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A meta-analysis of psychotherapy and medication in unipolar depression and dysthymia

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Abstract

Background: There remains considerable disagreement regarding the relative efficacy of psychotherapy and medication across types of depression.
Method: We used random effects meta-analysis to examine the relative efficacy of psychotherapy vis-à-vis medication at post-treatment and follow-up. We also estimated the relative efficacy of continued medication versus discontinued psychotherapy. As twenty-eight studies (39 effects, $n=3381$) met inclusion criteria, we were able to conduct an adequately powered test of between-study heterogeneity and examine if the type of depression influenced relative efficacy.
Results: Psychotherapy and medication were not significantly different at post-treatment, however effect sizes were not consistent. Although there was no association between severity and relative efficacy, a small but significant advantage for medications in the treatment of dysthymia did emerge. However, psychotherapy showed a significant advantage over medication at follow-up and this advantage was positively associated with length of follow-up. Moreover, discontinued acute phase psychotherapy did not differ from continued medication at follow-up.
Limitations: Limitations included relatively fewer studies of severe and chronic depression, as well as dysthymia. In addition, only a minority of studies reported follow-up data.
Conclusions: Our results indicated that both psychotherapy and medication are viable treatments for unipolar depression and that psychotherapy may offer a prophylactic effect not provided by medication. However, our analyses diverged from previous findings in that effects were not consistent and medication was significantly more efficacious than psychotherapy in the treatment of dysthymia.
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Keywords: Psychotherapy; Medication; Depression; Dysthymia; Meta-analysis; Severity of depression

Contents

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In a recent review, Hollon et al. (2005) arrived at several conclusions regarding the relative efficacy of psychotherapy and medications for depression. First, psychotherapy appears to be as effective as medications in the treatment of depression with some question remaining in regards to treatment for the most severe episodes. Second, although medications produce a robust effect in the acute phase of treatment, medications do not appear to prevent the return of symptoms after treatment has concluded. Alternatively, there is evidence that psychotherapies may provide enduring benefit after termination. Finally, despite the heterogeneous nature of depressive illness there is little evidence for prescriptive guidelines in selecting between the respective treatments based on characteristics of the depression.

Early meta-analyses indicated that psychotherapy was more effective than medication in the treatment of depression (Glass and Smith, 1980; Steinbrueck et al., 1983) and the results of more recent meta-analyses that included studies directly comparing psychotherapy and medication have reported either no difference between two treatments (De Maat et al., 2006; Depression Guideline Panel, 1993) or a small advantage for psychotherapy over medication (Gaffan et al., 1995; Gloaguen et al., 1998; Dobson, 1989; Robinson et al., 1990; Wexler and Cicchetti, 1992).

Glouguen et al. (1998) meta-analyzed 17 studies that compared cognitive therapy to medications for depression. Their results indicated that psychotherapy was slightly more effective than medications but cautioned that the advantage of psychotherapy may have been the result of two early studies wherein medication performed quite poorly (Rush et al., 1981; Blackburn et al., 1981). Recently, De Maat et al. (2006) meta-analyzed a collection of 10 studies that revealed psychotherapy and medication were of comparable efficacy. In addition, De Maat et al. reported that psychotherapy held a significant advantage over medication at follow-up — a finding mirrored in a more recent meta-analysis by Vittengl, Clark, Dunn, and Jarrett (2007). To our knowledge there has been no meta-analytic examination of the relative efficacy of continued or maintenance medication versus discontinued psychotherapy.

In all, the results of previous meta-analyses suggest that the effects of psychotherapy are comparable to that of medication, however, consensus has remained elusive. Some claim that psychotherapy should be considered a first line treatment for the range of unipolar depressive disorders (cf., Antonuccio et al., 1995), while others maintain that claims of comparable efficacy between psychotherapy and medication are unwarranted, misleading, and even "harmful" (Klein, 2000, p. 210). This lingering disagreement can be framed empirically in terms of the possibility of effect size heterogeneity in meta-analyses, or more specifically, that the treatment of choice may vary according to the type of depression.

