles, and histories of various racial/ethnic groups (Marger, 2002; S. Sue, 1988; S. Sue & Zane, 1987). As summarized by Gelso and Fretz (2001):

Numerous researchers agree that the single most important reason both for the underutilization of mental health services by ethnic minority clients and for the high dropout rates is the inability of psychotherapists and counselors to provide culturally sensitive/responsive therapy for the ethnic minority client. (p.153)

Historically, counseling and psychotherapy have focused predominantly on the therapeutic needs of upper- and middle-class European Americans (Hall, 2001; Ponterotto & Casas, 1991; Trusty, Davis, & Looby, 2002). Even with increasing acknowledgment of multicultural issues, contemporary psychotherapy continues to reflect the values of Western culture, most notably a persistent bias toward individualism (Carter, 1995; Pedersen, 2004; Smith & Draper, 2004). Collectivistic values and contextual circumstances such as socioeconomic status, home and community environment, spirituality, opportunities for development, and systematic forms of discrimination are often ignored or minimized (Smith, 2004). The experiences of culturally diverse clients are often misinterpreted and their mental health needs are often unmet (Hall, 2001; Richardson & Molinaro, 1996; Trusty et al., 2002). The pervasive influence of Western values

in psychotherapy and the widespread ignorance among psychotherapists regarding others' cultures have not helped to foster trust in mental health services among clients of color (e.g., Beauvais & LaBoueff, 1985; Vace, DeVaney, & Wittmer, 1995; D. Sue & Sue, 2003).

Second, clients of color are sometimes mistrustful of mental health services because of historic racial disparities and a scarcity of therapists from their own ethnic background who speak the same native language (Flaskerud & Hu, 1994; Marger, 2002; S. Sue, 1988; S. Sue & Zane, 1987). Despite increased recruitment and retention efforts in graduate training programs, there continues to be a conspicuous lack of therapists who are culturally diverse and bilingually proficient (e.g., Maton, Kohout, Wicherski, Leary, & Vinokurov, 2006).

Third, there is a lack of mental health services available in many communities where people of color reside (Flaskerud & Hu, 1994; Marger, 2002; S. Sue, 1988; S. Sue & Zane, 1987). Economically disadvantaged clients in rural and inner city settings are often unaware of services and may have difficulties attending mental health centers that are inconveniently located, impractical (e.g., limited evening services, no child care available), and expensive—all of which compound the perception that they are insensitive to the clients' needs (Zane et al., 1994).

To improve psychotherapy utilization, retention, and outcomes among clients from historically disadvantaged backgrounds, scholars have repeatedly emphasized the need for multiculturally competent mental health practices (Arredondo et al., 1996; Castro & Alarcon, 2002; S. Sue, 1998, 2003). Almost 30 years ago, Stanley Sue (1977) provided specific recommendations to culturally modify mental health interventions. Many subsequent proposals have greatly lengthened the list of ways to culturally adapt mental health service delivery systems, with at least four common methods recommended in the literature. First, scholars emphasize the need to explicitly incorporate the cultural values of the client into therapy (Oliver, 1989; Rowe & Grills, 1993; Wampold, 2001). Clients of color are more likely to seek out and use mental health services when their values and beliefs are congruent with the interventions provided (Coleman, Wampold, & Casali, 1995; Flaskerud & Nyamanthi, 2000; Rogler et al., 1987). For example, African American clients are more likely to remain in treatment

when mental health interventions are based on Afrocentric values (e.g., Banks, Hogue, Timberlake, & Liddle, 1998; Oliver, 1989).

Second, to facilitate client perceptions of therapists' understanding and similarity, clients can be matched with therapists of the same race/ethnicity who speak the same native language (Coleman et al., 1995; Lam & Sue, 2001). Although there are confounding variables that need to be considered, research has shown that when compared to nonmatched clients, clients matched to therapists by native language and ethnicity are less likely to drop out prematurely from therapy and more likely to report satisfaction with the interventions provided (Campbell & Alexander, 2002; S. Sue, 1998).

Third, mental health interventions and systems should be easily accessible and targeted to clients' circumstances (Flaskerud, 1986; Zane et al., 1994). Whenever possible, services should be delivered within the community where clients reside (Uba, 1982). Optimally, the mental health services should be specifically designed for the local context. For example, Asian American clients who attended clinics specifically designed for Asian Americans living in ethnic neighborhoods of Los Angeles had better outcomes than those who attended mainstream mental health clinics (Yeh, Takeuchi, & Sue, 1994).

Fourth, mental health practitioners should cooperate with support resources available within clients' community, spiritual traditions, and extended family (e.g., Armengol, 1999; Jackson-Gilfort et al., 2001; Prizzia & Mokuah, 1991). For example, when Latina mothers were explicitly involved in the treatment of their children through recounting cultural folk stories, the children showed significant reductions in presenting symptoms compared to traditional therapy even after one year of follow-up (Costantino, Malgady, & Rogler, 1986).

