

ADOPTING EVIDENCE-BASED PRACTICES IN MISSOURI'S MENTAL HEALTH SYSTEM: A GUIDE

This paper is the product of the Evidence Based Practice Workgroup of the Missouri Transformation State Incentive Grant. The purpose of the paper is to define Evidence Based Practice, describe implementation issues and convey the consensus reached by this cross departmental group.

This paper is not a compendium of practices, rather, it provides guidance to find the existing registries and advise the reader to accept that the nature of research precludes static lists. The foundational definition of Evidence Based Practices is short:

1. Standardized Treatments – Manuals or Guidelines
2. Studies in Controlled Research Designs
3. Shown to Improve Important Outcomes with Objective Measures
4. Research Conducted by Different Investigator Teams

However, experience has shown that these few sentences contain volumes of complexity, which we will touch upon in the following pages.

I. SOME PRELIMINARY CONSIDERATIONS

Focusing the mental health system (state/local, public/private) in Missouri on Evidence-Based Practices (EBP) is expected to result in more effective rehabilitation and better outcomes.

This guide to adopting Evidence-Based Practices has been written because of their importance. We want to encourage funding to be directed to practices that have demonstrable outcomes—practices that work. Hence, this paper outlines the guiding principles and issues confronting Missouri mental health provider agencies when identifying and implementing Evidence-Based Practices applicable to the mental health needs of a diverse population with age-specific needs. Because mental health services cross departmental and agency lines and are not the sole purview of the Department of Mental Health (DMH), this concept paper was developed by an interagency group. Each department and agency is encouraged to use this document to guide the internal adoption and implementation of Evidence-Based Practices in behavioral health.

Practices are based on assumptions out of which they emerge. One component of these foundational assumptions is values. In this Introduction the basic core values of Evidence-Based Practices in Missouri are set forth and defined. Evidence-based practices are ultimately

grounded in these values. In addition to values, successful Evidence-Based Practices are also dependent on a nurturing culture and context. The basic dimensions of this context include five domains: individual needs and preferences, practitioner knowledge and skills, efficacy and effectiveness, resources and constraints, and program/provider goals and values. In addition to the five domains the importance of community acceptance is also emphasized. Crafting appropriate implementation strategies to match the degree of stakeholder readiness to implement a particular Evidence-Based Practice is fundamental to successful implementation, and these strategies are presented.

A. Values

Although many systems are involved in the delivery of mental health services, we have chosen to put this in the context of the values of Missouri DMH as the state mental health authority; Values to which we aspire:

Community Inclusion – Missourians who participate in mental health services are welcomed and equally included in education, work, housing and social opportunities in their communities.

Accessible, Safe, Affordable, and Integrated Services – Missourians with mental health needs easily access safe, affordable and integrated medical and behavioral services.

Partners in Personal Service Design – Missourians participating in mental services are active partners in designing their services and supports.

Effectiveness Measured by Participant Outcomes – The effectiveness of Missouri’s mental health services is measured by the meaningful outcomes experienced by the people receiving them.

Valued and Motivated Staff – Missourians receive mental health services from competent, motivated, and highly valued staff serving as effective stewards of the public trust.

Prevention and Early Intervention – Emphasizing prevention and early intervention strategies avoids or minimizes the mental health problems of Missourians.

Respected Unique Participant Characteristics – Missourians participating in mental health services are valued for their uniqueness and diversity and respected without regard to age, ethnicity, gender, race, religion, sexual orientation or socio-economic condition.

Evidence-Based Practice is the integration of the best research evidence with clinical expertise and patient values, Institute of Medicine, 2001

