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A META-ANALYTIC REVIEW OF TREATMENT OF HOMOSEXUALITY[1]

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Summary.—This paper examined and synthesized studies of treatment of individuals identified as homosexual using meta-analytic technique. A large number of studies (146) evaluating treatment efficacy were identified, most published prior to 1975 and 14 of which met inclusion criteria and provided statistics that could be used in a meta-analysis. These 14 outcome studies were published between 1969 and 1982 and used primarily behavioral interventions. Analysis indicated that treatment for homosexuality was significantly more effective than alternative treatments or control groups for homosexuality (ES = .72), and significant differences were found across pre- to postanalysis (ES = .89). In other words, the average patient receiving treatment was better off than 79% of those in the alternative treatments or as compared to pretreatment scores on the several outcome measures. This meta-analysis of 14 studies provides empirical support for a group of 146 studies which have narratively suggested that treatment for homosexuality is effective. Variables related to treatment efficacy are examined.

Over the last several decades, the treatment of homosexuality has received very little attention in the psychological literature (cf. Berger, 1994). While various theories and treatment approaches have been suggested (Nicolosi, 1991, 1993; Socarides & Volkan, 1991) these have not been examined empirically. Considerable controversy over the treatment of individuals who identify themselves as homosexuals has occurred during the last 25 years. Since homosexuality was removed as a diagnostic category from the Diagnostic and Statistical Manual by the American Psychiatric Association in 1973, psychotherapists and researchers have argued the tenets of treating homosexuality. Some authors suggest political motivations rather than scientific and empirical support for this removal from the DSM (Nicolosi, 1991; Socarides, 1992; Satinover, 1996) and the basis for criticisms against treatment of homosexuality (Sturgis & Adams, 1978). Others (Gadpaille, 1981) noted that some individuals may seek "reorientation" from mental health professionals and posited that psychotherapists who refuse to treat or refer these patients are serving a "prohomosexual" ideology. At the same time, recent articles have reviewed ethical arguments supporting the utilization of sexual reorientation therapy (Donaldson, 1998; Throckmorton, 1998; Yarhouse, 1998a, 1998b; Nicolosi, Byrd, & Potts, 2000).

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Within this discussion on whether homosexuality is a disorder, and whether it should be treated, is an equally fierce debate regarding whether homosexuals can change during psychological treatment. Research reporting success in the treatment of homosexuality was first published in 1892 by Schrenck (Bieber, 1971). This report was the first to suggest that approximately one-third of the patients were cured and another one-third were improved. While Freud and others were pessimistic about homosexuals responding to treatment over the next 50 years, research reports beginning in the 1950s reported similar percentages (Ellis, 1956; Bieber, Dain, Dince, Drellich, Grand, Gundlach, Kremer, Rifkin, Wilbur, & Bieber, 1962; Hadden, 1966; Bieber, 1971; Bancroft, 1974; Birk, 1974). Numerous case studies were published beginning in the 1950s and continuing through the 1970s. More recently, Berger (1994) described having treated three men with moderate to excellent success. Case studies such as these provide narrative support for treatments that assist individuals in diminishing their homosexuality. Such narrative reports are often criticized as lacking objectivity necessary to be valid and generalizable.

An alternative to narrative reports and summaries that is increasingly being utilized to assess treatment outcome is meta-analysis. Meta-analysis was first introduced by Smith and Glass in 1977. A meta-analysis is a statistical technique that allows combination of statistical results from a number of individual studies.[2] Meta-analytic conclusions are thought to be more rigorous than those based on narrative reviews[3] because they reduce the likelihood of reviewer's bias and utilize specific methodological principles that not only guide the meta-analytic investigator but allow other readers to examine them independently (Garfield & Bergin, 1994). Piper (1988) further suggested that "Meta-analysis is considered superior to traditional methods of combining outcome results such as 'narrative integration' and 'box score' approaches, because ES is independent of sample size and expresses the

[2]This technique quantitatively synthesizes results from many studies so that one can draw conclusions based on research done by many researchers. ESs are calculated for each study in the meta-analysis and translated to a common metric: typically a *d* statistic. An overall ES can then be calculated from these individual statistical results by summing ESs across studies and obtaining an average ES (Hedges & Olkin, 1985; Hunter & Schmidt, 1990).

