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# The Effects of Psychotherapy on Depression Among Racial-Ethnic Minority Groups: A Metaregression Analysis

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**Objective:** Several psychotherapies have been found to be effective in the treatment of depression among adults. However, little is known about whether effectiveness differs by racial-ethnic minority group. The authors conducted a meta-analysis to assess the relative effects of psychotherapy for persons from racial-ethnic minority groups, by examining whether a sample's racial-ethnic minority proportion was a moderator of the effect size of psychotherapy. **Methods:** Eligible studies were identified with an existing database of randomized controlled trials (RCTs) on the psychological treatment of depression among adults. The analysis included all studies in which the effect of psychotherapy for adults with a depressive disorder or symptomatology was compared with a control condition in an RCT. Only studies that reported the overall racial-ethnic minority proportion of the sample or the studies reporting specific racial-ethnic backgrounds of participants were included. A total of 56 RCTs reported the proportion of participants from racial-ethnic minority groups (with 77 comparisons between psychotherapy treatment and control groups). **Results:** An overall moderate effect size ( $g=.50$ ) in favor of psychotherapy was found. No significant moderating effect of race-ethnicity was found in bivariate and multivariate analyses. **Conclusions:** Results suggest that psychotherapy is equally effective regardless of care seekers' race-ethnicity. Future research should focus on filling in the gap between effective mental health care and the delivery of these services. (*Psychiatric Services in Advance*, February 18, 2014; doi: 10.1176/appi.ps.201300165)

Depressive disorders are highly prevalent (1,2), significantly impair quality of life (3,4), and are associated with high economic costs (5). It is expected that by 2030, depression will be the second most disabling disorder worldwide (6). However, prevalence rates of depression vary considerably among racial-ethnic minority populations and nonminority native-born people (7). Socioeconomic

conditions of and discrimination toward racial-ethnic minority groups have been found to be important predictors of these differences.

Several types of psychotherapies have been developed over the years in order to treat depression of adults. Many of these therapies have been found to be effective, such as cognitive-behavioral therapy (8,9), interpersonal psychotherapy (10), problem-solving

therapy (11), and behavioral activation therapy (12). However, research on the effectiveness of psychotherapy for depressed members of racial-ethnic minority groups is sparse. The evidence for the effectiveness of psychological treatments is mostly obtained from studies conducted among white middle-income populations, leaving racial-ethnic minority populations underrepresented in clinical research (13). Even when the racial-ethnic distribution of participants is reported in studies, detailed information and differential analyses of racial-ethnic subgroups are rarely provided (8,14).

Research in the past 30 years has also indicated that racial-ethnic minority groups are not only underrepresented in clinical research on depression, but individuals from these groups also make less use of mental health care services than the white majority in Western countries (15–17). People from racial-ethnic minority groups often seek professional psychological help at a late stage of mental distress, when symptoms have developed into more severe mental problems. In fact, most people who use mental health services drop out of therapy prematurely (18).

A frequent argument has been that cultural and linguistic adaptations to psychotherapy should make it more accessible for people from racial-ethnic minority groups (18,19). However, randomized controlled trials (RCTs) of the effectiveness of culturally adapted psychotherapies are also scarce (20), and there is a lack of scientific evidence

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concerning whether psychotherapy is equally effective in nonminority populations as in racial-ethnic minority populations.

Because of this lack of knowledge of whether psychotherapies are equally effective for racial-ethnic minority and majority populations, we conducted a meta-analysis to investigate the association between the proportion of participants with a racial-ethnic minority background and the effect size of the studies. It would have been better to examine directly within studies the difference between the effects of psychotherapy for native residents and for those from racial-ethnic minority groups. However, this has hardly been done in studies in this field. Therefore, we decided to examine the more indirect association between proportion of racial-ethnic minority participants and the effect size of studies in this field.