1. Diagnostic considerations

The nosology of depression is quite complex, requiring the differentiation of a variety of potential clinical presentations. Klein (personal communication, January 17, 2003, as cited in McCullough et al., 2003, p. 621) has offered a four-fold classification system that builds upon the DSM-IV criteria, accommodating the various intersections of severity and chronicity including: (a) moderate-severe chronic (e.g., chronic major depression, (b) chronic mild depression (i.e., dysthymia), (c) moderate-severe acute (i.e., episode of major depression), and (d) mild-acute (i.e., minor depression).

Although there appears to be no one *sine qua non* of severe depression, it is typically operationalized as an elevated score on a depression instrument (Nemeroff, 2007). According to the DSM-IV, a depressive episode that has lasted for at least two years is considered chronic. Dysthymia is by definition chronic but is characterized by lower symptom severity or functional impairment (McCullough et al., 2003). Yet, dysthymia is often accompanied by a number of comorbidities and can be more complex to treat than other mild forms of depression (Markowitz, 1993; Markowitz, 1994).

As noted earlier, there is little consistent evidence to suggest that the type or severity of depression influences the selection of medication or psychotherapy as a first line treatment (Hollon et al., 2005). However, it is not surprising that there is skepticism that both psychotherapy and medication are, without exception, equivalent treatments for depressive illness. For example, evidence regarding the relative efficacy of psychotherapy and medication in more severe depression is mixed. The severity of depression has traditionally been accepted as indicating the need for medication. Some evidence has suggested that cognitive psychotherapy may be somewhat less effective than medication in the treatment of severe depressions (Dimidjian et al., 2006; Elkin et al., 1989), yet other findings suggest the treatments are comparable across severity levels (DeRubeis et al., 1999; DeRubeis et al., 2005; Hollon et al., 1992; Thase et al., 1997).

The relative efficacy of psychotherapy and pharmacotherapy in chronic depressions is also mixed. There is evidence that patients diagnosed with dysthymia may respond preferentially to medication (cf. Barrett et al., 2001; Markowitz et al., 2005). Although these findings have not yet been subject to a meta-analysis, they complicate early speculation that dysthymia may be most appropriately treated by psychotherapy (see Akiskal et al., 1980; Markowitz, 1994). However, as psychotherapy was comparable to medication in several studies of chronic major depression, the failure of psychotherapy to perform well in studies of dysthymia does not appear to translate to chronic major depression (DeRubeis et al., 2005; Jarrett et al., 1999; Keller et al., 2000). Specifically, in their meta-analysis De Maat et al. (2006) found that psychotherapy and medication were equivalent in treatment of chronic and non-chronic major depression.

2. Quantification and examination of heterogeneity

The possibility that relative efficacy varies across depression types can be tested by examining between-study heterogeneity in meta-analysis. If relative efficacy is variable across types of depressed patients, and studies vary meaningfully in this regard, there should be variation in the results of the primary studies. Moreover, failure to control for or examine this heterogeneity is a threat to meta-analytic conclusions (e.g., the threat of aggregating "apples and oranges") (Higgins and Thompson, 2002; Klein, 2000). Meta-analyses by De Maat et al. (2006) and Gloaguen et al. (1998) reported no association between pre-treatment severity and relative efficacy. In meta-analytic terms, these results indicate that severity was not a significant predictor of effect size heterogeneity and that the comparability of psychotherapy and medication is consistent across levels of severity.

Unfortunately, there are a number of limitations with the prediction of effect size heterogeneity as a means of evaluating the literature in a particular area. First, the methods used to evaluate effect size heterogeneity are problematic in that statistical significance is highly dependent on the number of effects included in the meta-analysis (i.e., tests with $k<20$ are underpowered) (Alexander et al., 1989; Cornwell and Ladd, 1993; Cornwell, 1993). Both Gloaguen et al. (1998) and De Maat et al. (2006) reported heterogeneity analyses that indicated effect sizes were consistent, but both meta-analyses included less than 20 effects, and thus may have been prone to Type II errors. Moreover, when there is little to no variability in effect sizes, it is less likely that a relationship between relative efficacy and any variable will be revealed (i.e., relatively efficacy is essentially stable and thus there is little variability to explain). Thus, although Gloaguen et al. (1998) and De Maat et al. (2006) found no evidence that pre-treatment severity predicted relative efficacy, given the small number of studies included in their analysis, this is not entirely surprising. We are not aware of any meta-analysis that has analyzed the similarity of medication and psychotherapy with a sufficient number of studies to detect true heterogeneity if it were present.