[3]While some have suggested that meta-analysis enjoys superiority over narrative reviews (Smith, Glass, & Miller, 1980. Shapiro & Shapiro, 1982) others are unwilling to endow it with such credentials (Wilson & Rachman, 1983; Wilson, 1985). Eysenck (1978), well-known for his critiques of the effectiveness of therapy, has suggested that meta-analyses camouflage "garbage in–garbage out" by using "fancy statistical techniques" (Cook, Cooper, Cordray, Hartmann, Hedges, Light, Louis, & Mosteller, 1992) Controversy is clear in reviews of this technique (Rachman & Wilson, 1980; Kazdin, 1985 Wilson, 1985), and questions abound regarding the decisions about characteristics of studies and how to classify them. However, meta-analyses, unlike narrative reviews and individual studies, make their methods of coding and computing clear. Decision rules for inclusion in a meta-analysis have become more rigorous and systematic (Strube, Gardner, & Hartmann, 1985).

magnitude of the result in quantitative form" (p. 1058). Since its inception, the use of meta-analytic techniques has gained increased recognition as an objective method.

The primary purpose of this study was to evaluate the effectiveness of treatment studies involving individuals identified as homosexual. While meta-analyses have been used to assess treatment outcomes for depression and anxiety, no meta-analysis to date has examined the effectiveness of treatment for homosexuality. Furthermore, this meta-analysis examined several variables that might relate to the differential efficacy of treatment for this population. It is important to note that this meta-analysis was not designed to defend the treatment of homosexuality or the identification of it as a disorder as other authors have done (Bayer, 1987) but to assess whether treatment approaches have yielded therapeutic change empirically.

Method

Inclusion and Exclusion Criteria

Articles were obtained for this meta-analysis by a computer search of PsycLit to locate all referenced articles published on the treatment of homosexuality. The reference sections of previous reviews, relevant publications, and articles identified in the computer search were examined for studies which could be included in the analysis. Initially, 146 studies were identified for possible inclusion in this study, most of them published prior to 1975. Articles were then included or excluded from the meta-analysis based on the following criteria: (1) The study must treat males identified as homosexual as the population of interest, (2) The treatment must consist of psychotherapy or a similar type of intervention, (3) Outcome variables must be stated in terms that can be represented as ES estimates according to the formulas given by Miller and Berman (1983), Hedges and Olkin (1985), and Rosenthal (1983, 1991). (4) Reports must be written in English. These criteria yielded the 14 articles included in the present analysis. Most of the excluded articles were case studies in which no outcome variables which could be transformed into ES estimates were provided.

Included Variables

Recent meta-analyses have identified variables in client, therapist, treatment, and methodological domains (Hoag & Burlingame, 1997; McRoberts, Burlingame, & Hoag, 1998). However, a review of the identified 14 articles suggested that many of these variables were not available in this group. This may result due to the time period in which these articles were published, namely, in the early 1970s. Various reviewers have commented on the lack of specificity in research published during this period. Several variables were identified from previous meta-analyses to be examined by this meta-analysis:

age of participants, entrance into treatment (whether the participants were referred, recruited, or required to attend treatment), amount of treatment, orientation of treatment, setting of treatment, and frequency, length, and number of sessions. In addition, publication year, type of analysis, and whether randomization was used in assigning participants to treatment groups were other variables examined.