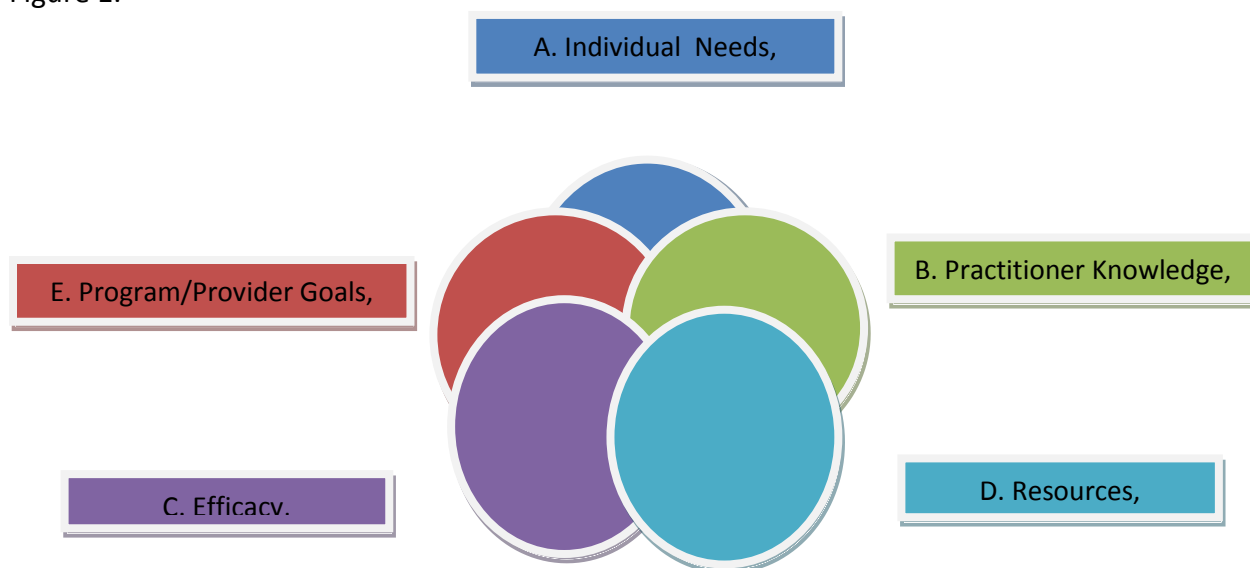
Although some of these values are more directly related to the discussion of EBPs than others, all undergird the identification and implementation of evidenced-based practices.

B. Domains of Evidence-Based Practices

Often Evidence-Based Practice is defined solely by the level of science in support of the practice, however, for Missouri we prefer a broader, more holistic, approach that takes into account important aspects of EBPs beyond just their scientific evidence.

This is captured in the American Psychological Association (2006, p. 273) definition of EBP as "the integration of the best available research with clinical expertise in the context of patient characteristics, culture and preferences." Other authors have also taken a multi-pronged approach to determining the critical domains of Evidence-Based Practices (Gibbs, 2003; Davies, 2004, further citation). One such approach is visually depicted by Julia Littell in the following schematic, which captures the importance of the various domains that must be addressed in identifying and implementing EBPs as well as the complex interdependence among these domains. One area that isn't specifically referenced by Littell is the importance of stakeholders in the community. This may fit conceptually in the area of resources and constraints, but we felt it deserved particular notice, as some EBPs may need community support for proper and full implementation. While the importance and role of community may vary from evidence-based practice to evidence-based practice, the inclusion and nurturing of community stakeholders should always be considered.

Figure 1.



C. Guidelines for Developing Evidence-based Implementation Strategies

In addition to taking into account each of the domains of EBPs; it is important to consider implementation strategies for introducing new EBPs. The introduction of an EBP often represents a significant change for persons with mental health needs, providers, agencies, and community partners. Thus, one useful approach is to employ a "stages of change model" to guide EBP selection, adoption, and implementation. This approach, borrowed from clinical change theory, can be used to consider where various stakeholders are in their desire and

motivation to change in a manner that would support the implementation of a specific EBP. Such considerations can suggest strategies that may move an individual, group, agency, etc. forward along a continuum of change acceptance.

Within each domain there are individuals, institutions, and communities at different stages of readiness for change. It is important to consider these stages, because matching an implementation strategy to stage of readiness is critical.

Appendix 2 contains, in chart form, the depiction of how implementation of EBP may be staged.

The Littell/Gibbs “flower” diagram, (Figure 1) highlights the integral domains underpinning successful implementation. A number of EBPs have been identified over the last 30 years in mental health, yet broad utilization has not followed, due to deficits in one or more domains that have prevented implementation. People with a mental illness may want a practice, practitioners may be trained and wish to deliver it, managers may support it, but without sufficient funding, there is a stalemate. Conversely, funds sometimes become available to implement a practice because a particular stakeholder group succeeds at the legislative level, yet the practice fails to take hold because of lack of trained staff and programs. If all other aspects are in place, but people with a mental illness/families are not willing to accept the practice, the implementation effort will also fail.