In terms of examining the effect of severity and dysthymia on relative efficacy, it is notable that studies of minor depression and dysthymia were not included in the majority of previous meta-analyses. Accordingly, the equivalence of psychotherapy and medication is restricted to patients with a current diagnosis of major depression (e.g., and not dysthymia or minor depression). It may be that the relative efficacy of treatments is consistent across all depressed populations or that it varies in some population not included in previous analyses. However, we are currently aware of no meta-analysis that has included the four diagnostic categories noted by Klein and Santiago (2003) above. Specifically

these categories include: (a) episodic major depression, (b) chronic major depression, (c) episodic minor depression, and (d) dysthymia.

3. The current meta-analysis

The purpose of the present analysis was to estimate the efficacy of psychotherapy relative to the efficacy of medication in the treatment of unipolar depressive disorders. More directly, we addressed several fundamental questions: (a) Do psychotherapy and medication yield comparable outcomes in depressive disorders at post-treatment and follow-up? (b) What is the relative efficacy of maintenance treatment with medication versus discontinued psychotherapy (c) Are the effects derived from direct comparisons of psychotherapy and medication significantly different (i.e., are the effects heterogeneous)? and (d) If heterogeneity is present, does type of depression account for the heterogeneity? To provide a more thorough test of these phenomena, all eligible studies of a unipolar depressive disorder in adults were included, thus increasing the likelihood of detecting variability in true effect sizes if it were present. Specifically, it was not a requirement that participants meet DSM or research diagnostic criteria for major depression and consequently studies of minor depression as well as dysthymia were included.

4. Method

4.1. Selection of studies

In order to locate the corpus of studies that directly compared psychotherapy and medication for depressive disorders, we conducted a literature search of the psycINFO (from 1887) and Medline (from 1965) databases through July 2007, entering the search terms drug therapy, pharmacotherapy, psychotherapy, clinical trial, depression, and dysthymia. Additionally, we reviewed the reference lists of both qualitative and quantitative reviews of psychotherapy versus medication trials in order to obtain further studies. We obtained studies which may have been missed in our previous searches by conducting a manual review of high impact journals that historically publish psychotherapy and medication comparisons (i.e., Archives of General Psychiatry, American Journal of Psychiatry, Journal of Consulting and Clinical Psychology).

To be included in this meta-analysis, a study had to (a) contain the necessary information to calculate effect sizes for the target depression measures, (b) evaluate acute phase treatment of a unipolar, non-psychotic depressive disorder or report naturalistic follow-up data for the primary study (studies of maintenance treatment were not considered) in adults, and (c) randomly assign patients to a psychotherapy intended to be therapeutic with an accepted pharmacological treatment for a unipolar depressive disorder (see Wampold et al., 1997). Treatment arms that paired pill placebos with psychotherapies were excluded (see Hollon and DeRubeis, 1981).

4.2. Calculation of effect size

We calculated one effect size estimate (d_i) for each comparison of a psychotherapy with a medication, first calculating an effect size for each target depression variable and then aggregating these effect size estimates within each comparison. Next, we combined the effect sizes for each dependent variable under the assumption that the correlation among dependent variables was 0.50, a reasonable value for the correlation among the dependent variables (see Hedges and Olkin, 1985, pp. 212–213 for the method and Wampold et al., 1997, for a justification and application in the psychotherapy context). A positive *d* indicated the superiority of psychotherapy (i.e., depression scores were lower in the psychotherapy). We conducted analyses of relative efficacy on post- treatment data and on follow-up data (including data regarding maintenance medication and discontinued psychotherapy), if available. Follow-up data included estimates of relapse and symptom return over time as well as cross sectional analysis of symptom severity at a given time point. Primary analyses of heterogeneity and the effects of severity and dysthymia were conducted on studies that reported intent-to-treat (ITT) outcomes. We reported completer analyses if treatment differences, heterogeneity, and/or moderator analyses differed substantively from ITT estimates.

