

BIOGRAPHICAL SKETCH

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NAME: Arnow, Bruce A.

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POSITION TITLE: Professor of Psychiatry and Behavioral Sciences

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Queens College, Flushing, NY	B.A.	06/1969	Psychology
CA State University, Hayward, CA	M.S.	06/1976	Counseling
Stanford University, Stanford, CA	Ph.D.	06/1984	Counseling Psychology
Stanford University School of Medicine, Stanford, CA	Fellow	06/1985	Psychology

A. Personal Statement

I have several decades of experience as a clinical psychologist providing psychotherapy, supervising and teaching both M.D. and Ph.D., as well as Psy.D. trainees, and as an investigator in the area of psychotherapy process and psychotherapy outcome. I have been co-investigator of two large clinical trials examining treatment outcome for depression, both of which involved psychotherapy provided either as monotherapy or combined with pharmacotherapy. I have also served as a clinical supervisor to Veteran's Administration mental health providers in a nationwide implementation project funded by the Department of Defense to train VA practitioners in cognitive behavior therapy for depression. Further, in addition to serving as Co-Director of the Division of Adult Psychiatry and Clinical Psychology, I have directed the Stanford University Department of Psychiatry Behavioral Medicine Clinic (recently renamed the Psychosocial Treatment Clinic) since 1985. This clinic, the largest in our adult division by patient visits, plays a key role in the department, not only in providing psychotherapy to patients seeking treatment, but also in training psychiatry residents and adult clinical psychology fellows in psychotherapy. The combination of clinical trials research, clinical teaching and supervision and responsibility for providing evidence-based psychotherapy to patients in a large academic medical center has afforded a unique perspective on what is known and not known, about psychotherapy process and outcome, which will be an important asset in carrying out the proposed research.

Keller, M.B., McCullough, J.P., Klein, D.N., **Arnow, B.**, Dunner, D., Gelenberg, A., Markowitz, J., Nemeroff, C.B., Russell, J.M., Thase, M.E., Trivedi, M.H., Zajecka, J., Blalock, J.A., Borian, F.E., Fawcett, J., Hirschfeld, R., Jody, D.N., Keitner, G., Kocsis, J.H., Koran, L.M., Kornstein, S.G., Manber, R., Miller, I., Ninan, P.T., Rothbaum, B., Rush, A.J., Schatzberg, A.F., & Vivian, D. (2000). The acute treatment of chronic major depression: A comparison of nefazodone, psychotherapy, and their combination. *New England Journal of Medicine*, 342, 1462-1470.

Kocsis, J.H., Gelenberg, A.J., Rothbaum, B.O., Klein, D.N., Trivedi, M.H., Manber, R., Keller, M.B., Leon, A.C., Wisniewski, S.R., **Arnow, B.A.**, Markowitz, J.C., & Thase, M.E. (2009). Cognitive behavioral analysis system of psychotherapy (CBASP) and brief supportive psychotherapy for augmentation of antidepressant nonresponse in chronic depression: A randomized-controlled trial. *Archives of General Psychiatry*, 66, 1178-1188.

Steidtmann, D., Manber, R., Blasey, C., Markowitz, J.C., Klein, D.N., Rothbaum, B.O., Thase, M.E., Kocsis, J.H., & **Arnow, B.A.** (2013). Detecting critical decision points in psychotherapy and psychotherapy + medication for chronic depression. *Journal of Consulting and Clinical Psychology*, 81, 783-792.

Kappelman, N. Rein, M., Fietz, J., Mayberg, H.S., Craighead, W.E., Dunlop, B.W., Nemeroff, C.B., Keller, M., Klein, D.N., **Arnow, B.A.**, Husain, N., Jarrett, R.B., Vittengl, J.R., Menchetti, M., Parker, G., Barber, J.P., Bastos, A.G., Dekker, J., Peen, J., Keck, M.E., & Kopf-Beck, J. (2020). Psychotherapy or medication for depression? Using individual symptom meta-analyses to derive a Symptom-Oriented Therapy (SOrT) metric for a personalized psychiatry. *BMC Medicine*, 18, 170.