Coding of Variables and Computation of ES

An undergraduate and graduate student independently rated the articles on the aforementioned variables. The graduate student had previous experience in coding meta-analyses (Burlingame, Fuhriman, McRoberts, Hoag, & Anderson, 1995; Hoag & Burlingame, 1997; McRoberts, *et al.*, 1998) and trained the undergraduate rater. Amount of agreement between raters was 92.3% (mean of all open-ended categories) for the mostly open-ended[4] categories. Kappa for the two variables with distinguishable levels prior to rating was established at .87, which represents "excellent agreement beyond chance" (Fleiss, 1981, p. 218). After articles were rated, coders met together to obtain a consensus rating for each variable on each article.

The DSTAT computer software package (Johnson, 1989) was used to calculate ESs from the outcome statistics in each study according to the within-study meta-analysis formula given below:

$$d = \frac{M_1 - M_2}{Sp}$$

where d is the estimated ES,[5] M_1 and M_2 are the means of the groups being compared, and Sp is the pooled within groups standard deviation (Cohen, 1977). This formula was utilized to calculate several types of ESs, one that directly compared treatment with alternative treatments and one that calculated ESs from pre- and posttreatment scores which reflect improvement over the course of treatment. When means and standard deviations were not provided, e.g., when only an F or t statistic was provided, ESs were computed utilizing formulas provided by DSTAT.

[4]Only the setting of the treatment (inpatient or outpatient) and entrance into treatment (whether the participants were referred, recruited, or required to attend treatment) categories were set up with specific levels. The rest of the variables were coded as presented within the article.

[5]An effect size (ES) represents the average amount of change that one might expect from a treatment of interest when compared to no treatment or an alternative treatment. It can be roughly interpreted as a Z score with positive values indicating improvement and negative values indicating deterioration. For example, an ES of 1.00 would indicate that the treatment group achieved an effect one standard deviation above that obtained by the control or comparison group. It could then be said that the average person in the treatment group achieved an outcome that was better than 84% of the people in the control or comparison group. Likewise, an ES of −1.00 would indicate that the average person in the treatment group fared worse than 84% of the subjects in the control group.

Since it is common for outcome studies to utilize more than one outcome measure within a given study, it may be problematic simply to average all measures from each study to obtain an overall ES for the meta-analysis. For instance, a study with multiple outcome measures from the same source, e.g., self or therapist, would not provide independent estimates of improvement. If these outcome measures were averaged into the overall ES, studies with a greater number of same source measures would influence the overall ES differentially when compared to those studies with fewer measures. As a result, ESs from any given study were averaged so that only one ES was obtained from each study.

Analysis

To address the primary question posed by this study of how effective is treatment for men identified as homosexual, a *t* test was calculated on the overall effect size reflecting differences between the group treated and the alternative treatment (or in some cases between pre- and posttest measures of outcome) to examine whether it differed reliably from zero. A significant *t* in this analysis indicates that the treatment of interest is better than the alternative treatment. Furthermore, each of the aforementioned variables were examined to identify whether various levels of the coded variables were differentially related to the overall ES. This allowed an analysis of whether levels of each variable contributed significantly to the overall ES.

Results

Characteristics of Reviewed Studies

The characteristics of the 14 studies in the meta-analysis were examined to provide a context for interpreting the results (see Table 1). Most of the studies were published in the early 1970s, with the average publication year being 1973 and the range being 1969 to 1982. The average sample size was

TABLE 1
Characteristics of Studies in the Meta-analysis

Characteristic	Average	Range
Publication Year	1973	1969–1982
Sample Size, *n*	25	7–46
Therapy Dosage, min.	1130	630–2700
Session Length, min.	49	25–90
Number of Sessions	21	14–30
Age of Patient, yr.	26.6	23–32

25, with a range of 7 to 46. Therapy dosage (number of sessions by the length of the sessions) averaged 1,130 min., average length of sessions was 49 min., and the average number of sessions was 21. The average age of the

participants in group therapy was about 27 years of age. Almost every study utilized a behavioral approach to treatment, with only one study utilizing a psychodynamic approach. Nine studies were completed with outpatient participants, while five utilized inpatient participants. Of the studies reporting referral source, most studies used participants referred by mental health professionals.