## Methods

### *Search strategy*

Eligible studies were identified by searching the [www.evidencebasedpsychotherapies.org](http://www.evidencebasedpsychotherapies.org) database of RCTs for the psychological treatment of depression among adults. The database includes studies from 1966 to the present (last update January 1, 2012), is updated annually, and contains 315 RCTs. The development and methods of this database have been described in detail elsewhere (21). Searches in major bibliographic databases (PubMed, PsycINFO, Embase, and Cochrane Central Register of Controlled Trials) were conducted by combining terms indicative of psychological treatment and depression (both MeSH terms and text words). We also searched 42 published meta-analyses in the database at [www.evidencebasedpsychotherapies.org](http://www.evidencebasedpsychotherapies.org) as well as the reference lists of included studies.

### *Inclusion and exclusion criteria*

We included all studies in which the effect of psychotherapy for adults (18 years and older) with a depressive disorder diagnosis (diagnostic interview) or an elevated level of depressive symptomatology (scoring above a cut-off on a self-report instrument) was compared with a control condition (care-as-usual, waiting-list, placebo, or another

control group) in an RCT in which the distribution of race-ethnicity in the study sample was reported.

We included studies that reported the overall proportion of the sample that was from racial-ethnic minority groups, as well as studies reporting the specific racial-ethnic background of participants. Psychotherapy was defined as an intervention in which verbal communication between a therapist and a client was the core therapeutic element or in which a systematic psychological method was conveyed in print or on a Web site (bibliotherapy) for the client to work through more or less independently, but with some kind of personal support from a therapist (by telephone, e-mail, or otherwise).

### *Quality assessment and data extraction*

We assessed the validity of the studies using four criteria of the Risk of Bias assessment tool, developed by the Cochrane Collaboration (22): adequate generation of allocation sequence, concealment of allocation to conditions, prevention of knowledge of the allocated interventions by outcome assessors, and dealing with incomplete data.

Apart from the validity assessment, we also extracted data on characteristics of the intervention, the participants, and the design of the study. The characteristics of the intervention we distinguished included type of therapy (cognitive-behavioral therapy, interpersonal psychotherapy, problem-solving therapy, nondirective supportive therapy, behavioral activation therapy, psychodynamic therapy, or other psychotherapy) (21) and treatment format (individual or group). Study-related characteristics included method of recruitment into the study (through the community, clinical samples, or other recruitment type), target group (adults in general, older adults, student population, women with postpartum depression, persons with general medical conditions, or other target groups), and definition of depression (according to a diagnostic interview or established with a self-report measure). We also rated the type of control group (waiting-list, care-as-usual, pill placebo, or other type of control group).

Racial-ethnic minorities were categorized into five groups: black (African background), Asian, Hispanic (Latin American and Spanish background), Native American (referring to the indigenous peoples of North America), and other (people from racial-ethnic minority groups who could not be identified in one of these categories). Data extraction was conducted by two independent assessors (BÜI and EH); in case of disagreement, a third assessor (HR) was consulted.

### *Analyses*

For each comparison between a psychotherapy and a control group, the effect size indicating the difference between the two groups at posttreatment was calculated (Cohen's *d* or standardized mean difference). Effect sizes were calculated by subtracting (at posttreatment) the average score of the control group from the average score of the comparison group and dividing the result by the pooled standard deviations of the two groups. Effect sizes  $\geq .80$  can be assumed to be large, whereas an effect size of .50 is moderate and .20 is small (23). Because several studies had small sample sizes, we adjusted the effect size for small-sample bias according to the procedures suggested by Hedges and Olkin (24) (Hedges' *g*).

In the calculations of effect sizes, we used only instruments that explicitly measured symptoms of depression, such as the Beck Depression Inventory (BDI) (25) or the Hamilton Rating Scale for Depression (HAM-D) (26). If more than one depression measure was used, the mean of the effect sizes was calculated, so that each study provided only one effect. If means and standard deviations or any other precise test statistic was not reported, we used the procedures of Comprehensive Meta-Analysis software (version 2.2.021) and dichotomous outcomes to calculate the effect size. The software was also used to calculate pooled mean effect sizes. Because we expected considerable heterogeneity among the studies, we decided to calculate mean effect sizes using a random-effects model.