B. Positions and Honors

1984-1985 Post-doctoral Research Fellow, Department of Psychiatry, Stanford University School of Medicine
1985- Director, Psychosocial Treatment Clinic (formerly called Behavioral Medicine Clinic), Department of Psychiatry, Stanford University Medical Center
1992- Chief Psychologist, Department of Psychiatry, Stanford University School of Medicine
1992- Director, Clinical Psychology Training, Department of Psychiatry, Stanford University School of Medicine
1994-2000 Assistant Professor of Psychiatry, Department of Psychiatry, Stanford University School of Medicine
2000-2006 Associate Professor of Psychiatry, Department of Psychiatry, Stanford University School of Medicine
2002-2005 Co-Chair and Co-Director, PGSP-Stanford Psy.D. Consortium
2006-2012 Co-Director of Clinical Training, PGSP-Stanford Psy.D. Consortium
2006- Professor, Department of Psychiatry, Stanford University School of Medicine
2010- Associate Chair, Department of Psychiatry, Stanford University School of Medicine
2012- Co-Director, Adult Psychiatry & Clinical Psychology Division, Department of Psychiatry, Stanford University School of Medicine

Honors

1996- Founding Fellow, Academy of Cognitive Therapy
2013- Fellow, American Psychological Association Society of Clinical Psychology (Division 12)

C. Contributions to Science

My research interests include 1) treatment outcome in depression; 2) predictors and moderators of outcome in the treatment of depression; 3) mediators of outcome in psychotherapy. I am an author on more than 100 peer-reviewed publications, as well as one book, numerous book chapters, invited papers and presentations at national meetings.

1. Treatment Outcome in Depression

I was a co-investigator in two large trials investigating psychotherapy (Cognitive Behavioral Analysis System of Psychotherapy for Chronic Depression; CBASP), medication and combined treatment for chronic depression. Among the findings from these studies included equivalent efficacy of pharmacotherapy and psychotherapy monotherapies, and a significant advantage for combined therapy during the acute-phase treatment (Keller et al., 2000, *NEJM*); more rapid remission in patients in the combined condition compared to those in the monotherapy conditions (Manber, Kraemer, Arnow et al., 2008, *JCCP*); nonresponders to either monotherapy who were crossed over to the alternate monotherapy demonstrated significant reductions in symptoms, and those crossed over from medication to psychotherapy demonstrated higher response rates and lower attrition than those crossed from psychotherapy to medication (Schatzberg, Rush, Arnow et al., 2005, *Arch Gen Psych*); monthly maintenance psychotherapy was significantly superior to assessment-only in preventing recurrence (Klein et al., 2004, *JCCP*); and attrition due to medication side-effects was lower in combined therapy compared to medication-only, suggesting that the relationship with the psychotherapist may increase patient willingness to tolerate the side-effects of antidepressant medication (Arnow et al., 2007, *JAD*). We also found that patient preference was a potent moderator of response (Kocsis et al., 2009, *J Clin Psychiatry*). In the second trial, (Kocsis et al., 2009, *Arch Gen Psychiatry*), we found that, among patients who did not respond to an initial open-label trial of antidepressant medication and were subsequently randomized to algorithm-driven pharmacotherapy versus combined pharmacotherapy and psychotherapy, psychotherapy did not add to the efficacy of pharmacotherapy.