Similarly, within each domain there are individuals and institutions at different stages of readiness for change. It is useful to think about these stages, because matching an implementation strategy to the appropriate stage of readiness is most critical. Thus, as we attempt to move Missouri toward EBP, we must be mindful of the stages of change and match our implementation activities to them within each domain of EBP.

Detailed, staged, action plans should be developed for each area. The locus of planning will depend upon the practice and the scope of need for it. Some practices, such as Supported Employment for adults and Wrap Around for children will require statewide implementation whereas others that treat smaller numbers or specific locations will have different needs for roll-out.

II. DOMAINS, STAGES OF CHANGE, AND EVIDENCE-BASED PRACTICE

A Note on Language.

Throughout much of this section a “person first” language is used to describe people who need, seek, and/or use mental health services. Although the term “consumer” is in common usage, we believe that person first language is more inclusive than “consumer.” Historically, “consumer” is linked to a specific movement and culture associated with persons who have serious mental illness (SMI) and who have struggled with the mental health establishment to be recognized as having a necessary voice in both the treatment of their illness and in the mental health service structure. Although commonly employed, the use of “consumer” is certainly not unanimous, even among persons with serious mental illness. Alternative terms have also been suggested, such as “survivor” or “ex-patient.”

Many older adults who suffer from late-onset mental health/substance abuse issues have not been part of that culture and do not recognize the use of the term. Although they have serious mental health needs, they do not self-identify as “consumers.” In fact, the term may drive them away from accepting their mental health problems or accepting mental health services. Similarly, children and adolescents may not self-identify with the term.

But, although “person or individual with mental health needs,” or a variant of this phrase, is a more inclusive term than “consumer,” there are still a substantial number of persons who self-identify as “consumers.” The phrases “consumer operated” or “consumer driven” are engrained in our language, services, and programs, even extending to some proper names such as “Consumer Operated Service Programs (COSP).” Because of this, in this section, when speaking mainly of services and programs for persons self-identifying as “consumers,” we will not uniformly use a person first vocabulary. However, even then, the reader should keep in mind the tension between people who identify with the term “consumer” and those who do not. The term “consumer” should be understood in the context of that tension.

In the rest of this section each of the five domains of evidence-based practice is discussed in greater detail, stages of change are identified and these are linked to some general strategies of implementation.

A. Individual Needs and Preferences

Evidence-Based Practices are occasionally criticized as being too rigid; a one size fits all approach to services. Although in doing research it is necessary to try to create a homogenous population, in the real world people who participate in Evidence-Based Practices are very different. They may have different backgrounds, values, experiences and beliefs. Therefore, practitioners must recognize individual needs and preferences, both in the selection of a practice and in its implementation. Although the scientific evidence might support Practice A for an individual, human diversity must be taken into account in the selection of a practice as noted in Figure 1. For example, requiring every school age child to shave his/her head might be

an empirically sound way to decrease the spread of lice; however, it would not be in line with the values and preferences of many families and children.

Key to honoring individual needs and preferences is recognizing and ensuring that participants have an **informed** and **active** voice and choice in the mental health services they receive. To achieve this, clinicians must provide persons with a mental illness with meaningful information about different service options and choices. Ethically, mental health professionals must clearly explain a proposed intervention, its benefits, and potential side effects or consequences. Multiple options should be provided and fully explained in the context of an active dialogue.

The issue of identifying and valuing the culture and wishes of an individual also applies to recognizing the population served as a whole. This may be recognizing the values of a rural v. urban community, a predominantly Hispanic v. Caucasian population, or the impact poverty has on functioning. Also important is the recognition that different age groups within a population may have different values and perceived needs. *A repeated caveat in this document is that a practice is only considered evidence-based when applied for the population on which it was tested and supported and for the specific outcomes cited.* Even if practice A is successful with urban, African-American males, it is not considered an EBP if applied to rural, Caucasian females. Therefore clinicians must be knowledgeable; not only about the practice, but also of the research evidence behind the practice, to assure that it is appropriately implemented. Historically, evidence-based medicine or practice was based on a medical view of health care

“Organizations and systems must demonstrate their value of diversity . . . culture is a resource to draw upon, not a problem to be solved”