Although these kinds of cultural adaptations to psychotherapy would appear to have great promise in better meeting the needs and experiences of clients from historically disadvantaged backgrounds, a variety of objections have been raised (Thomas & Weinrach, 2004; Vontress & Jackson, 2004; Weinrach & Thomas, 2002, 2004). One of the primary arguments leveled concerns the lack of a solid research base for multicultural approaches to psychotherapy. Although the research base was clearly limited in previous decades, the number of empirical research reports

on culturally adapted mental health treatments has increased exponentially over the past several years. A sizable corpus of research on the topic now exists, and there is a clear and pressing need for a thorough review of the research conducted to date. To that end, we sought to gather and synthesize the empirical literature of outcomes associated with culturally adapted mental health interventions using meta-analytic methodology. We were particularly interested in ascertaining the client characteristics (e.g., race, gender, age), research characteristics (e.g., research design, type of control group), types of cultural adaptations to the interventions provided (e.g., providing therapy in the client's native language, consultation with individuals familiar with the client's culture), and types of outcomes (e.g., mental health symptoms, client retention rates) that were associated with the greatest benefits to clients across studies.

Method

Literature Search

In order to obtain published and unpublished studies that examined the effectiveness of culturally adapted treatments, several techniques were used. First, searches were conducted using the following electronic databases: PsycINFO, Family and Society Studies Worldwide, PsycArticles, Social Work Abstracts, Sociological Abstracts, Academic Search Elite, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Criminal Justice Abstracts, Education Resources Information Center (ERIC) databases, Medline, Science Citation Index (SCI), Social Sciences Abstracts, Social Sciences Citation Index (SSCI), CQ Researcher, and Digital Dissertations. In order to diminish the number of inadvertent omissions, databases yielding the most citations were searched one to three additional times through August 2004. Next, reference sections of located articles were physically examined to identify additional studies that met inclusion criteria but were not identified in the database searches. Finally, through email, letters, and phone calls we solicited authors who had published two or more articles on the topic to provide information regarding other (unpublished) studies that could possibly be included in the meta-analysis.

Studies selected for inclusion in the meta-analysis were written in English and provided

quantitative data evaluating a mental health intervention that was adapted based on cultural considerations. The manuscript had to explicitly state that the adaptations were based on culture, ethnicity, or race. We did not include studies that were adapted for other characteristics (i.e., gender) unless they were also adapted for culture, ethnicity, or race (e.g., Latina women). Studies that simply assigned clients to therapists of the same ethnic group or native language (i.e., ethnic or language matching) were not included in this meta-analysis unless they also adapted the content, format, or delivery of the intervention to be culturally appropriate. We did not exclude research reports based on the apparent quality of the research conducted because we were interested in describing the entire corpus of literature available on the topic and because excluding research reports can introduce biases into the results of a meta-analysis (Glass, McGaw, & Smith, 1981; Rosenthal, 1991). Case studies, single-subject designs, qualitative research articles, analogue studies in which no interventions were delivered, and conceptual/theoretical papers were excluded.

Data Coding

Coding teams of two members each were established to help verify the accuracy of coding and data entry. Each article was coded twice by separate teams of coders, with the second coding team having access to the data of the first team for purposes of verification and correction of inaccuracies. Coders extracted independent and identifiable characteristics from each study. These characteristics included: (a) the source of the study (journal article, dissertation, etc.); (b) the number of participants and their age, gender, and ethnicity if reported; (c) the type of population receiving the mental health intervention (normal community members, at-risk groups and clinical populations); (d) the treatment type and duration; and (e) the racial/ethnic composition of the comparison groups (groups of mixed-race vs. same-race participants).

The majority of information obtained from the studies was extracted verbatim from the reports. As a result, the interrater agreement was quite high for categorical variables (Cohen's $kappa$ ranged from .72 to .95 across variables, with a mean of .83, $SD = .07$) and for continuous variables (intraclass correlations using one-way ran-

dom effects models for single measures [Shrout & Fleiss, 1979] that ranged from .74 to .99, with a mean of .94, $SD = .11$). Discrepancies across coding teams were resolved through further scrutiny of the manuscript.

Computation of Effect Size Estimates

Among the studies included in this meta-analysis, several different statistics were reported: correlations, analyses of variance (ANOVAs), t tests, odds ratios, chi squares, means and standard deviations, and p values. In order to compare these data across studies, the statistics reported were transformed to standardized mean differences (Cohen's d) using the Meta-analysis Calculator software (Lyons, 1996). When an analysis was reported to be "statistically significant" but no statistic was provided, the d value was determined by the corresponding $alpha$ level (assuming two-tailed $alpha = .05$ unless reported otherwise). Analyses that reported results as "nonsignificant" but gave no additional information were set to effect size $d = .00$. These procedures yielded conservative effect size estimates. The direction of all effect sizes was coded uniformly, such that positive values indicated a comparatively greater benefit from the culturally adapted intervention and negative values indicated that the control or comparison group had a more beneficial effect than the culturally adapted intervention.

Several studies reported data on multiple outcome measures. For example, some studies assessed attendance/attrition rates in therapy as well as aspects of symptom reduction. According to the assumption of statistically independent samples, there would be a greater likelihood of nonindependence in the data should each effect size be used in the omnibus analysis (Cooper, 1998; Cooper & Hedges, 1994; Hedges & Olkin, 1985). Therefore, we averaged the effect sizes within each study (weighted by the number of participants included in the analysis) to compute an aggregate effect size (Mullen, 1989), such that each study contributed only one data point in the analyses.

Results

Descriptive Characteristics

Statistically nonredundant effect sizes were extracted from 76 studies, with a total of 25,225

participants. Across the 76 studies, 71 (93%) reported client gender, with 55% of the total being female. All 76 studies reported client ethnicity, with an overall breakdown of 31% African Americans, 31% Hispanic/Latino(a) Americans, 19% Asian Americans, 11% Native Americans, 5% European Americans, and 3% not specified (i.e., "other") or not included in one of the above groups. Thirty-six studies (47%) reported the ethnicity of the clinicians/professionals providing the intervention, with a breakdown of 34% African Americans, 29% Hispanic/Latino(a) Americans, 19% Asian Americans, 10% European Americans, and 8% Native Americans.

