WHAT IS EVIDENCE? … HOW DO YOU KNOW?

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"Now for the evidence," said the King, "and then the sentence."
"No!" said the Queen, "first the sentence, and then the evidence!"
"Nonsense!" cried Alice, so loudly that everybody jumped, "the idea of having the sentence first!" (Carroll, n.d.)

EVIDENCE c *PRACTICE PARTNERSHIP*

Evidence and practice are a reciprocal partnership. We share a basic need for practical applications and a practical need for basic discoveries (Breckler, 2004). Together we can bridge the reciprocal linkages between evidence and practice. We must attend to what evidence is produced, how evidence is used, and the linkages between production and use (Levin, 2004). We face reciprocal issues of evidence base, generalizability, transportability, and accessibility. We need a common process for evidence-based practices; guidelines for making evidence-based decisions, and an azimuth for pulling in the same direction.

Best practices reflect the integration of multiple sources of evidence, everything from research, to practitioner's experiences, to situational context. We must be fully informed about best available evidence, the strengths and limitations of different sources of evidence, the strengths and limitations of our expertise (e.g., CPT-stuff, competencies, experiences, and more), as applied to each situational-specific context.

Why engage in this reciprocal partnership? Because, what we designated as evidence will determine (DeAngelis, 2005): (1) our practices and thereby the outcomes we effect; (2) what is researched; (3) what is funded; and most importantly, (4) what we teach in academic curricula. Our students are a most valuable asset, they are our future, they will replace us. Toward this end, faculty hold great power; they mold our future through their students and through the curricula they offer.

c Evidence

We must consider the evidence first, before deciding upon a course of action. We must consider what constitutes evidence and how it differs from whatever is NOT evidence. We must recognize multiple sources of evidence. We must evaluate and integrate best-available evidence from multiple sources, before arriving at informed decisions. Such a process will better ensure evidence-based practices and desired outcomes.

We must not only identify practices supported by evidence and those that have been shown to be ineffective, but also those practices that have not yet been tested. Remember, the absence of evidence proves nothing, other than, perhaps, "we don't know." Just because there is little or no evidence, does not mean the practice is ineffective. Reciprocally, just because a technique has received considerable "research press" does not necessarily make it better than techniques that have not been tested. We must draw from the entire range of research approaches. Different types of research are better suited to address different types of questions (Greenberg & Newman, 1996). Furthermore, decisions or practices based upon what we know today SHOULD become outdated. Because our evidence-base is dynamic, so too must our practices and decisions change.

Evidence - Support for a proposition, derived from empirical observation or experience (Popper, 1992).
Empirical {Ger. *Erfahrung*} - Based on publicly observable events; use of the senses, observation, or experience generally.
Empiricism - Reliance on experience as the source of ideas and knowledge. Epistemological theory that genuine information must be acquired by *a posteriori* means, such that nothing can be thought without first being sensed.

c Generalizability

Together, we can do research that works in the real world. Reciprocally, we can do field work that furthers our understanding of basic mechanisms or theoretical underpinnings.

c Transportability

We must attend to the reciprocal linkages between evidence and practice. We must present ourselves in language that others understand: researchers must communicate with practitioners, practitioners must communicate with researchers and with other practitioners, and we all must communicate with our clients, funding agencies, and policy-makers.

c Accessibility

Evidence must be readily accessible when it's needed, where it's needed, and by whomever needs it. Even the most well-done research will not matter unless consumers can benefit from it (Levin, 2004). Reciprocally, practitioner expertise and situation-context evidence must be available to researchers.

We must accumulate, mine, analyze, and synthesis our evidence base across all sources.