A primary aim of the meta-analysis was to examine the influence of certain diagnostic variables on relative efficacy. Accordingly, if hypotheses related to specific diagnostic groups were reported by the primary researchers, we calculated effect sizes in a way that was sensitive to these effects. For example, Barrett et al. (2001) reported separate outcome data for individuals diagnosed with minor depression and those who met criteria for dysthymia.

4.3. Moderators

We estimated the effect of three moderators: (a) severity, (b) dysthymia, and (c) chronic major depression. To estimate the potential effect of depression severity on the relative efficacy of treatments, we analyzed a *z*-transformation of study level pre-treatment severity. The most consistent indicator of severity across studies, pre-treatment HRSD, served as a primary indicator of severity. However, the use

of multiple forms (e.g., 17-item, 21-item, 24-item) and the absence of the HRSD in several studies presented an analytical problem. In regards to the multiple HRSD forms, we used the published estimates of O'Sullivan, Fava, Agustin, Baer, and Rosenbaum (1997), in which the various forms were simultaneously administered to a sample of patients who met DSM criteria for major depression. We calculated a *z*-score of pre-treatment severity, using the means and standard deviations derived from O'Sullivan et al. (1997). In the case of the few studies that did not report HRSD pre-treatment severity we conducted a similar procedure using the published norms of the BDI (Beck and Steer, 1993). One study did not utilize the BDI or HRSD and only reported the Montgomery Asberg Depression Rating (MADRS; Montgomery and Asberg, 1979). In this case we used a MADRS pre-treatment mean obtained in a large clinical trial of patients who met DSM criteria for MDD (Mulder et al., 2003).

We analyzed the effect of dysthymia and chronic major depression by creating a dichotomous variable that indicated whether or not the study was exclusive to either dysthymic or chronically depressed individuals. We defined chronic major depression as those studies that were exclusive to patients with at least a two year depressive episode.

4.4. Statistical analysis

Given that a primary goal was to address the heterogeneity of effects obtained when psychotherapy and medication are compared in the treatment of depressed patients, we conducted a random effects meta-analysis (Hedges and Olkin, 1985). In a random effects meta-analysis it is assumed that studies included in the analysis were sampled from a larger population of studies both past and future. We used Hierarchical Linear Modeling (HLM) to estimate a multi-level model with known variances (Bryk and Raudenbush, 1992). Specifically, effect sizes (level 1) were considered nested within studies (level 2). If there are no true differences between treatments, γ_o(the grand mean) will not be significantly different from zero. If the grand mean is homogenous, the variance of u_j will be small (i.e., the variance would not be significantly greater than would be expected by chance.

If it is found that the effects derived from a meta-analysis are heterogeneous (i.e., there is significant between-study variability), researchers can test for moderators of treatment outcome by performing regression analyses (Glasziou and Sanders, 2002; Higgins et al., 2003). Homogeneity is tested with the statistic *H*, which is an index of the deviations of sampled effects from the grand mean weighted by the inverse of the variance (Hedges and Olkin, 1985; Bryk and Raudenbush, 1992). In order to quantify the extent of heterogeneity between studies we also calculated the I^2 statistic (Higgins and Thompson, 2002; Huedo-Medina et al., 2006). I^2 quantifies the extent of heterogeneity by comparing the *H* value with its expected value if effects were homogenous. If the *H*-statistic is smaller than its degrees of freedom (i.e., the I^2 is negative) then I^2 is set to zero (i.e., there is no evidence of between-study heterogeneity). I^2 ranges from 0% to 100% and can be interpreted as a percentage of heterogeneity (Higgins and Thompson, 2002).

Finally, the effects of severity, dysthymia, and chronic major depression were examined with four models wherein the mean was conditioned on: (a) severity, (b) dysthymia, and (c) both severity and dysthymia, and (d) chronic major depression.