- Klein, D.N., Santiago, N.J., Vivian, D., **Arnow, B.A.**, Blalock, J.A., Dunner, D.L., Kocsis, J.H., Markowitz, J.C., Manber, R., McCullough, J.P., Rothbaum, B., Rush, A.J., Trivedi, M.H., Thase, M.E., Borian, F.E., Keitner, G.I., Miller, I.W., & Keller, M.B. (2004). Cognitive behavioral analysis system of psychotherapy as a maintenance treatment for chronic depression. *Journal of Consulting and Clinical Psychology*, *72*, 681-688.
- Arnow, B.A.**, Blasey, C., Manber, R., Constantino, M.J., Markowitz, J.C., Klein, D.N., Thase, M., Kocsis, J.H., & Rush, A.J. (2007). Dropouts versus completers among chronically depressed outpatients. *Journal of Affective Disorders*, *97*, 197-202.
- Schatzberg, A.F., Rush, A.J., **Arnow, B.A.**, Banks, P., Blalock, J.A., Borian, F.E., Howland, R., Klein, D.N., Kocsis, J.H., Kornstein, S.G., Manber, R., Markowitz, J.C., Miller, I., Ninan, P.T., Rothbaum, B.O., Thase, M.E., Trivedi, M.H., & Keller, M.B. (2005). Chronic Depression: Medication (Nefazadone) or psychotherapy (CBASP) is effective when the other is not. *Archives of General Psychiatry*, *62*, 513-520.
- Kocsis, J.H., Leon, A.C., Markowitz, J.C., Manber, R., **Arnow, B.**, Klein, D.N., & Thase, M.E. (2009). Patient preference as a moderator of outcome for chronic depression treated with nefazodone, cognitive behavioral analysis system of psychotherapy, or their combination. *Journal of Clinical Psychiatry*, *70*, 354-361.

2. Predictors and Moderators of Outcome in Depression

In each of the two large clinical trials noted above, we found that early therapeutic alliance significantly predicted subsequent change. In the first of these (Klein et al., 2003, *JCCP*), we examined the alliance in both a psychotherapy only and a combined condition. We found that early alliance predicted subsequent change after controlling for prior improvement and 8 prognostically relevant patient variables in both conditions. In the second study (Arnow et al., 2013, *JCCP*), we found that early alliance significantly predicted outcome after controlling for prior change in both a directive cognitive behaviorally oriented treatment (CBASP) and brief supportive psychotherapy (BSP), a nondirective treatment emphasizing common factors as a mechanism of change. We also found a significant alliance by treatment type interaction which revealed that the alliance was a stronger predictor of post-treatment outcome in CBASP compared with BSP. A study based on the Keller et al. (2000) data revealed that therapeutic reactance predicted positive outcome in psychotherapy, but not in medication-only nor combined treatment (Arnow et al., 2003, *JCCP*). We also found that response styles (i.e., rumination and distraction) did not predict endpoint depression scores in chronically depressed patients in treatment and that these results were consistent among both men and women (Arnow, Spangler, Klein & Burns, 2004, *Cognitive Ther Res*). In a study derived from the ISPOD-D trial, we found that depression subtypes (melancholic, atypical, anxious) responded similarly to three different antidepressant medications, with no significant differences in either remission rates or symptom reduction (Arnow et al., *AJP*, 2015). We found that subtype membership did not moderate outcome with the three medications used in this trial. Additionally, we found evidence of substantial overlap in the three subtypes and that 25% or more of patients did not meet criteria for any subtype. In the same report, we examined subtype distribution in the STAR*D dataset and found that the distributions were similar.

- Arnow, B.A.**, Spangler, D., Klein, D.N., Burns, D.D. (2004). Rumination and distraction among chronic depressives in treatment: A structural equation analysis. *Cognitive Therapy and Research*, *28*, 67-83.
- Arnow, B.A.**, Manber, R., Blasey, C., Klein, D.N., Blalock, J.A., Markowitz, J.C., Rothbaum, B., Rush, A.J., Thase, M.E., Riso, L.P., Vivian, D., McCullough, J.P., & Keller, M.B. (2003). Therapeutic reactance as a predictor of outcome in the treatment of chronic depression. *Journal of Consulting & Clinical Psychology*, *71*, 1025-1035.
- Arnow, B.A.**, Steidtmann, D., Blasey, C., Manber, R., Constantino, M.J., Klein, D.N., Markowitz, J.C., Rothbaum, B.O., Thase, M.E., Fisher, A.J., & Kocsis, J.H. (2013). The relationship between the therapeutic alliance and outcome in two distinct psychotherapies for chronic depression. *Journal of Consulting and Clinical Psychology*, *81*, 627-638.
- Arnow, B.A.**, Blasey, C., Williams, L.M., Palmer, D., Rekshan, W., Schatzberg, A.F. Etkin, A., Kulkarni, J., & Rush, A.J. (2015). Are depression subtypes relevant in predicting antidepressant response?: A report from the iSPOT-D trial. *American Journal of Psychiatry*, *172*, 743-750.