The standardized mean difference (Hedges' *g*) is not easy to interpret from a clinical perspective. Therefore,

we also transformed it into a numbers-needed-to-treat (NNT) value, using the formulas provided by Kraemer and Kupfer (27). The NNT indicates the number of patients that must be treated in order to generate one additional positive outcome (28).

We examined heterogeneity of effect sizes by using the Q statistic and  $I^2$  statistic. The Q statistic informs only about the presence of heterogeneity, which we report in terms of significance. The  $I^2$  statistic indicates the heterogeneity in proportions. A value of 0% indicates no observed heterogeneity, and 25%, 50%, and 75% indicate low, moderate, and high levels of heterogeneity, respectively (29).

Publication bias was tested by inspecting the funnel plot on primary outcome measures and by Duval and Tweedie's (30) trim-and-fill procedure, which yields an estimate of the effect size after the publication bias has been taken into account (as implemented with the software). We also conducted Egger's test of the intercept to quantify the bias captured by the funnel plot and test whether it was significant.

In order to examine whether the proportion of participants from racial-ethnic minority groups was associated with the effect size of each study, we first conducted a series of bivariate metaregression analyses with the Comprehensive Meta-Analysis software. In the first bivariate metaregression analysis we examined whether the effect size was significantly associated with the proportions of racial-ethnic minorities. Then we conducted another bivariate metaregression analysis in which we examined the association between the effect size and the proportion of black participants, another one with the proportion of Asian participants, and separate analyses of the proportion of Hispanic, Native American, and "other race-ethnicity" participants.

Then we conducted multivariate metaregression analyses with the effect sizes as the dependent variable and as predictors the proportion of racial-ethnic minorities and the characteristics of the participants, the interventions and the studies. In the first multivariate analysis, we entered the proportion of racial-ethnic minorities

as predictor. In the second we entered each of the specific minority groups (black, Asian, Hispanic, Native American, and other) as separate predictors. Because multivariate metaregression analyses cannot be conducted with Comprehensive Meta-Analysis software, we used Stata/MP for Mac (version 11) for these analyses.

## Results

### *Selection and description of the included studies*

We examined a total of 13,407 abstracts, removed 9,860 duplicates, and then retrieved 1,344 full-text papers for further consideration. We excluded 1,288 of the retrieved papers for the following reasons: studies with adolescents (N=69), no random assignment (N=54), inclusion of disorders other than depression (N=165), no psychotherapy (N=151), no comparison condition (N=113), maintenance trial (N=53), dissertation (N=10), duplicate of paper already included (N=64), no information about racial-ethnic distribution of the population sample (N=125), no effect size reported (N=5), or other reasons (N=479). A total of 56 studies with 5,819 participants met inclusion criteria. [The 56 studies are listed in appendix A in a data supplement to this article, and the inclusion process is detailed in a flowchart available online as appendix B.]

Most (N=42, 75%) of the trials were conducted in the United States, four were conducted in the United Kingdom, four in Australia, four in the Netherlands, one in Brazil, and one in Sweden. [Selected characteristics of the 56 studies are presented online in appendix C of the data supplement.]

Psychotherapy was compared with a control condition in 56 trials (77 comparisons between a psychotherapy group and a control group). Most of these trials examined cognitive-behavioral therapy (N=32, 57%) and interpersonal psychotherapy (N=11, 20%). Care as usual (N=28, 50%) and a waiting list (N=14, 25%) were the most frequent control groups. Furthermore, most of the studies used a diagnostic interview to establish the presence of a depressive disorder among participants (N=38, 68%), and most of the therapies were delivered to the individual (N=34, 61%).