5. Results

The initial search yielded 1131 articles. Ultimately, 28 trials (39 effects) and 3381 ($M=90$) patients were included in the analysis. Only 13 studies reported data on the ethnic background of the patients. Of these studies, 78% of the patients were European American. In sum, the typical patient included in the meta-analysis was a European American, middle aged female, most often diagnosed with a unipolar non-psychotic major depressive episode. However, several studies of minor depression, dysthymia, and chronic major depression were also included. Most patients were treated in psychiatric or academic research clinics, however, several studies focused on the treatment of depressed patients in primary care settings. The length of treatment varied from 10 weeks to 52 weeks, and the number of psychotherapy sessions varied from a minimum of 7 sessions to a maximum of 24 sessions. The mean pre-treatment severity of the studies included in the analysis was $z=-.25$, which corresponded to an HRSD−17 of 21.39 (SD=3.23), indicating that the average patient in the sample was moderately depressed. A reference list with all studies including in the meta-analysis and tables reporting effect sizes for each comparison are available from the authors upon request.

5.1. Psychotherapy vs. medication

In the unconditioned models the grand mean of the effect for the psychotherapy versus medication comparison was not significantly different from zero, indicating that psychotherapy and medication produced equivalent outcomes, $\lambda(29)=0.01$, $p>.5$. However, heterogeneity analyses indicated these effects were *not* homogenous $H(29)=56.16$, $p=.002$, $I^2=48.36$. The I^2 value indicated

that approximately 50% of the observed variation in effects was due to true variability between effects. Thus, in contrast to previous analyses (e.g., Glaoguen et al., 1998; De Maat et al., 2006) it appears there were more differences among reported effects than one would expect due to chance. Only in the reduced set of studies ($k>20$) that reported completer data, the H-statistic was not significant. However, the I^2 index was 28.77, indicating a small amount of variability in effects still remained.

5.2. Moderators

The finding that effects were not consistent across studies raises the possibility that in some instances certain treatments were more effective than others. In contrast to the conventionally held belief that medication is indicated as severity increases, the fixed coefficient for severity was positive (as severity increased, the relative advantage of psychotherapy increased), although not significant $\lambda(28)=0.09$, $p=.19$. However, the fixed effect for dysthymia was significant, $\lambda(29)=-.33$, $p=.009$ and resulted in a decrease in the value of I^2 to 37.87. Specifically, dysthymia studies were associated with a significant advantage for medication. As the grand mean for psychotherapy in the conditioned model was .06 (indicating little difference between the two modalities), the predicted difference between psychotherapy and medication in dysthymia studies was −.27. The effect of dysthymia was also shown by the decrease in the random effect as the variation among true effects decreased by approximately 20% when dysthymia was modeled. Note that although the effect of dysthymia was of similar size in the completer analyses, the effect was not significant. However, only one dysthymia study was included in this analysis (viz., Dunner et al., 1996).

As expected, the point-biserial correlation between dysthymia and severity in the psychotherapy and medication comparison was significant ($r=-.53$, $p=.003$), indicating that dysthymia studies were associated with lower pre-treatment severity. In order to account for any confounding between dysthymia and severity, we conditioned the model on severity and dysthymia simultaneously. When severity and dysthymia were modeled simultaneously, the effect of severity did not approach significance, $\lambda(28)=-0.01$, $p>.5$, and the effect of dysthymia remained significant and similar in size, $\lambda(28)=-0.36$, $p=.02$.

There are several threats to the finding that dysthymia is associated with preferential response to medication. The first is that the effect of dysthymia may be the result of a broader effect of chronicity in general. We examined this possibility by entering the studies of chronic major depression (DeRubeis et al., 2005; Jarrett et al., 1999; Keller et al., 2000) as predictors of relative efficacy. There was no significant effect of chronic major depression on relative efficacy, $\lambda(28)=-.13$, $p=.40$. An additional threat is the possibility that dysthymia studies were associated with some other third variable and that it is this variable that is truly responsible for the observed effect. Two possibilities are worthy of examination. First, a number of dysthymia studies were conducted in primary care settings (e.g., Barrett et al., 2001). Thus it is possible that psychotherapy is less effective relative to medication in primary care settings. However, setting was not a significant predictor of relative efficacy, $\lambda(28)=-.16$, $p=.14$. Second, several dysthymia trials contained a somewhat lower dose of psychotherapy then typically used in comparative trials (e.g., Browne et al., 2002). Although positive, (i.e., increased number of sessions corresponded to greater relative efficacy of psychotherapy), number of sessions was not a significant predictor of relative efficacy $\lambda(28)=.02$, $p=.09$. When sessions and dysthymia were entered simultaneously, the results were unchanged, sessions, $\lambda(27)=.01$, $p=.36$ and dysthymia, $\lambda(27)=-.30$, $p=.027$. It appears the effect of dysthymia is robust to these potential confounds.