Also noted below in Table 2 are the measures of change utilized by the 14 studies. A variety of measures were utilized, including plethysmograph and other physiological assessments as well as self-report measures of sexual behavior and attitudes.

Preliminary Analysis

It was initially planned to calculate ESs comparing treatment for homosexuality to alternative treatments, i.e., other treatments for homosexuality, or control groups and between pre- and post-test measures of outcome (see Table 2). However, an independent-samples t test indicated that the alternative or experimental treatment mean ES ($n = 7$, $M = .72$) did not differ significantly from the pre- to posttreatment means ($n = 7$, $M = .89$; $t_{12} = 1.13$, ns). As a result, ESs from these two groups were combined for the analysis of the overall ES as well as with the examination of the other variables under examination.

Overall Effectiveness of Treatment for Homosexuality

An overall ES for the 14 studies (combining the ESs as described above) comparing treatment to an alternative treatment or across pre- to posttreatment was .81. This ES is significantly different from zero ($t_{14} = 10.24$, $p = .001$). This overall ES has a range of .23 to 1.24 and a standard deviation of .29. Thus, the average individual in treatment can be placed at the 79th percentile of those who received an alternative treatment or as compared to pretreatment results. This overall ES is similar to those reported in other meta-analyses which have examined the effects of therapy for adults in general (Lambert & Bergin, 1994).

Differential Treatment Considerations

Several variables were examined to assess their differential contribution to the ES obtained. The following variables were identified prior to rating the articles as possibly being related to ES estimates: random assignment, orientation of therapy, setting of therapy, referral source, type of analysis, dosage of therapy, and publication year of the study. Sufficient data were not present for an analysis of therapeutic orientation and referral source. Variables with sufficient sample size are examined next.

The use of random assignment is important in assessing the validity of the studies in a meta-analysis. Some have critiqued meta-analytic technique

because it includes all studies regardless of methodological problems (Rachman & Wilson, 1980; Wilson & Rachman, 1983; Wilson, 1985; Weiss & Weisz, 1990). In this meta-analysis, the use of random assignment was examined to assess its influence on overall ES. Random assignment was significantly related to treatment outcome ($F_{1,13} = 7.75$, $p = .02$). In other words, studies in which assignment was random displayed significantly lower ESs (ES = .67) than studies without random assignment (ES = 1.04). However, it is important to note that the studies in which random assignment was utilized still produced statistically significant effect sizes.

These results contrast with Shirk and Russell's research (1992) that indicated well-designed studies produced ESs nearly twice as large as poorly designed studies. While this analysis examined only one aspect of design, random assignment, it appears that the less rigorous studies produced larger ES ratings than studies that were more rigorous. This supports the need for more rigorous studies in this area. Further, it supports the importance of examining methodological factors in meta-analyses.

The setting of therapy was also examined with outpatient (nine studies) and inpatient (five studies) being the categories compared. Outpatient therapy (ES = .97) was significantly more effective than inpatient therapy (ES = .51; $F_{1,13} = 17.04$, $p = .001$). An examination of the five studies completed on an inpatient basis suggests that these interventions were short-term (approximately 5 days). As a result of having less time in treatment, these studies would be expected to have less influence than outpatient services that often extended for longer periods of time. Also, all five of these inpatient studies were published by one group of researchers (McConaghy and colleagues), and these inpatient hospitalizations appeared to be initiated for the study, rather than interventions sought out by the participants. These two issues confound the comparison of inpatient and outpatient treatment modalities.

The dosage of therapy, the number of visits multiplied by the time for each visit, was computed for each study to see if it was related to effectiveness in therapy. Unfortunately, only six studies reported both the number of visits and the time per visit. A nonsignificant but large correlation was obtained (Pearson $r = -.79$, $p = .06$). Finally, the publication year of each study was examined to assess whether this was related to overall ES. A nonsignificant correlation was also found between publication year and ES (Pearson $r = .41$, ns). The small sample and lack of power for these two variables accounts for these two analyses being nonsignificant.