Studies included in this meta-analysis typically involved the comparison of a culturally adapted mental health intervention to a traditional mental health intervention. For example, Organista, Munoz, and Gonzalez (1994) contrasted client retention rates at mainstream clinics with those found at a culturally sensitive outpatient clinic with bilingual and bicultural therapists serving low-income clients of color. However, the type of outcome measures used and the types of cultural adaptations provided differed widely across studies. The most frequently mentioned cultural adaptations (84% of all studies) involved explicitly including cultural values/concepts into the intervention. For example, an intervention with children included storytelling about cultural folk heroes (Costantino et al., 1986, 1994). In addition, many of the interventions attempted to match clients to therapists of the same ethnic group (61%) and native language if other than English (74%). In at least 41% of the reports, the clinic or organization providing the mental health intervention explicitly served clients from culturally diverse backgrounds (e.g., the clinic title or mission reflected a cultural or multicultural emphasis). Several studies also included explicit collaboration/consultation with individuals familiar with the clients' culture (38%), outreach efforts to recruit underserved clients (29%), provision of extra services designed to increase client retention (24%) such as child care during sessions, oral administration of written materials for illiterate clients (21%), cultural sensitivity training for professional staff (17%), and referrals to additional service agencies (15%). Overall, there was a great deal of overlap across the types of adaptations to traditional mental health interventions that were provided within studies, with 50% of the studies providing two to four types of

adaptations and 43% of the studies providing five or more types of adaptations. Because all studies reported providing culturally based adaptations to the content or delivery of mental health interventions, we first collapsed all studies in an omnibus analysis and subsequently conducted analyses that investigated specific aspects of the studies, including differences across the types of adaptations provided.

Omnibus Analysis

Across all 76 studies, the random effects weighted average effect size was $d = .45$ ($SE = .04$, $p < .0001$), with a 95% confidence interval of $d = .36$ to $d = .53$. The data consisted of 72 nonzero effect sizes, of which 68 (94%) were positive and 4 (6%) were negative. Effect sizes ranged from $d = -.48$ to $d = 2.7$. The variability of the effect size estimates was quite high, with the index of heterogeneity reaching statistical significance ($Q_{(75)} = 459.0$, $p < .0001$). These results suggest that systematic effect size variability was unaccounted for. In other words, it was likely that factors associated with the studies (e.g., publication status), participant characteristics (e.g., race), research procedures (e.g., experimental vs. single-group designs), the type of cultural adaptations (e.g., involving cultural consultants), and the type of outcome measure (e.g., mental health symptoms vs. client retention rates) may have moderated the overall results. We therefore conducted additional analyses to determine the degree to which these other variables moderated the variability in magnitude of effect size estimates.

Assessment of Publication Bias

To evaluate whether the omnibus results were biased against the null hypothesis, we conducted several procedures to detect possible publication bias, also called the *file drawer effect* (Rosenthal, 1979). Publication bias can occur in a meta-analysis because studies with statistically significant results are more likely to be published than are studies with statistically nonsignificant results. Because published studies tend to be located more readily than unpublished studies, a meta-analysis that disproportionately includes published results may be characterized by excessively high estimates of the actual effects.

As a first step in evaluating possible publica-

tion bias, we generated a scatter-plot of the effect sizes (x -axis) by the number of participants in the study (logarithmic y -axis). Typically, it is expected that the resulting pattern of data will resemble an inverse funnel or elongated pyramid, which shape demonstrates that the studies with the fewest number of research participants tend to have increased variability in the magnitude of effect sizes (Begg, 1994). The scatter-plot using data from the 76 studies included in this meta-analysis demonstrated a relative scarcity of studies of low sample size and negative results. Because studies with low sample size and negative results tend to remain unpublished, the possibility of publication bias seemed likely and further examination of potential publication bias was necessary (Rosenthal, 1979).

As a second step, the mean weighted effect size from unpublished reports was compared to the mean weighted effect size from published reports. Fifty-seven studies that were published in journals yielded similar average effect sizes (mean $d = .45$) to 19 studies that were unpublished (viz., conference presentations, theses, and dissertations; mean $d = .43$). A random effects weighted ANOVA conducted between published and unpublished studies revealed no statistically significant difference ($Q = .06, p = .81$). Therefore, this analysis did not support the customary finding for published reports to contain effect sizes of higher magnitude than unpublished reports, which evidence contradicts the possibility of publication bias affecting the results.

As a third step, a fail-safe N (Begg, 1994) was conducted. A fail-safe N is an estimate of the number of "missing" research reports averaging an effect size of $d = .00$ that would be required to render the present omnibus effect size estimate statistically nonsignificant. Calculation of the fail-safe N showed that at least 904 studies with null results would need to be located. Given the resources required to conduct psychotherapy outcome research, it seemed unlikely that so many additional studies on the topic had been conducted.