Terry Cross, 2003

which focused on the clinician who managed the “patient’s” disease and was about improving the clinician’s use of evidence to determine the most appropriate treatment for that disease. More contemporary thinking, as noted above, involves a shared decision making approach in which persons needing mental health services and clinicians are active partners. This approach acknowledges and

honors the way a person experiences the disease, that is, the effect on their life, how he or she functions in society, and the person’s unique life values and goals. A key duty of clinicians is to assist people in understanding what is known about the benefits and harms of treatment options, enabling **people** to make the decision about how **they** want to proceed. This emphasis can raise some of the following issues:

- The most effective way to present evidence and options, as well as the potential benefits, harm, and risks of any particular intervention;
- The professional skills and competencies required, including communication skills that are appropriate for the racial, ethnic and age groups with which the clinician works;

- How people with mental health needs may weigh and interpret evidence to make decisions about their health care, and how their preferences may differ from the recommendations made by clinicians; and
- Ethical questions on whether/when health care professionals or policy makers' interpretations of the evidence should override people's individual choices.

Ideally all people should be able to access valid and relevant information about their health status. They should be able to judge the advantages and disadvantages of all possible courses of action, according to their values, beliefs, preferences, and their personal circumstances. Many people still find themselves interacting with providers who favor the 'classical', authoritarian, paternalistic, asymmetrical model of "patient-provider" interaction. In these situations, a person's access to information is prevented by health care providers who function as the main purveyors of knowledge. In other cases, people with a mental illness face providers who prefer an "informed choice" decision making model, in which they give people as much information as they think is needed to make a decision, but the professionals do not participate directly in the decision. A shared decision making approach goes beyond this, placing people with mental health needs and providers of mental health services as active participants and partners in the decision making process, with a two-way exchange of information.

Implementation Strategies

A central strategy is to provide information broadly to individuals and families that some things work better than others in order to create demand for EBP. Thus we must: a) Build a system for listening to the preferences of informed service recipients; b) Create a flexible response method for new iterations of practice and outcome reporting; c) Take pains to create cultural and age relevance and competence in EBP rollout.

True informed consent requires strong participation from people with mental health needs and their families, as well as peer-to-peer sharing. Clearly, relationships between policy makers/funders and individuals with a mental health problem/families must be in place to permit the necessary dialogue to build consensus (or at least understanding) about EBP implementation. Current examples of this dialogue exist in the Department of Mental Health, Missouri Advisory Councils for Comprehensive Psychiatric Services and Alcohol and Drug Abuse, both of which statutorily require that "one-half of the members shall be consumers" (631.021 RSMo; 632.020 RSMo). In addition there is the engagement of individuals and families in certification and monitoring activity, training peer and family support staff, hiring consumers and family members, supporting Consumer Operated Service Programs (COSP), among other forms of consumer involvement.

“Nothing about us without us” should be a touchstone consumer value. In order to conduct informed needs assessment and eventual implementation of any practice, the relationships with the consumer/family community must be robust. This requires going beyond those “known” consumer and family leaders who currently participate in the above mentioned activities. It may also require identifying and actively reaching out to groups that have traditionally been underserved by the mental health system. Public relations and marketing skills are needed to “drill down” to the broader population that may neither be involved nor identify themselves as consumers.

(Please refer to **Appendix 2**)

B. Practitioner Knowledge and Skills

Some clinicians are concerned that manualized Evidence-Based Practices diminish the need for professionals trained in the mental health field, and that now “anyone” can provide a practice. Contrary to this belief, Evidence-Based Practices are geared to a specific level of expertise and many rely on core competencies of trained mental health clinicians. Some of the core competencies identified include motivational and harm reduction approaches, establishing therapeutic rapport and relationships, and assessment or identification of mental health symptoms or disorders. Additionally, competency in recognizing and addressing trauma is critical. However, it should be noted that not every individual that has a graduate degree in the mental health field necessarily has these core competencies. Peers and family members are emerging as valued team members in the evidence based practice arena, and they are learning core competencies to enable them to contribute. When selecting a caregiver, either as an employee or a therapist, his/her core competencies should be assessed. A range of skills is key to successful implementation of EBP.