Discussion

While a number of studies have suggested that therapy for homosexuality can be effective, very few studies have documented this empirically. As a result, the literature in this area has been criticized as lacking support for

TABLE 2
CHARACTERISTICS OF CHANGE AND COMPARISON GROUPS OF STUDIES IN META-ANALYSIS

Article	Change Measure	Change Defined	Comparison Group
Birk, *et al.* (1970)	Change in Kinsey score Scale 5 of MMPI Sexual Behavior ratings	Decrease in homosexual behaviors	Alternative treatment (Placebo comparison group)
Feldman & MacCulloch (1971)	Homoerotic and heteroerotic interest scores	Decrease in homoerotic scores and increase in heteroerotic scores	Alternative treatment
Freeman & Meyer (1975)	7 attitude measures 4 response strength measures (penile measurements) 3 measures of stimulus strength (ratings) 2 sexual orientation measures 4 measures of frequency and reaction times of sexual arousal	"Changes in direction of heterosexuality"	Pre-posttest
Hallam & Rachman (1972)	Heart rate responses to sexual stimuli	Decrease in heart rate reaction time	Pre-posttest
McConaghy (1969)	Penile volume assessment	Penile volume reduction	Pre-posttest
McConaghy (1970)	Penile volume assessment	Penile volume reduction	Pre-posttest
McConaghy, *et al.* (1972)	Penile volume assessment	Penile volume reduction	Pre-posttest
McConaghy & Barr (1973)	Penile volume assessment	Penile volume reduction	Pre-posttest
McConaghy (1975)	Self-report of (1) homosexual and heterosexual desire, (2) homosexual and heterosexual relations Penile volume assessment	Reduction in homosexual desires Penile volume reduction	Alternative treatment Compared aversive treatment and positive conditioning
Pradhan, *et al.* (1982)	Bancroft scores (measures of homosexual and heterosexual behaviors)	Decrease in homosexual behaviors and increase in heterosexual behaviors	Pre-posttest
Tanner (1973)	Change in penile circumference	Penile volume reduction	Alternative treatment Comparison with similar treatment, less intense treatment
Tanner (1974)	(1) Penile volume assessment (2) Self-report of arousal to slides (3) Scale 5 of MMPI (4) Measure of sex, socializing, and covert sexual behavior with males/females	Penile volume reduction, decrease in arousal, decrease on MMPI scale 5, decrease on self-report measures	Experimental - control

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TABLE 2 (CONT'D)
CHARACTERISTICS OF CHANGE AND COMPARISON GROUPS OF STUDIES IN META-ANALYSIS

Article	Change Measure	Change Defined	Comparison Group
Tanner (1975)	(1) Penile volume assessment (2) Self-report of arousal to slides (3) Scale 5 of MMPI (4) Measure of sex, socializing, and covert sexual behavior with males/females	Penile volume reduction, decrease in arousal, decrease on MMPI scale 5, decrease on self-report measures	Alternative treatment Compared treatment with or without booster sessions
Truax, *et al.* (1970)	Self-report of (1) Percentage of fantasy devoted to homosexuality, (2) Percentage frequency of homosexuality preoccupation (time spent during the day)	Reduction in homosexuality fantasy and preoccupation	Experimental - control

change in symptoms. Furthermore, with the removal of homosexuality from the Diagnostic and Statistical Manual, outcome studies treating homosexuality have essentially disappeared over the last 20 years. The treatment of homosexuality is viewed negatively, and political implications abound for those psychotherapists who continue to agree to treat homosexuality.

This study identified only 14 articles which met the inclusion criteria and presented sufficient data to be included in the meta-analysis. A review of these measures suggests that they lacked specificity regarding many of the treatment factors identified in research. However, even with these shortcomings, several conclusions can be drawn.