As a final step, the "trim and fill" method of Duval and Tweedie (2000a, 2000b) was utilized to estimate the number of missing studies due to publication bias. This method involves removing ("trimming") outlying studies that have no corresponding values on the opposite side of the distribution and then recalculating the mean effect size. This process is repeated until the distribu-

tion is symmetrical with respect to the mean. In our analyses, we followed the recommendations of Duval and Tweedie (2000b) in using L_0^+ to estimate the number of "missing" studies, using formulae provided by Jennions and Moller (2002). The final step in the procedure is to replace the "trimmed" studies along with "filled" estimated values of the "missing" studies on the other side of the distribution. The "filled" studies correspond with the opposite values of those "trimmed." The resulting data set inclusive of "filled" missing studies is then used to calculate a new omnibus effect size, with statistically nonsignificant values indicating potential publication bias. In the current study, the recalculated random effects weighted mean effect size was $d = .26 (p < .00001)$. Thus, publication bias does not appear to be a substantial threat to the results obtained in this meta-analysis.

Moderation by Client Characteristics

To investigate whether the client outcomes in culturally adapted mental health interventions varied as a function of client characteristics, we conducted analyses involving participant age, clinical status, gender, ethnicity, and level of acculturation. In order to establish whether differences in the age of the sample accounted for significant between-studies variance, the effect sizes from the 65 studies that reported participants' average age were correlated with the corresponding effect size for that study. The resulting random effects weighted correlation was $.29 (p = .004)$. Studies with participants who were older in age yielded effect sizes of moderately higher magnitude than those with younger participants.

We next evaluated differences in client outcomes across their clinical status. Specifically, we compared the magnitude of the effect sizes obtained when participants were at-risk groups, clinical populations already diagnosed with a mental illness, and normal community members without a mental health diagnosis (see Table 1). The resulting Q value of 2.2 ($p = .34$) was nonsignificant, indicating that the clinical nature of the sample did not moderate the results. Clients from at-risk groups and clinical populations were as likely to benefit from the mental health interventions as clients who did not have apparent mental health concerns.

To evaluate the possible association of client

TABLE 1. Analyses of Weighted Average Effect Sizes Across Participant Characteristics

Variable	Q_b	p	k	d^+	95 % CI	Q_w	p
Sample type	2.2	.34					
At-risk groups			37	.40	[.27, .52]	34.0	.57
Clinical populations			30	.52	[.39, .65]	77.7	<.001
Normal community members			9	.38	[.13, .63]	10.9	.21
Client gender	.1	.85					
100% Female			9	.31	[.06, .55]	7.0	.54
100% Male			6	.34	[-.04, .72]	3.2	.66
Client ethnicity	1.6	.67					
100% African American			19	.45	[.26, .64]	10.4	.67
100% Hispanic/Latino(a) American			18	.56	[.38, .75]	25.6	.08
100% Asian American			11	.53	[.30, .75]	19.4	.04
100% Native American			7	.65	[.36, .95]	26.6	.006
Client acculturation level	.9	.63					
Low acculturated			27	.50	[.36, .64]	42.6	.02
Moderately acculturated			23	.45	[.28, .61]	28.7	.15
Mixed sample or insufficient information			26	.40	[.26, .54]	50.9	.002

Note. k = number of studies; d^+ = the effect size, random effects weighted standardized mean difference; Q_b = Q -value for variance between groups; Q_w = Q -value for variance within groups, an indicator of effect size homogeneity.

gender, the effect sizes from the 71 studies that reported client gender composition were correlated with percentage of female participants in the study. The resulting random effects weighted correlation was .02 ($p = .85$), indicating no association between participant gender and study outcome. To further explore the relationship between gender and effect size, effect sizes extracted from studies that had either 100% female or 100% male participants were compared with one another (see Table 1). The differences between samples with exclusively females or males did not reach statistical significance $Q = .1$ ($p = .85$), confirming that participant gender did not moderate the results obtained.

To ascertain whether differences in the racial/ethnic composition of the participants accounted for significant between-studies variance, the percentage of clients from each racial/ethnic group was correlated separately with the corresponding effect size. Within the 33 studies reporting some African American participants, the weighted correlation was .07 ($p = .70$), indicating no association between the results obtained and African American participants. Within the 32 studies reporting some Hispanic/Latino(a) American participants, the weighted correlation was .37 ($p = .007$). Studies with higher percentages of Hispanic/Latino(a) participants had effect sizes of greater magnitude than studies with lower percentages of Hispanic/Latino(a) participants. Within the 21 studies having some Asian American participants, the weighted correlation was

.07 ($p = .65$), indicating no association between the results obtained and Asian American participant composition. And within the nine studies having some Native American participants, the weighted correlation was .15 ($p = .66$), once again indicating no association between the results obtained and Native American participant composition. As an additional step in determining possible differences in the client outcomes based on race/ethnicity, nonredundant effect sizes calculated with samples of a specific ethnic group were analyzed (e.g., 100% African American participants compared with samples of 100% Asian American participants, etc.; see Table 1). The results of the random effects weighted ANOVA were not statistically significant ($Q = 1.6$, $p = .67$). Thus, it appears that the ethnicity of the client generally did not moderate the results obtained, with the possible exception of Hispanic/Latino(a) American clients.

We next calculated differences across samples with different levels of inferred client acculturation. Although 26 studies contained either mixed samples or insufficient information to estimate the level of client acculturation, 27 studies involved clients characterized by low levels of acculturation (e.g., immigrants with limited English proficiency residing in an ethnically homogeneous neighborhood), and 23 studies involved clients characterized by moderate levels of acculturation (e.g., second generation adolescents). As seen in Table 1, studies with clients characterized by low levels of acculturation had average effect

sizes that were only slightly larger than those of other studies ($Q = .9, p = .63$).