Clinicians and/or their employers are responsible for maintaining up-to-date knowledge in their area of practice. This may include new findings in the identification of a disorder, or the impact of a disorder or a specific practice. Merely relying on learning obtained in graduate school can quickly reduce the skills of a once trained clinician. Training is often considered a low priority in difficult budget times, yet this is precisely when a highly skilled workforce can be most critical in adapting to the increasing demands and stressors. **Training should always remain a top priority for individuals and agencies.**

Agencies and licensing bodies that monitor continuing education should directly tie a clinician’s practice to the obtainment of appropriate training in their area of expertise. Training should be easily accessed and affordable as well as meaningful to the individual’s area of practice. Clinicians who work with adolescents in the juvenile justice system should be trained in systems

issues, common disorders, and effective interventions for delinquent type behaviors, as opposed to trainings on adults with substance abuse issues simply to obtain necessary continuing education units for licensure. Likewise, practitioners working with older adults must be trained in the interaction between physical and mental health, in age-appropriate communication skills, and holistic assessment skills. Below are listed some key issues/tools to develop and sustain a well trained workforce as presented by Michael Hoge, The Annapolis Coalition Yale School of Medicine, at the ADAA Management Conference in 2007:

- Implement and evaluate interventions, including:
 - Salary, benefits, and financial incentives,
 - Non-financial incentives and rewards,
 - Job characteristics, and
 - Work environment;
- Develop career ladders;
- Cultural and linguistic competence;
- Public relations campaign;
- Competency development;
- Curriculum development;
- Evidence-based training methods;
- Substantive training of direct care workers;
- Technology assisted instruction;
- Co-occurring competencies in all staff; and
- Systemic support to sustain newly acquired skills.

Not listed above but also of critical importance is **age appropriate competency**.

As with selecting a practice, people receiving services should have a choice in the therapist/practitioner with whom they work; whether it is as direct as selecting by gender or culture, or whether it may be more of a style issue, in being able to feel comfortable with, and confident in their practitioner. To be able to permit a wide choice—in both practitioners and practices—the system must be flexible and support access to a wide range of services and providers.

Implementation Strategies

Provide information about EBP concepts and practices to practitioners; introduce new information in all educational settings preparing practitioners; provide resources for in-service training for people in practice. Match training on practices to appropriate staff and participant mix.

Beyond the obvious constraints of time and funding to support in-service training, there is frequently resistance to new practices from various disciplines. Change is difficult for everyone.

At a deeper level, the recent move to greater involvement of peers and family members has presented difficulties for some traditionally trained clinicians, and the large numbers of private practitioners who operate in isolation are challenging to reach with new information and practices. Action steps in this area are many and varied and intersect with other Littell domains (see Figure 1). For example:

- Curriculum changes at post secondary settings;
- Licensing and continuing education requirements changes;
- Establishment of funding streams for in-service training; and
- Competency assessment rather than simply degree requirements.

(Please refer to **Appendix 2**)

C. Efficacy/Effectiveness

The term **efficacy**, as used in medical research, refers to the ability of an intervention to produce certain effects under controlled conditions. Research on Evidence-Based Practices is often completed, at least initially, in controlled environments or situations. The term **effectiveness** relates to change under real-life conditions. A major factor for Evidence-Based Practices is how they translate from an ideal controlled study to real-life conditions. If a practice can only produce results when all other variables are controlled by the researcher, it has little worth in the real world. When selecting and implementing an Evidence-Based Practice, both factors should be examined. What is the efficacy **and** what is the effectiveness? Further, factors that impact effectiveness should be known.

The goal of many evidenced-based practices is the reduction of symptomatology that then increases the individual's ability to be fully included in their community. Many Evidence-Based Practices have specific targeted outcomes such as effective functioning in multiple domains, including family, community, school, occupation/vocation, and general sociality. With older adults there are EBPs that can reduce, for example, depressive symptoms which in turn can lead to a reduction in "excess disability" and actually improve health and social functioning. There are also Evidence-Based Practices designed to enhance a person's ability to have a meaningful job, such as Supported Employment. These targeted outcomes increase an individual's level of community inclusion through such things as employment, sustainable housing, social functioning, and health status.

Additionally, the level of training and ongoing supervision to insure fidelity to an evidence-based practice should insure that staff are competent. A significant issue within the

implementation strategies in this document, is how to insure fidelity with a practice and continue support for ongoing training and learning collaboratives as well as coaching to keep the bar high in the implementation of Evidence-Based Practices. Without fidelity, the concept of Evidence-Based Practices becomes diluted and meaningless.