SOURCES OF EVIDENCE

Description	*Limits & Gaps*
Research	
"Traditional" evidence source. The breadth of research methods is critical to address the breadth of questions, for example (APA PTF EBP, 2005; Greenberg & Newman, 1996): § effectiveness studies, e.g., ecological validity field testing § single-subject designs, e.g., measure variables multiple times before and after an intervention § process-outcome studies, e.g., link measures to outcomes § ethnographic research, e.g., detailed descriptions in natural settings § systematic case studies, e.g., aggregated comparisons across applications § experimental research, e.g., test functional relationships	Paradox: Presence or absence of research can bias practices. Some techniques are widely used because they are easy to test. In contrast, some techniques are avoided because they have NOT been tested (DeAngelis, 2005). Paradox: A design's greatest strength can be its greatest weakness. Generalizability – external validity; to what extent is lab research applicable to the real world Transportability – to what extent are research products consumable by non-researchers? Accessibility – to what extent are research products readily accessible when needed, where needed?
Practitioner Expertise	
Encompasses education, experience, diagnostic judgment, skills, adaptation, self-assessment, and much more. Outcomes are related to treatment provider, above and beyond type of treatment (Crits-Christoph et al., 1991; Kim, Wampold, & Bolt, in press, Huppert et al., 2001; Wampold & Brown, 2005). Consistent evidence of enduring and significant differences between experts and novices (Bédard & Chi, 1992; Bransford, Brown, & Cocking, 1999; Gambrill, 2005). Seasoned practitioners are better than novices at making diagnoses and at modifying them given client-specific conditions, and changes to those conditions (DeAngelis, 2005). Inferences, diagnostic judgments, and case formulations can be reliable and valid (Eels et al., in press; Persons, 1991; Westen & Weinberger, 2004, in press). Sensitivity and flexibility in administering treatments produce better outcomes than rigid application of manuals or principles (Castonguay et al., 1996; Henry et al., 1993; Huppert et al., 2001). Client-practitioner relationships influence outcomes (Horvath & Bedi, 2002; Martin, Garske & Davis, 2000; Shirk & Karver, 2003).	Moving from research to practice carries inherent risks, e.g., idiosyncratic interpretations, overgeneralizations, other errors in judgment (Dawes, Faust, & Meehl, 2002; Grove et al., 2000; Meehl, 1954; Westen & Weinberger, 2004) We know very little about (APA PTF EBP, 2005): § practices of practitioners who obtain best outcomes, in general and in situation-specific contexts § skills used by experts in administrating interventions that have proven to be effective § reliability and validity of diagnoses and case formulations § conditions that maximize expertise (rather than primarily on limits to expertise) § errors and biases linked to decrements in outcomes § standard measures of diagnostic judgments, process, progress, and outcomes § distinguishing expertise related to common factors shared across practitioners and expertise specific to particular applications. Generalizability – to what extent do confounded, applied outcomes relate to basic mechanisms or theoretical underpinnings Transportability – practitioners must communicate with researchers; experience must be captured in ways that can be accumulated, analyzed, and synthesized Accessibility – consumable applied products are not readily accessible when needed, where needed
Situation-Specific Context	
Rarely do we come across even two client situations that are exactly the same. Instead, each situation is confounded by intricate interaction effects of situational-specific factors, practitioner expertise, and variations of interventions. We adapt (customize, tailor) interventions to each client's specific problems, functional status, resistance level, stage of change, values, culture, cost-benefit, client preferences, and more (APA PTF EBP, 2005).	This is the most uncharted evidence source, with multiple factors to untangle, including: § variations in presenting problems; when have we crossed into another class of problem? § etiology (root causes); how did this client/organization come to be in this state? § concurrent symptoms or multiple problems, rarely is there just one § level of resistance and current stage of change § environmental context and stressors § culture, values, expectations, and many more.

Ways of Knowing (adapted from Peirce, 1887)	
Tenacity	**It has always been that way**. One forms an opinion and stubbornly clings to it.
Intuition	**It seems right or it feels true**.
Authority	**Experts or other authoritative source say it is true**. Beliefs are accepted on faith based upon coming from an authority figure or institution, such as, religious doctrine, political beliefs, parents, teachers, leaders, etc. This method usually lacks rationale (logical reasoning) and is subject to rebellion or questioning of authority.
Rationalism	**It's reasonable or it makes sense logically**. One may reason something out without reference to experience, data, or other publicly observable events. Because this method applies logic, deductive and inductive reasoning are subsets of rationalism.
Empiricism	**It was observed and measured to be true.** This way of knowing is testable, fallible, and self-correcting because it is open to refutation on the basis of publicly observable events. Empiricism allows for bad reasoning and good reasoning and allows each individual to arrive at his/her own conclusion based upon the evidence. In contrast, the other three ways of knowing lack objective controls or criteria for assessing validity or truth.

REFERENCES

American Psychological Association Presidential Task Force on Evidence-Based Practice (APA PTF EBP). (February 25, 2005). *Draft policy statement on evidence-based practice in psychology*. Washington, DC: American Psychological Association.

Bédard, J., & Chi, M. T. (1992). Expertise. *Current Directions in Psychological Science, 1,* 135-139.

Bransford, D., Brown, A. L., & Cocking, R. R. (Eds.). (1999). *How people learn: Brain, mind experience, and school.* Washington, DC: National Academy of Sciences.

Breckler, S. J. (2004, June). The practical need for basic science. *Monitor on Psychology, 35* (6), 37.

Carroll, L. (n.d.). *Alice's adventures under ground* [After Lewis Carroll's original manuscript which later became *Alice in wonderland*]. Panda Prints, Inc.: New York.