5.3. Follow-up

Of the 28 studies in the original meta-analysis, 11 (14 effects, 602 patients) reported naturalistic follow-up data. The average length of follow-up was 15 months (SD=7.25). Analyses revealed a significant and moderate sized advantage for psychotherapy at follow-up, $\lambda(13)=.37$, $p=.009$, which was not homogeneous, $H(13)=22.48$, $p=.048$, $I^2=42.17$. However, length of follow-up was a significant and positive predictor of relative efficacy, indicating that the longer the follow-up, the greater the advantage for psychotherapy, $\lambda(12)=.04$, $p=.023$. In addition, conditioning the model on length of follow-up rendered the homogeneity statistic nonsignificant and accounted for approximately 80% of the value of I^2, $H(12)=12.95$, $p=.37$, $I^2=7.34$. We found no studies that reported naturalistic follow-up data for dysthymia studies.

It could be argued that short-term treatment with medication does not reflect usual antidepressant practice and hence it is informative to examine the effect of short-term psychotherapy vis-a-vis medication that is continued past the end of the acute treatment phase (APA, 2000; Hollon et al., 2005). Nine studies (11 effects, 983 patients) reported follow-up data in which psychotherapy was terminated (patients were

occasionally offered several 'booster' sessions) and medication was continued. The average length of follow-up was 14 months (SD=8.14). There was no significant difference at follow-up between discontinued psychotherapy and continued medication, $\lambda(10)=-.03$, $p>.5$ and these effects were homogenous, $H(10)=12.24$, $p=.269$, $I^2=18.30$. Although there were only two dysthymia effects in the analysis, dysthymia diagnosis was a significant predictor of relative efficacy, $\lambda(10)=-.30$, $p=.042$, indicating that continued medication demonstrated a significant benefit over discontinued psychotherapy in the treatment of dysthymia. Modeling dysthymia accounted for 100% of the size of I^2.

6. Discussion

We conducted a meta-analysis of studies that directly compared acute phase psychotherapy and medication for depressive disorders at termination and follow-up. The aggregate effects for comparisons of psychotherapy and medication indicated that the two treatments were not significantly different at post-treatment, but psychotherapy was superior to medication at naturalistic follow-up. An analysis of severity revealed that the relative benefit of psychotherapy and medication was not associated with increased levels of severity. These results are consistent with prior meta-analyses as well other recent well-cited studies (De Maat et al., 2006; DeRubeis et al., 2005; Gaffan et al., 1995; Gloaguen et al., 1998; Keller et al., 2000; Robinson et al., 1990; Vittengl et al., 2007). Moreover, the lack of a significant difference between acute phase psychotherapy and continued medication at follow-up provides a quantitative verification of a recent qualitative review (Hollon et al., 2005).

In contrast to previous analyses (e.g., De Maat et al., 2006; Gloaguen et al., 1998), our analysis provided meta-analytic evidence that the effects derived from studies comparing psychotherapy and medication for depression were not consistent (i.e., heterogeneous). This finding suggests two possibilities: (a) previous analyses were underpowered and thus were unable to detect true differences between studies, or (b) the inclusion of a more diverse array of studies (e.g., studies of dysthymia) resulted in the increase of heterogeneity. In addition, the relative benefit of antidepressant medication revealed in this analysis is not consistent with optimism that brief, time-limited psychotherapies would perform as well as medication in the treatment of dysthymia (e.g., Markowitz, 1994) or with prior belief that dysthymia would be more amenable to psychotherapy (e.g., Akiskal et al., 1980).

It is tempting to speculate as to what mechanisms may be responsible for the performance of brief psychotherapy in the treatment of dysthymia. It stands to reason that when patients are highly distressed, psychological mechanisms such as remoralization and other common factors thought to be major components of effective psychotherapies may be particularly potent (Frank and Frank, 1991; Wampold, 2001). When distress is chronic and patterns of negative affectivity are more ingrained, the 'kick start' provided by psychotherapy might be less important. Improvement may be more incremental and dependent on making difficult, concrete changes.