There are many Evidence-Based Practices that are geared toward prevention and early intervention. Sometimes the data/outcome is more difficult to track but the data does exist for the individual as well as the cost savings to society in prevention of social and emotional problems. It should be noted however that the impact of the benefits is often seen within a different sector. For example, although mental health dollars may support a prevention initiative, the cost savings and benefits may be in the educational system, juvenile justice or criminal system, health care and long-term care system, or in the area of employment and tax bases. Prevention and early intervention practices targeting depression can also reduce health care usage and costs for older adults. The critical issue is that there is a growing knowledge base on how to enhance mental wellness and intervene early to reduce both the individual and social impact of risk factors.

The value of respecting participant characteristics was discussed previously in regard to the delivery of individualized and culturally sensitive services as they cut across the various age cohorts. In tying this value with Evidence-Based Practices we note again that an Evidence-Based Practice is only evidence-based when it is applied to the population on which it was researched and for the specific researched outcome(s). This can create some problems as there are not evidenced-based practices yet recognized for every population and for every outcome. For example there may not be an identified practice for Middle Eastern transitional age youth dealing with depression. In those circumstances, it is even more critical that the intervention meets the other types of evidence discussed above, including delivery by skilled practitioners, in a culturally and age sensitive manner, that values the individual's needs and preferences, and is in line with program goals and values

Although funding and resources are limited, the Department of Mental Health has the responsibility to support planning and implementation of accessible programs to alleviate and prevent problems related to mental disorders and mental illness. The Department must also assure program quality in compliance with such appropriate standards as may be established by the Department and shall sponsor and encourage research into causes, effects, prevention, treatment and rehabilitation of mental disorders and mental illness.

It is critical that scientific evidence be considered in selecting and implementing interventions. The Evidence-based Workgroup developed a continuum (Figure 2) on which evidence can be rated. This continuum is based largely on the Centers for Disease Control and Prevention's (CDC) definition of evidence. This continuum only addresses the level of science and must be balanced with the other components or values discussed earlier, including individual needs and preferences, barriers and constraints, practitioner skills and knowledge, and program/provider goals and values. The following definitions are to be used to **assess the level of science** of a practice. A practice is deemed as having a specific level of evidence as it applies to a specific population to achieve a specific outcome. When a practice is applied to a population or outcome for which there is no research, it would likely fall in the "Insufficient Evidence" category. Appendix 1 contains definitions of a number of research terms.

Figure 2. Continuum of Evidence.

(It must be understood that evidence in this figure refers to studies focusing on like populations.)

STRONG EVIDENCE	SUFFICIENT EVIDENCE	INSUFFICIENT EVIDENCE	EVIDENCE OF HARM
At least 2 consistent studies that are of good quality of execution ¹ and greatest design suitability ² OR At least 3 consistent studies that have good/fair quality of execution and great/moderate design suitability OR At least 5 consistent studies that have a good or fair quality of execution and any research design	At least 1 study that is of good execution and greatest design suitability OR At least 3 consistent studies that are good/fair design and great/moderate design suitability OR At least 5 consistent studies that utilize good/fair quality of execution and any research design	Does not meet the criteria for categorizing as having Strong Evidence, Sufficient Evidence or Evidence of Harm. This may be due to a lack of any evidence/research on the practice	In the research conducted or in reviews of research conducted there is evidence that the practice may cause temporary or permanent harm to an individual either physically or psychologically.
¹ Quality of Execution: Good = 1 or less threats to the validity of the design, Fair = 2-4 threats to the validity of the design. Threats to validity may include..... ² Design Suitability: Greatest = Concurrent comparison groups and prospective measures; Moderate = Retrospective designs or multiple pre or post measurement, no concurrent comparison group			

Implementation Strategies

The efficacy of a practice that is demonstrated by outcomes achieved in controlled settings is different than the effectiveness in messy real world environments. It is imperative that information on a practice's efficacy and effectiveness be conveyed to people with mental health needs/families, practitioners, agencies, community stakeholders, and departments in understandable ways so that people have a full understanding of the data and can make informed decisions about adoption and implementation of a specific practice. Furthermore, information must be provided about how, under what circumstances, and for what types of people and problems particular practices work. Such information can inform decisions about whether or not to adopt a practice, and also provides the necessary information about what resources and training will be required to implement an EBP, and what can reasonably be expected in terms of outcomes for particular groups of people.