Carroll, L. (1946). *Alice's adventures in wonderland*. New York: Random House.

Castonguay, L. G., Goldfried, M. R., Wiser, S., Raue, P. J., & Hayes, A. M. (1996). Predicting the effect of cognitive therapy for depression: A study of unique and common factors. *Journal of Consulting and Clinical Psychology, 64*, 497-504.

Crits-Christoph, P., Baranackie, K., Kurcias, J. S., Carroll, K., Luborsky, L., McLellan, T., et al. (1991). Meta-analysis of therapist effects in psychotherapy outcome studies. *Psychotherapy Research, 1*, 81-91.

Dawes, R. M., Faust, D., & Meehl, P.E. (2002). Clinical versus actuarial judgment. In T. Gilovich & D. Griffin (Eds.), *Heuristics and biases: The psychology of intuitive judgment.* (pp. 716-729). New York: Cambridge University Press.

DeAngelis, T. (March 2005). Shaping evidence-based practice. *Monitor on Psychology, 36*(3), 26.

Edwards, D. J., Dattilio, F. M., & Bromley, D. B. (2004). Developing evidence-based practice: The role of case-based research. *Professional Psychology: Research & Practice*, *35*(6), 589-597.

Eels, T. D., Lombart, K. G., Kendjelic, E. M., Turner, L. C., & Lucas, C. (in press). The quality of case formulations: A comparison of expert, experienced, and novice cognitive-behavioral and psychodynamic therapists. *Journal of Consulting and Clinical Psychology.*

Gambrill, E. (2005). Critical thinking in clinical practice: Improving the accuracy of judgments and decisions about clients (2nd ed.). New York: Wiley.

Grove, W. M., Zald, D. H., Lebow, B. S., Snitz, B. E., & Nelson, C. (2000). Clinical versus mechanical prediction: A meta-analysis. *Psychological Assessment, 12*, 19-30.

Henry, W. P., Schacht, T. E., Strupp, H. H., Butler, S. F., & Binder, J. L. (1993). Effects of training in time-limited dynamic psychotherapy: Changes in therapist behavior. *Journal of Consulting & Clinical Psychology, 61,* 434-440.

Horvath, A. O., & Bedi, R. P. (2002). The alliance. In J. C. Norcross (Ed.), *Psychotherapy relationships that work: Therapist contributions and responsiveness to patients* (pp. 37- 883 70). New York: Oxford University.

Huppert, J.D., Bufka, L.F., Barlow, D.H., Gorman, J.M., Shear, M.K., & Woods, S.W. (2001). Therapists, variables, and cognitive behavioral therapy outcome in a multicenter trial for panic disorder. *Journal of Consulting and Clinical Psychology, 69,* 747-755.

Kim, D., Wampold, B. E. & Bolt, D. M. (in press). Therapist effects in psychotherapy: A random effects modeling of the NIMH TDCRP data. *Psychotherapy Research.*

Levant, R. F. (2005, February). Evidence-based practice in psychology. *Monitor on Psychology, 36*(2), 5.

Levin, B. (2004.). Making research matter more. *Education Policy Analysis Archives*, *12*(56).

Martin, D. J., Garske, J. P., & Davis, M. K. (2000). Relation of the therapeutic alliance with outcome and other variables: A meta-analytic review. *Journal of Consulting and Clinical Psychology, 68*, 438-450.

Meehl, P. E. (1954). *Clinical vs. statistical prediction.* Minneapolis, MN: University of Minnesota Press.

Persons, J. B. (1991). Psychotherapy outcome studies do not accurately represent current models of psychotherapy: A proposed remedy. *American Psychologist, 46,* 99-106.

Popper, K. R. (1992). *Logic of scientific discovery.* New York: Routledge. Retrieved August 19, 2005 from http://www.philosophypages.com/dy/e5.htm#empl

Shirk, S. R., & Karver, M. (2003). Prediction of treatment outcome from relationship variables in child and adolescent therapy: A meta-analytic review. *Journal of Consulting & Clinical Psychology, 71,* 452-464.

Stokes. D. E. (1997). *Pasteur's quadrant: Basic science and technology innovation*. Washington, D. C.: Brookings Institution Press.

Taylor, S. (2002, Summer). Right reasoning: S. I. Hayakawa, Charles Sanders Peirce and the scientific method. *A Review of General Semantics*, 141-147.

Wampold, B. E., & Brown, G. S. (2005). Estimating therapist variability: A naturalistic study of outcomes in managed care. *Unpublished manuscript*.

Westen, D., & Weinberger, J. (2004). When clinical description becomes statistical prediction. *American Psychologist, 59,* 595-613.