We also sought to determine if acculturation interacted with client ethnicity, but the only case in which there was more than four studies with clients of either high or low acculturation was with Hispanic/Latino(a) clients. This comparison across acculturation level was of particular interest because of the apparent trend noted previously for effect sizes to be larger among studies containing higher percentages of Hispanic/Latino(a) clients. The results approached statistical significance ($Q = 3.3, p = .07$), with seven studies whose participants were characterized by low levels of acculturation ($d = .81$) having effect sizes twice as large as seven studies whose participants were characterized by moderate levels of acculturation ($d = .41$). Given the very low statistical power of the random effects weighted ANOVA (with 14 total studies, 7 in each cell) and the very large difference observed in the average effect sizes, we considered this finding noteworthy. Hispanic/Latino(a) clients with low levels of acculturation appeared to benefit greatly from culturally adapted mental health interventions.

Moderation by Research Design

The majority (82%) of research studies included in this meta-analysis involved experimental or quasi-experimental research designs. However, 14 studies reported data from a single intervention group without comparing outcomes to a control group (e.g., pre to posttest differences). This type of research design is vulnerable to several threats to internal validity and may lead to results that overestimate the effectiveness of the intervention (Heppner, Kivlighan, & Wampold, 1999). Hence, it was essential to determine

if the omnibus results reported earlier were moderated by the type of research design used within studies. As seen in Table 2, the differences in the magnitude of the observed effect size across study research design did not reach statistical significance ($Q = 5.3, p = .07$). Nevertheless, there was a trend for the magnitude of effect sizes to be higher across studies using a single intervention group ($d = .67$) than across studies using an experimental ($d = .40$) or quasi-experimental research design ($d = .42$). This trend could have unduly biased the magnitude of the omnibus effect size reported earlier. We therefore recalculated an omnibus effect size using only the 62 studies that used an experimental or quasi-experimental research design. The resulting value of $d = .40$ ($SE = .04, p < .0001$) differed minimally from the omnibus effect size of $d = .45$ observed across all 76 studies.

There were also differences in the type of control group used within the 62 experimental and quasi-experimental studies. Most of these studies (77%) used control groups that simultaneously received an alternative mental health intervention (e.g., an emotional support group not adapted to the participants' culture), but 14 of the studies used a control group that received no intervention during the same time (e.g., waiting list placement). To determine if the nature of the control group used influenced the outcome of the results, we conducted a random effects model ANOVA, which did not reach statistical significance ($Q = .01, p = .94$; Table 2). The results of the intervention studies did not differ as a function of the control group used.

Moderation by Intervention Characteristics

The mental health interventions provided to clients differed in several respects across studies.

TABLE 2. Analyses of Weighted Average Effect Sizes across Research Design Characteristics

Variable	Q_b	p	k	d^+	95 % CI	Q_w	p
Research design type	5.3	.07					
Single-group			14	.67	[.46, .89]	28.8	.007
Quasi-experimental			21	.42	[.28, .57]	62.1	<.001
Experimental			41	.40	[.28, .51]	31.2	.84
Control group type	.1	.94					
No intervention (waiting list)			14	.41	[.22, .59]	8.9	.78
Alternative intervention			48	.40	[.30, .49]	94.8	<.001

Note. k = number of studies; d^+ = the effect size, random effects weighted standardized mean difference; Q_b = Q -value for variance between groups; Q_w = Q -value for variance within groups, an indicator of effect size homogeneity.

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Some studies involved individual therapy, while many others involved group interventions or a combination of individual and group interventions. To investigate if these differences in the format of the intervention accounted for differences in client outcomes, we conducted a random effect weighted ANOVA. As seen in Table 3, the analysis was not statistically significant ($p =$

.95), indicating that the format of the intervention did not moderate the overall results.

The mental health interventions provided to clients across studies also differed in terms of their duration. We therefore evaluated differences in client outcomes across different numbers of sessions provided. As seen in Table 3, the results of the random effects weighted ANOVA did not

TABLE 3. Analyses of Weighted Average Effect Sizes across Intervention Characteristics and Outcome Measures

Variable	Q _b	p	k	d ⁺	95 % CI	Q _w	p
Treatment type	.1	.95					
Individual therapy			17	.46	[.29,.63]	55.3	<.001
Group therapy			41	.46	[.34,.59]	33.5	.75
Combination of individual and group therapy			18	.43	[.27,.61]	28.7	.04
Length of treatment	.9	.82					
1 session			7	.51	[.26,.77]	15.5	.02
2–10 sessions			28	.42	[.28,.56]	43.4	.02
11+ sessions			36	.44	[.32,.57]	42.5	.18
Not specified			5	.57	[.26,.88]	20.6	.001
Intervention groups	13.9	.001					
Mixed racial composition			14	.12	[−.04,.29]	9.4	.67
Same-race composition			49	.49	[.39,.58]	84.7	.001
Cultural content	2.4	.12					
Explicitly incorporated			64	.48	[.39,.58]	98.0	.003
Not specified			12	.32	[.13,.50]	26.7	.005
Therapist ethnic match	6.1	.05					
Yes			31	.44	[.31,.57]	36.6	.19
Routinely attempted			16	.31	[.16,.47]	26.8	.03
Not specified			29	.58	[.43,.72]	60.2	.001
Non-English services ^a	5.7	.02					
Yes			34	.49	[.37,.61]	7.5	.76
Not specified			12	.21	[.01,.40]	66.0	.001
Paradigm of clinic	2.1	.15					
Cultural/multicultural			31	.38	[.26,.50]	57.7	.002
Not specified			45	.51	[.39,.62]	67.1	.01
Cultural consultants	.1	.97					
Explicitly involved			29	.45	[.31,.59]	37.3	.11
Not specified			47	.45	[.35,.55]	90.6	<.001
Outreach recruitment	3.3	.07					
Yes			22	.33	[.17,.48]	19.8	.53
Not specified			54	.49	[.40,.60]	103.0	<.001
Extra services	.7	.41					
Yes			18	.39	[.23,.55]	25.5	.09
Not specified			58	.47	[.37,.57]	99.7	<.001
Reading accommodations	.1	.82					
Yes			16	.47	[.28,.66]	22.8	.09
Not specified			60	.44	[.35,.53]	105.4	<.001
Staff sensitivity training	.1	.84					
Yes			13	.43	[.22,.64]	18.5	.10
Not specified			63	.45	[.36,.54]	108.4	<.001
Referrals to external services	.8	.38					
Yes			11	.36	[.16,.57]	14.6	.15
Not specified			65	.47	[.37,.56]	111.4	<.001