A review of the measures in Table 2 suggests that these 14 studies primarily examined change in symptomatology related to homosexuality. Examined symptoms included a decrease in homosexual behaviors, fantasies, or desires and an increase in heterosexual behavior or fantasies. Also, many studies examined physiological reactions to slides of nude men and women. Physiological changes noted in these studies included decreased heart rate reaction time and reduction in penile volume over the course of therapy. The obtained values of ES described herein provide evidence for treatment efficacy with regard to these symptoms. This suggests that individuals identified as homosexual can change *symptomatically* over the course of treatment. However, what has not been identified was whether symptomatic change is equivalent to the more fundamental change in sexual orientation. To conclude that sexual reorientation is possible based on this research is premature and inappropriate. Additional research should investigate further the possibility of change in sexual orientation.

Furthermore, the overall ES obtained in this meta-analysis is similar to those reported in other meta-analyses in which was examined individual treatment for adults with a wide range of disorders (Lambert & Bergin, 1994). This suggests that individuals identified as homosexual (as specified in this meta-analysis) change at a rate similar to adults in treatment (from other meta-analyses) with a variety of disorders such as depression and anxiety. This finding has important ramifications for the treatment of homosexuality and suggests that change is possible. Unfortunately, like other treatment areas with meager research, few follow-up data have been provided for treatment approaches with homosexual men. Whether these findings can be replicated over time remains to be seen and must be examined with follow-up studies.

Using Cohen's classification scheme (1988), the overall LES obtained in this study (.81) is categorized as falling into the high range. In interpreting this overall ES, it is important to remember that it is based on studies in which a particular treatment was compared with an alternative treatment or control group as well as pre- to postanalysis of change combined. While this

combination may be criticized on methodological grounds, it was adopted because there were so few studies. While only a small number of articles could be included in this analysis, the number of studies in this review is similar to those of several recently published meta-analyses (Dobson, 1989; Benton & Schroeder, 1990; McRoberts, *et al.*, 1998) and similar to the average reported by Lambert and Bergin (1994) in their review of meta-analytic outcome studies with adults. Unfortunately, even though the number of articles is similar, the lack of breadth in the studies limits the conclusions that can be drawn.

Given the lack of specificity of the studies under examination, the relative contribution of a variety of client, therapist, and treatment variables to the overall treatment effectiveness could not be examined. This is likely due to the time period in which these studies were completed. Authors of meta-analyses of more recent research within the realm of group therapy lament the absence of variables in these domains (Burlingame, *et al.*, 1995; Hoag & Burlingame, 1997; McRoberts, *et al.*, 1998). It is important to note that this meta-analysis showed that outpatient treatment was more effective than inpatient treatment for individuals identified as homosexual. Unfortunately, it appears that this finding is confounded by the relatively brief inpatient stay of five days and that all of the inpatient studies were performed by one group of researchers. Thus, no real conclusions can be drawn from this finding.

Reviews of narrative work in this literature have provided optimism regarding treatment for homosexuality. Satinover (1996) noted many claim that symptomatic change for people who are homosexual is not possible. In reviewing the literature, he listed treatment studies which provided evidence for an overall success rate of over 50%. In responding to this apparent contradiction, he described "all the evidence suggests strongly that homosexuality is changeable." This meta-analysis provides empirical support for his position and the numerous other narrative and case study reviews published throughout the last 50 years.

Political, legislative, and psychotherapeutic issues concerned with homosexuality are debated regularly. Within the various mental health professions, psychotherapy for homosexuals is being challenged, and many have described it as unethical (Haldeman, 1994), suggesting that it does not produce change and that it does more harm than good. This meta-analysis is pertinent to that political debate and provides empirical evidence, based on the literature, that treatment interventions can be successful with individuals identified as homosexual.

These findings may be criticized by many on political and personal grounds. However, it is important to note that the validity of any therapy—no matter what the treatment method or goal—is found in its overall effect

on the life of the client. If the treatment is right for the person, then the freedom and well-being it brings will be evident in all aspects of functioning (Nicolosi, 1991).

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