3. Mediators of Outcome in Psychotherapy

In addition to investigations of predictors and moderators of psychotherapy outcome, I have also been involved in research on mediators of outcome, that is, how psychotherapy works, or what mechanisms account for outcome. In a study of more than 400 patients receiving either psychotherapy or psychotherapy + antidepressant medication, we found that while the acquisition of a specific skill taught in cognitive behavioral analysis system of psychotherapy (CBASP) for depression at the midpoint of treatment predicted outcome, medication status did not predict either rate of skill acquisition or overall skill level at the end of treatment (Manber et al., 2003).. In a subsequent investigation, we examined whether the ability to utilize the skills taught in CBASP mediated the relationship between the therapeutic alliance and endpoint depression and also whether the alliance moderated the relationship between skills acquisition and treatment outcome. Neither model was supported. Rather, we found that each of these factors were independent contributors to symptom reduction (Santiago et al., 2005, CTR). Another study examined changes in coping and attributional style in CBASP and combined CBASP and medication. In this study, we found that changes in escape-avoidant coping and attributional style partially mediated the superiority of combined treatment (Blalock et al., 2008, CTR). In another study where patients received CBASP + medication, brief supportive therapy plus medication or medication alone, we found that changes in social problem solving predicted subsequent change in depression symptoms. However, the magnitude of the associations did not differ across treatment conditions, suggesting that social problem solving is not a mechanism distinguishing CBASP from other treatments (Klein et al., JCCP, 2011). In a study of patient interpersonal impact, as rated by therapists, we found that among depressed patients receiving CBASP with or without medication, reductions in hostile-submissive behavior were significantly associated with reduced depression at treatment endpoint, regardless of treatment condition (Constantino et al., 2012, JCCP). Another investigation revealed that patient interpersonal impact mediated the relationship between therapeutic alliance and endpoint depression. Specifically, higher early alliance predicted decreases in patient hostile-submissiveness during therapy, which in turn related to lower endpoint depression (JCCP, 2016).

Manber, R., **Arnow, B.**, Blasey, C., Vivian, D., McCullough, J.P., Blalock, J.A., Klein, D.N., Markowitz, J.C., Riso, L.P., Rothbaum, B., Rush, A.J., Thase, M.E. & Keller, M.B. (2003). Patients' therapeutic skill acquisition and response to psychotherapy, alone or in combination with medication. *Psychological Medicine*, 33, 693-702.

Klein, D.N., Leon, A.C., Li, C., D'Zurilla, T.J., Black, S.R., Vivian, D., Dowling, F., **Arnow, B.A.**, Manber, R., Markowitz, J.C., & Kocsis, J.H. (2011). Social problem solving and depressive symptoms over time: A randomized clinical trial comparing cognitive behavioral analysis system of psychotherapy, brief supportive psychotherapy, and pharmacotherapy. *Journal of Consulting and Clinical Psychology*, 79, 342-352.

Constantino, M.J., Laws, H.B., **Arnow, B.A.**, Klein, D.N., Rothbaum, B.O., & Manber, R. (2012). Changes in patients' interpersonal styles predicts outcome in treatment for chronic depression. *Journal of Consulting and Clinical Psychology*, 80, 354-364.

Constantino, M.J., Laws, H.B., Coyne, A.E., Greenberg, R. P., Klein, D.N., Rothbaum, B.O., & Manber, R. & **Arnow, B.A.** (2016). Change in patients' interpersonal style as a mediator of the alliance-outcome association in treatment of chronic depression. *Journal of Consulting and Clinical Psychology*, 84, (12), 1135-1144.

My publications may be viewed at:

<https://profiles.stanford.edu/bruce-arnow?tab=publications>