(Please refer to **Appendix 2**)

D. Resources and Constraints

There are growing resources related to implementation of Evidence-Based Practices. Universities are a natural resource available to most communities. Many are actually doing work on developing or adapting Evidenced Based Practices; if not faculty are well versed in the use of research and supporting literature on specific Evidence-Based Practices. There are a number of technical assistance centers available on the web (a list of some of these technical assistance centers is provided in Appendix 2). These centers may offer a searchable list of specific Evidence-Based Practices and frequently (and ideally) offer the research that supports the practice. Many federal agencies as well as foundations offer funding either for the development, testing or implementation of Evidence-Based Practices. Although the issue of sustainability must always be addressed with grant dollars, these offer a mechanism to "try out" a practice, assess its impact, and as appropriate sustain through shifting existing dollars away from non-effective services/interventions towards the Evidence-Based Practice.

It is always important to look at the workforce as a resource. We have outlined already, however, that we may not value the workforce enough or at least the need for on-going training and support for the workforce. There are many options for at least one-time dollars for workforce development. Technology is also a resource in maintaining a well-informed workforce. Initial training modules can be completed through web-based methods. Learning collaboratives can also be supported through teleconferencing or web-based forms of

communication. Distance learning is possible with just notebook computer webcams that can reach out to rural or isolated areas of the state. In looking at training mechanisms sustainability is always an issue and being able to develop in-house or in-state trainers can help in this area.

Environmental constraints are defined as conditions that would limit or preclude adoption of the new behavior or sustaining the behavior overtime. These constraints may be physical – insufficient financial resources, lack of space, inadequate management information systems. Psychological constraints in the environment might include practitioner resistance or ambivalence, lack of a clear vision for change, inadequate supervision, or disagreement with the theory underlying the new intervention. And of course one of the common constraints is time--time to learn, time to plan, time to implement. Again this may need to be addressed through the provider’s/program’s goals and values. If effective treatment is truly valued, then it becomes a priority for time commitments. Managers responsible for the implementation of evidence-based practices must address and remove environmental constraints at the same time that they are assessing readiness and developing the necessary skills for implementing the intervention.

One model for applying a systematic approach to implementation of change was developed by Dwayne Simpson (2002). This is a four-phase process that describes the process of implementing changes toward evidence-based practice. The following chart identifies each of these stages and lists the type of activities that organizations can employ as they move from exploring evidence-based practices to sustaining implementation of new practices over time. It is important to begin the implementation process with a clear vision about the results that the new intervention will yield and to have a systematic plan for implementation, evaluation, review and adaptation of the intervention. This systematic approach will help to facilitate the process and to identify obstacles to successful implementation and develop strategies for overcoming those obstacles.

Exposure	Adoption	Implementation	Practice
Dissemination of research literature	Examining the “fit” of a particular intervention for relevance, timeliness, clarity, credibility, replicability and acceptability	Pilot Studies or trial uses of the intervention	Incorporation of the intervention into overall treatment approach
Review of “Best Practice” documents	Training in the delivery of the selected intervention	Developing policies and procedures to support the practice	Sustaining use of the intervention over time
Initial review of possible practices for implementation	Adapting the intervention for the	Clinical supervision to monitor fidelity and effectiveness	
Training overviews of several possible interventions		Develop a cadre of internal trainers to	

Consultation with experts	local setting Establishing data collection and quality assurance mechanisms	minimize problems with turnover Review of evaluation results and client outcomes Establish mechanisms to balance fidelity and adaptation	
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Implementation Strategies

Money, policy, and politics are the key factors in this area. All of the domains of EBPs are both constrained **by** and influences **of** this area. EBP can reach full implementation (the default practice, rather than boutique status) when the system is broadly supportive. Close relationships with medicaid, vocational rehabilitation, education, corrections, child welfare, and aging service systems including area agencies on aging are essential.

In these times, most particularly, the prospect of large influxes of new funds is unlikely, thus, the resources for EBP will have to be redirected. This fact brings with it a host of constraints, both political and practical. Embedded in this transformative notion is also belief that the same resources will go much farther when we attain recovery and resiliency outcomes. Dollars basically follow outcomes.