### *Quality assessment*

The quality of the studies varied considerably. Thirty-one studies (55%) reported an adequate sequence generation, and 30 studies (54%) conducted an adequate concealment of allocations before assignment. Seventy-seven percent of the studies (N=43) reported blinding of outcome assessors, and 41 studies (73%) conducted intention-to-treat analyses. Only 19 (34%) studies met all four quality criteria, and two studies (4%) met none of the criteria. [Details on the quality assessment are available online in appendix C of the data supplement.]

### *Effects of psychotherapy compared with a control condition*

The mean effect size of 77 comparisons for psychotherapy compared with a control condition was  $g=.50$  (95% confidence interval [CI]=.41-.58, NNT=3.62). Heterogeneity was moderate to high ( $I^2=61.64\%$ ) and significant ( $p<.001$ ). The results of these analyses are shown in Table 1. Removal of possible outliers (studies outside the CI of the mean effect size) showed a small decrease in the mean effect size ( $g=.46$ , CI=.39-.53, NNT=3.91). Studies based on the HAM-D had an effect size of  $g=.66$  (CI=.48-.85), and studies in which the BDI was used had a higher mean effect size ( $g=.73$ , CI=.60-.87).

Inspection of the funnel plot and use of Duval and Tweedie's (30) trim-and-fill procedure indicated considerable publication bias. After adjustment for missing studies,  $g$  decreased from .45 to .30 (CI=.26-.35, N=22 imputed studies). Egger's test pointed to significant asymmetry of the funnel plot ( $p<.001$ ).

### *Race-ethnicity as a moderator*

*Bivariate metaregression analyses.* The results of the bivariate metaregression analyses are reported in Table 1. For illustrative purposes, we also present the effect sizes for studies with differing proportions of participants from racial-ethnic minority groups. As the table shows, there was a trend ( $p<.100$ ) indicating that the proportion of racial-ethnic minorities in the samples may be associated with the effect size, with a lower effect size for higher proportions of persons from racial-ethnic minority groups.



**Table 1**

Efficacy of psychotherapy versus a control condition in meta-analyses of 56 randomized controlled trials of psychotherapy for depression<sup>a</sup>

Characteristic	N <sub>comp</sub>	Effect size		I <sup>2b</sup>	NNT	Slope			
		g	95% CI			Point estimate	95% CI	z	p <sup>c</sup>
All studies	77	.50	.41 to .58***	61.64***	3.62				
Outliers removed <sup>d</sup>	66	.46	.39 to .53***	29.96*	3.91				
Hamilton Rating Scale for Depression scores only	30	.66	.48 to .85***	72.11***	2.78				
Beck Depression Inventory scores only	32	.73	.60 to .87***	47.61**	2.54				
Subgroup analyses									
All racial-ethnic minority groups (proportion of sample)						-.00	-.00 to .00	-1.65	.099
≤24.9%	57	.49	.40 to .59***	59.97***	3.68				
25%–49.9%	11	.41	.28 to .55***	9.05	4.39				
≥50%	9	.56	.19 to .93**	82.67***	3.25				
Black						-.00	-.01 to .00	-1.64	.100
≤24.9%	65	.53	.44 to .63***	65.33***	3.42				
≥50%	12	.30	.18 to .43***	.00					
Asian						.03	-.02 to .08	1.04	.298
≤24.9%	77	.50	.41 to .58***	61.64***	3.62				
Hispanic						.00	-.00 to .00	.18	.854
≤24.9%	71	.48	.40 to .57***	55.97***	3.76				
≥25%	6	.61	.11 to 1.10*	85.60***	2.99				
Native American						-.02	-.12 to .07	-.47	.636
≤24.9%	77	.50	.41 to .58***	61.64***	3.62				
Other						-.01	-.01 to .00	-1.62	.106
≤24.9%	74	.49	.41 to .58***	62.60***	3.68				
≥25%	3	.53	.29 to .77***	.00	3.42				

<sup>a</sup> Efficacy (Hedges' g) was analyzed with a random-effects model. N<sub>comp</sub>, number of comparisons; NNT, number needed to treat

<sup>b</sup> Heterogeneity in proportions, with values in percentages. The p value indicates whether the Q statistic for heterogeneity is significant.