Note. k = number of studies; d^+ = the effect size, random effects weighted standardized mean difference; Q_b = Q-value for variance between groups; Q_w = Q-value for variance within groups, an indicator of effect size homogeneity. ^a The analysis of non-English service provision only involved the 46 studies with participants who were not clearly all native English speakers.

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reach statistical significance ($Q = .94, p = .82$). When averaged across studies, the outcomes experienced by clients were independent of the duration of the interventions.

Experimental and quasi-experimental studies also differed in terms of the racial/ethnic composition of the intervention groups. Several studies involved intervention groups with clients of mixed racial/ethnic backgrounds, while other studies involved comparisons where all clients were from the same racial/ethnic group. The results of the random effects weighted ANOVA with this variable reached statistical significance ($Q = 13.9, p < .001$; see Table 3). Studies with groups that consisted of participants who were all the same race yielded effect sizes of much higher magnitude ($d = .49$) than did studies with groups of mixed racial composition ($d = .12$).

As mentioned in a previous section, studies provided several types of cultural adaptations to mental health interventions. These included: (1) explicit incorporation of cultural content/values into the intervention; (2) racial/ethnic matching of client and therapist; (3) provision of services in clients' native language if other than English; (4) explicit cultural or multicultural paradigm of the agency or clinic; (5) consultation with individuals familiar with the client's culture; (6) outreach efforts to recruit underserved clientele; (7) provision of extra services designed to enhance client retention, such as child care during sessions; (8) oral administration of materials for illiterate clients; (9) cultural sensitivity training for professional staff; and (10) provision of referrals to external agencies for additional services. These aspects of service provision were coded as either being present or absent in the description provided within each manuscript. As seen in Table 3, only 2 of these 10 contrasts reached statistical significance. Studies in which there was no report

of matching clients to therapists of the same race/ethnicity had average effect sizes that were higher ($d = .58$) than the average across studies in which racial/ethnic matches were attempted but not mandatory ($d = .31$). Studies in which therapists spoke the same (non-English) language as clients had effect sizes that were much higher ($d = .49$) than studies in which no descriptions regarding language matching were provided ($d = .21$).

Moderation by Type of Outcome Measure

The studies included in this meta-analysis involved several different types of outcome measures (i.e., mental health symptoms, client retention, client satisfaction). We therefore sought to determine if the magnitude of the effect sizes differed as a function of the type of outcome measure used in the study. Although the random effects weighted ANOVA did not reach statistical significance ($Q_b = 9.2, p = .10$), this may have been partially because of the small numbers of studies in several of the cells and the associated low statistical power of the analysis. Visual inspection of the data in Table 4 indicates that most types of outcome measures clustered around the omnibus effect size of $d = .45$. However, the average effect size associated with clients' satisfaction with or evaluation of services was $d = .93$, a value two times larger than the omnibus effect size. The 95% confidence interval corresponding with the five studies that measured outcomes in terms of client satisfaction (.57 to 1.3) did not include the 95% confidence interval for effect sizes from the 45 studies that used multiple kinds of outcome measures (.30 to .53). We therefore concluded that measures of client satisfaction were associated with higher effect sizes than multidimensional outcomes.

TABLE 4. Analyses of Weighted Average Effect Sizes Across Outcome Measures

Variable	Q_b	p	k	d^+	95 % CI	Q_w	p
Outcome measure	9.2	.10					
Mental health symptoms			12	.39	[.18, .60]	19.9	.05
Substance use/abuse			4	.55	[.22, .89]	20.3	.001
Treatment duration or client retention			4	.30	[-.01, .61]	1.2	.73
Social support/pro-social behavior			6	.59	[.26, .92]	8.1	.15
Client satisfaction/evaluation of services			5	.93	[.57, 1.3]	8.2	.09
Combination of the above			45	.42	[.30, .53]	52.4	.18

Note. k = number of studies; d^+ = the effect size, random effects weighted standardized mean difference; Q_b = Q -value for variance between groups; Q_w = Q -value for variance within groups, an indicator of effect size homogeneity.

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Discussion

The results of this meta-analysis demonstrated an overall positive effect of culturally adapted mental health interventions. Across all 76 studies the random effects weighted average effect size was $d = .45$, and across 62 studies with experimental or quasi-experimental designs, it was $d = .40$. Average effect sizes across many potential moderating variables (Tables 1 to 4) typically ranged from $d = .30$ to $d = .60$. These values approach a “moderate” magnitude (Cohen, 1987). Given that previous psychotherapy outcome research has demonstrated very minimal differences, typically ranging from $d = 0$ to $d = .21$ (Wampold et al., 1997), across various forms of psychotherapy (e.g., cognitive vs. psychodynamic vs. humanistic) the results presented here are noteworthy. Overall, culturally adapted interventions resulted in significant client improvements across a variety of conditions and outcome measures.