As the majority of trials included in our meta-analysis were studies of brief treatment, the relative superiority of medication in the treatment of dysthymia may be related to a duration of psychotherapy that was less then optimal for the treatment of dysthymia. Although the number of sessions patients received did not account for the effect of dysthymia in this meta-analysis, it remains plausible that the length of the psychotherapies in this and other trials may not be sufficient to treat dysthymia. The dose conjecture is consistent with the findings reported by McCullough (1991), who reported that an average of 31 sessions of psychotherapy were necessary to treat dysthymic patients to remission. No trial included in this meta-analysis offered acute phase psychotherapy of this duration. Accordingly, longer treatment protocols may be necessary for psychotherapy to provide comparable benefit to antidepressants for dysthymic patients. This seems a fair recommendation given that medication is likely to be continued as well (APA, 2000).

Although the difference between psychotherapy and medication in the treatment of dysthymia is relatively consistent across the five dysthymia studies included in our meta-analysis (and others excluded for methodological reasons, e.g., Ravindran et al., 1999) and the lack of a severity effect is consistent with past research, these findings have several limitations. First, it is possible that our lack of a severity effect was confounded by restricted range. Studies of severe depression were not equally represented in this analysis and thus one might more cautiously interpret findings as suggesting that relative efficacy does not vary in mild or moderately depressed patients. It should also be noted that while severity was not a moderator of relative efficacy, symptom severity appears to influence the separation of medications and placebos (Kirsch et al., 2008). Thus symptom severity should not be overlooked as a potentially important diagnostic variable in other treatment comparisons. Additionally, relatively few studies reported follow-up data. Of the five dysthymia

studies included in our meta-analysis, none reported naturalistic follow-up data and three compared discontinued psychotherapy to continued medication. Although follow-up studies are complex and subject to many threats to validity, the findings of our analysis and others (e.g., Vittengl et al., 2007) suggest that the analysis of follow-up data is a critical area for future research. While it is intriguing that medication offers an advantage for dysthymia in the short-term, it is unclear if this advantage would persist if both treatments were terminated. A focus on acute phase treatment seems particularly near-sighted in the analysis of a disorder that is, by definition, chronic. Indeed, a small advantage that has vanished in several months seems quite meager when viewed in the context of a disorder that consists of at least two years of chronic distress.

Ultimately, the question that drives the literature comparing psychotherapy and medication is how clinicians should best manage depression in its various forms. The clinical implications of this meta-analysis are complex. We observed a consistent difference between medication and psychotherapy in dysthymia where severity was lower but chronicity was high. This effect was also apparent at follow-up in studies that continued medication, but discontinued psychotherapy. However, even if medication is slightly more potent than psychotherapy in the treatment of dysthymia, there is reason to believe that psychotherapy may be an important component of treatment. Specifically, the course of dysthymic patients cannot often be distinguished from other chronic depressions (e.g., many will ultimately meet criteria for a major depressive episode) (Dunner, 2005; Klein et al., 2006; McCullough et al., 2003; McCullough et al., 2000). While the effects of psychotherapy in patients who present with dysthymia alone may be attenuated, psychotherapy appears to be of equivalent efficacy when these patients become more depressed.

It is important to note that acute phase treatment with psychotherapy protects against the return of symptoms as much as continued treatment with medication, except in the case of dysthymia. However, we do not know how continued psychotherapy would have compared to medication. Patients with recurrent symptoms could opt for long-term or even life-time medication, but side-effects are then prolonged and there is always the risk that medication will lose its effect (Hollon et al., 2005). Alternatively, psychotherapeutic treatment may often be preferable as it is relatively brief, appears to be accompanied by a protective effect not offered by medication, and does not carry the complications associated with medications.

Although past recommendations about the treatment of dysthymia may have suffered from the 'tyranny of severity' (i.e., high symptom severity=difficult to treat) (Markowitz, 1994), achieving real change in a short time may be less likely than in the treatment of major depression. It may be that longer-term psychotherapy is necessary for psychotherapists to help patients living with chronic disorders wherein acute distress is less prominent.

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Conflict of interest

My coauthors and I do not have any interests that might be interpreted as influencing the research and ethical standards were followed in the conduct of the study.

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