<sup>c</sup> Values indicate whether the difference between the effect sizes in the subgroups is significant.

<sup>d</sup> See appendix A of the online data supplement for the following outliers: Baker et al., 2010 (two comparisons); Dobkin et al., 2011; Dwight-Johnson et al., 2011; Jamison and Scogin, 1995; Miranda et al., 2003; O'Hara et al., 2000; Schmidt and Miller, 1983 (two comparisons); van Bastelaar et al., 2011; Williams Jr. et al., 2000.

\*p<.05, \*\*p<.01, \*\*\*p<.001

In the metaregression analyses in which we examined whether the racial-ethnic minority proportion of study groups was associated with the effect size, we did not find any indication that this was the case, although there was a trend (p=.100) indicating that the effect size may have been lower when the proportion of black participants was higher.

*Multivariate metaregression analyses.* The results of the multivariate analyses are reported in Table 2. There was no significant association between the total sample proportion of racial-ethnic minorities and the effect size after we adjusted for other characteristics of the studies (model 1). We also found no significant association between each racial-ethnic minority group and effect size, after adjusting for other study characteristics (model 2).

## Discussion

In this meta-analysis, we selected 56 trials that examined effects of psychotherapy on depression by comparing treatment with a control group and that contained information about the racial-ethnic distribution of the population samples. We found no association between race-ethnicity and effect size. We found a moderate effect size (g=.50) in favor of psychotherapy.

Our overall results suggest there is little reason to assume that psychotherapy is less effective for racial-ethnic minority populations compared with nonminority populations. Although we were not able to make direct comparisons between racial-ethnic subgroups because of sparse literature in this field, our finding is in line with the general view that evidence-based psychotherapy is generalizable across racial-ethnic

minority groups (31). Cultural context and race-ethnicity seem to play a minor role in the effectiveness of psychotherapy. Moreover, a recent meta-analysis that included 17 studies of psychotherapy for depression and anxiety in low- and middle-income countries found comparable effect sizes (Cohen's d=1.02) for psychotherapy in high-income countries (32). This finding suggests that the effectiveness of psychotherapy for depression can be generalized over different cultural contexts.

In our study, we found some trends suggesting that higher numbers of participants from racial-ethnic minority groups may be associated with lower effect sizes for psychotherapy. These trends did not reach statistical significance, however, and disappeared completely after adjustment for other

characteristics of the studies. It is often found that people from minority populations are less affluent, are much more likely to be seen in impoverished settings, and have lower levels of education compared with the majority population, and these differences result in considerable differences between studies with higher levels of minority participants and other studies. It could very well be the case that in such conditions psychotherapy would be less effective, but that is not what we found. In fact, we found that after adjustment for the characteristics of the studies, there was no indication that the percentage of racial-ethnic minority representation was associated with the outcome.

This study had several limitations. First, we could not directly look at the effect of race-ethnicity on effect size because an insufficient number of trials reported the necessary data. We therefore examined race-ethnicity proportions of the population samples in relation to the effect of psychotherapy. Second, some publication bias was indicated in studies in which psychotherapy was compared with a control condition. This finding suggests that our meta-analysis could have overestimated the effect size of psychological treatments. Third, the mean effect size for psychotherapy found in our study is somewhat lower than that found in earlier meta-analyses (33,34). One interpretation is that our sample of studies reporting the proportion of racial-ethnic minorities was not representative of all studies in this field. If this is the case, the results of this study may not be generalized to other studies of psychotherapy for adult depression. Another important limitation is that among blacks and Hispanics, those who enroll in psychotherapy have a high probability of being highly educated and well integrated, thus being less representative of their minority groups. Therefore, generalizing the findings of our study to racial-ethnic minority groups must be done with great care. Because of these limitations, the results of this study should be considered with caution.