An important finding in the present meta-analysis concerned the racial composition of the participants. Interventions provided with groups of same-race participants ($d = .49$) were four times more effective than interventions provided to groups consisting of mixed-race participants ($d = .12$). This finding implies that cultural adaptations to mental health interventions may be more efficacious when the adaptations are specific to a particular racial/ethnic group. Multicultural adaptations designed to be sensitive to many cultural groups are still more efficacious than interventions without any cultural adaptations, but optimal benefit is apparently derived when the treatment is tailored to a specific cultural context. Nevertheless, because meta-analytic data cannot establish causality, this interpretation remains speculative and will require extensive future examination.

In this meta-analysis we also evaluated whether culturally adapted interventions were more or less effective across differences in participant age, gender, ethnicity, and acculturation level. Moderating effects were demonstrated across participant age and across the percentage of Hispanic/Latino(a) participants included in the studies. Specifically, studies with participants of higher chronological age and with higher percentages of Hispanic/Latino(a) participants had effect sizes of greater magnitude than studies with participants of younger age or with few

Hispanic/Latino(a) participants. One possible explanation for these results relates to the acculturation level of the participants. Older populations tend to be less acculturated (and therefore possibly in greater need of cultural adaptations to psychotherapy) than younger populations, and Hispanic/Latino(a) populations are highly likely to speak Spanish, be migrants, and remain in lower socioeconomic status years after migration (Gloria, Ruiz, & Castillo, 2004). Indeed, limited data from the current meta-analysis demonstrated that studies in which the Hispanic/Latino(a) participants were characterized by low levels of acculturation had an average effect size that was twice as large as studies in which the Hispanic/Latino(a) participants were characterized by moderate levels of acculturation. However, because of the limited number of studies evaluating participants with varying levels of acculturation from other racial/ethnic groups (e.g., Native Americans), we were unable to ascertain if this finding regarding acculturation could be generalized. The acculturation level of clients warrants further investigation in future studies of culturally adapted mental health interventions.

In this meta-analysis, we also evaluated different ways in which mental health treatments were adapted to account for clients' cultural contexts. Studies in which clients were not apparently matched to therapists based on ethnicity had average effect sizes that were higher than studies in which ethnic matching was generally attempted but not consistently conducted. Previous research has found minimal positive effects for ethnic matching of client and therapist (e.g., Coleman et al., 1995), but the result found in our meta-analysis was in the opposite direction of that typically expected. We also found that studies in which the client was matched with a therapist based on language (if other than English) had outcomes that were twice as effective as studies that did not. This finding strongly supports the need for therapeutic interventions to be conducted in clients' preferred language. Nevertheless, we caution that these analyses, along with the other eight analyses conducted across the types of cultural adaptations made to the mental health interventions (see Table 3), are likely unreliable because of an inherent error in the coding scheme. Studies that explicitly mentioned inclusion of the variable of interest (e.g., ethnic or language matching, consultation with cultural experts) were contrasted with studies that did not

report that particular adaptation. Some of the studies that did not mention a cultural adaptation may have nevertheless involved the adaptation without it being reported in the manuscript, and some studies that did mention an adaptation may not have performed internal checks to ensure that the adaptation was provided as intended. Thus, the analyses reported in Table 3 tested only the approximated presence or absence of culturally sensitive adaptations to mental health interventions. Future research is needed to more clearly delineate the types of cultural adaptations that are most and least effective.

Additional Limitations and Recommendations for Future Research

Meta-analyses such as the one reported in this manuscript have several distinct advantages (Cook & Leviton, 1982; Cooper & Hedges, 1994; Matt & Cook, 1994; Matt & Navarro, 1997). For example, aggregation of outcome studies increases the sample size of observations and decreases the impact of sampling error. However, meta-analyses are also prone to several limitations. First and foremost, the results of any meta-analysis depend upon the characteristics of the studies included in the analyses. The quality, procedures, and research design of each individual study influences the outcome of any meta-analysis (Cooper, 1998; Cooper & Hedges, 1994; Matt & Navarro, 1997). Because ours was the first meta-analysis of culturally adapted mental health interventions and because excluding research studies based on apparent methodological rigor or perceived quality can bias the results (Glass et al., 1981; Rosenthal, 1991), we included all research reports available, regardless of quality. Hence, the results of this particular meta-analysis may reflect the current state of research in the field more than the actual magnitude of the effect.

A related limitation of this meta-analysis is that the data in individual studies were rarely disaggregated. Reporting only aggregate data ensures that within-group differences and trends remain undetected. Even though this meta-analysis revealed an overall positive effect across 69 of the 76 research reports, not all participants improved as a result of the culturally adapted interventions that they received, and some clients may have deteriorated in treatment. In the future, it will be important to ascertain which clients

benefit the most and which clients benefit the least from adaptations to traditional mental health services. This work will require within-subjects research designs, which are infrequently reported in the current literature (P. Heppner et al., 1999).