The difficulties with conceptualizing the term race-ethnicity also should be stressed. Race-ethnicity is a very broad concept that includes several

**Table 2**

Multivariate regression analyses of predictors of psychotherapy use, by study characteristics and ethnicity in 56 randomized controlled trials of psychotherapy for depression

Variable	Psychotherapy versus control condition			
	Model 1 <sup>a</sup>		Model 2 <sup>b</sup>	
	$\beta$	SE	$\beta$	SE
Race-ethnicity (reference: nonminority)				
% from racial-ethnic minority group	-.00	.00	—	
% nonminority native born				
% black			.00	.00
% Asian			-.01	.03
% Hispanic			.00	.00
% Native American			-.01	.06
Diagnosis (reference: no diagnosis)	.05	.11	.07	.11
Study group: adults (reference: other)	.17	.12	.16	.12
Recruitment (reference: community)				
Clinical	-.23	.13	-.27	.14
Other	-.03	.14	-.08	.14
Intervention (reference: other <sup>c</sup> )				
Cognitive-behavioral therapy	.30*	.14	.23	.16
Interpersonal psychotherapy	.27	.19	.21	.19
Problem-solving therapy	.12	.21	.09	.22
Nondirective supportive therapy	.49*	.22	.45*	.23
Group format (reference: individual)	.09	.11	.08	.11
Control condition (reference: waiting list)				
Care as usual	-.12	.14	-.09	.14
Other	-.17	.10	-.14*	.10
U.S. study (reference: non-U.S. study)	.18	.14	.20	.15
Quality of study	-.06	.04	-.06	.05

<sup>a</sup> Study characteristics and ethnicity were categorized into nonminority and racial-ethnic minority groups.

<sup>b</sup> Study characteristics and ethnicity were categorized into five groups: nonminority native born, black, Asian, Latin, and Native American.

<sup>c</sup> Includes behavioral activation therapy, psychodynamic therapy, and other psychotherapies, as noted in Appendix C of the online data supplement

\* $p < .05$

dynamic sociological conditions in terms of history, culture, religion, language, and nation, making it difficult to clearly define as a variable in this study. There are several sociological factors that could also be important moderators for treatment effects that were not taken into account in this study. For example, some authors suggest the importance of distinguishing between immigrants and native-born persons from racial-ethnic minorities when evaluating mental health interventions (7). Such distinctions can reveal different characteristics between the two groups, including in regard to depressive symptoms. In addition to this possible distinction, socioeconomic status, immigration history, and education level are among the other factors that should be taken into account (35). We oversimplified the

concept by categorizing race-ethnicity in several groups according to country of origin, which is another important limitation of this study.

The generalizability of our findings to other racial-ethnic minority groups is another important point of discussion. Because a majority of the studies focused on culturally and linguistically unadapted therapies, it is very likely that mainly highly integrated people were included in the RCTs used in our analyses, limiting generalizability of the results. In most of the studies we reviewed, participants were included only if they could read and speak the language of their resident country. As mentioned earlier, degree of acculturation is found to be related to help-seeking behavior and therefore should also not be overlooked when evaluating the effect of race-ethnicity

on treatment effect. The participants in our meta-analysis may very well be a very select, small group who were well integrated and aware of their psychological problems, who identified with the mainstream, and who were willing to participate in a research study (36). Possibly, a large portion of the racial-ethnic minority groups therefore remain overlooked in this type of research.

## Conclusions

However, given the societal and personal burden of depression, the need for treatment is not always met among racial-ethnic minority populations, as mentioned earlier. Racial-ethnic minorities stay underrepresented in clinical as well as research settings. Because our meta-analysis did not give strong indications that psychological treatments work differently between specific racial-ethnic minority groups, more attention should be paid to the gap between effective mental health care and the delivery of these services (19).

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