A third limitation of this meta-analysis is that the research reports did not control for experimenter bias and therapist allegiance effects. It is presumed that the therapists and researchers involved in the studies strongly believed in the efficacy of culturally adapted interventions, such that they may have had higher expectations for client improvement or such that their procedures may have fostered optimal efficacy for culturally adapted interventions in contrast with other interventions. Therefore, future research of culturally adapted interventions would likely benefit from including critical observers and from incorporating other methodological steps to reduce the likelihood of experimenter bias inflating the magnitude of the results obtained.

Although most of the studies included in this meta-analysis involved experimental and quasi-experimental research designs, 15 studies used a single intervention group with no comparison to an equivalent control group. Pre to posttest designs suffer from several methodological limitations and do not carry the same weight as more robust designs (P. Heppner et al., 1999). Several years ago, the use of single-group research designs may have been appropriate in preliminary explorations of the efficacy of culturally adapted treatments. However, now that at least 61 outcome studies using experimental and quasi-experimental designs have been located, researchers may not glean as much benefit from conducting single-group research as from conducting studies with greater complexity and rigor.

A final limitation is that several of the research studies did not provide detailed descriptions of the cultural adaptations made to the interventions. As seen in Table 3 across the rows labeled "not specified," many types of cultural adaptations were not explicitly described within studies. Greater specificity in the descriptions of the intervention would be beneficial for purposes of replication—and for eventually determining which cultural adaptations are most effective.

There are a host of variables of interest that were not evaluated in the current meta-analysis because of insufficient descriptions in the studies obtained. For example, few studies evaluated the level of cultural competence of the therapists or

clinics providing services (e.g., Constantine, 2002). Lists of multicultural competencies (e.g., Arredondo et al., 1996) and measures of multicultural competence (e.g., Dunn, Smith, & Montoya, 2006) could be used more frequently in future outcome studies. Future research of cultural adaptations to mental health interventions should also focus on relational factors (Smith & Draper, 2004) and client perceptions of the services provided. When researchers make adaptations to mental health interventions that are based upon cultural considerations, they should subsequently verify that clients perceive the adaptations to be culturally appropriate.

Given the extensive literature documenting mistrust of mental health services among clients of color (e.g., D. Sue & Sue, 2003; S. Sue, 1988), it will be particularly important for future research to document clients' trust of culturally adapted interventions. Contemporary psychotherapy outcome research highlights the salience of common factors, such as the level of client trust and the quality of the therapeutic relationship, much more than specific modifications to psychotherapy content or method of delivery (e.g., Wampold, 2001; Wampold et al., 1997). Applying this line of reasoning to our findings, it is possible that the positive client outcomes associated with culturally adapted mental health interventions in this meta-analysis may be more related to clients' increased sense of trust (and decreased concerns about institutional racism) than to the adaptations themselves. This hypothesis is speculative, and future evaluations of the causal mechanisms through which culturally adapted interventions enhance client outcomes are needed.

There are also several larger issues regarding culturally adapted mental health interventions that were not directly addressed in this meta-analysis but that should become the focus of future scholarship. Hundreds if not thousands of studies have investigated mental health interventions, and the fact that only 76 studies were located that specifically examined cultural adaptations to those interventions seems to indicate that multicultural psychology research is still in its early stages. In a previous review of 63 meta-analyses of psychotherapy outcomes, the authors found that only three of them had even coded for descriptive information regarding participant ethnicity and none of them provided actual results

broken down by race, ethnicity, or culture (Matt & Navarro, 1997). These authors concluded that:

There is surprisingly little attention given to psychotherapy effects in African American, Latino, Asian American, and Native American Indian populations—not to mention different ethnic groups in non-English-speaking countries. Clearly, to argue for the efficacy of psychotherapy in improving public health, there is a need for rigorous outcome studies in specific target populations of settings and clients that are currently underrepresented in the existing literature. (p. 27)

The efficacy of counseling and psychotherapy is rarely reported for nondominant racial and ethnic groups (Fuentes, Costa, Mueller, & Hersh, 2005). Given that few psychotherapy outcome studies even report the race/ethnicity of the participants involved (Fuentes et al., 2005; Matt & Navarro, 1997) let alone report data disaggregated by race, it seems clear that the field has a long way to go before it can accurately understand the experiences of clients of color. We join with Stanley Sue (1999) in calling for increased representation of ethnic/racial issues in psychological research.

A related issue perpetuating the field's failure to address cultural issues relevant to psychotherapy is a relative scarcity of research funding specific to the topic. Traditionally, research regarding cultural-specific interventions and multicultural competency has not been adequately supported by funding agencies (Delgado-Romero, Galvan, Maschino, & Rowland, 2005; Spanierman & Poteat, 2005; S. Sue, 1999, 2003). This lack of funding reduces researchers' abilities to conduct the large-scale, rigorous studies necessary to establish solid empirical evidence. We therefore urge grant-giving agencies to include culture-specific mental health interventions as a priority for future funding.

Conclusion

In recent years, increased attention has been given to the need to adapt psychotherapy to clients' cultural values and contexts. This meta-analysis has attempted to synthesize the results from this rapidly growing body of literature. Overall, the findings provide evidence of the benefits of culturally adapting mental health interventions—particularly when the interventions are targeted to a specific racial/ethnic group and when the interventions are conducted in clients' preferred language. Future research would benefit from increasing the rigor of experimenta-

tion and from more specific examinations of the circumstances and specific adaptations that most benefit clients. The data presented here support increased inquiry into adaptations of mental health interventions according to clients' cultural contexts.

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Psychotherapy: Theory, Research, Practice, Training extends its thanks to the following individuals who contributed their time and expertise to the journal by serving as reviewers for articles published in 2006.

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