The marketing of EBP to stakeholders has been described above but has not yet mentioned fiscal analysis of outcomes, which is also key. For this activity to be meaningful there must be a plan and a commitment by leadership to obtain and analyze the needed data elements. Systems are in place for this in many cases, but without clear mandates to participate in the process, incomplete data is the norm. Another meaningful way of reaching stakeholders is to hold open meetings in the community that include community leaders, advocates, persons with mental health needs, family members, and professionals. This can help to obtain community buy in, support, and participation.

(Please refer to **Appendix 2**)

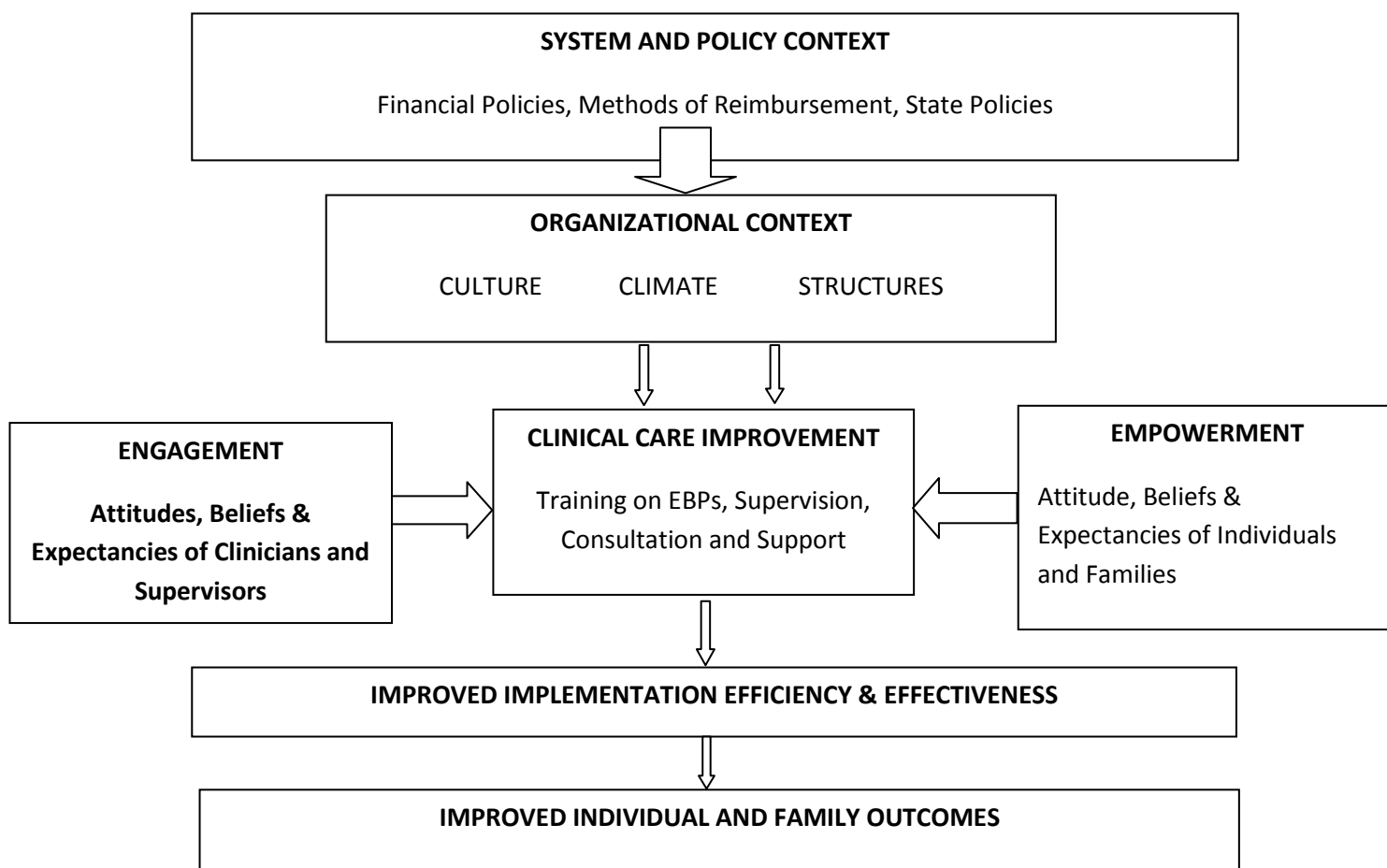
E. Program/Provider Goals, Values

This domain is driven by the programs or provider's goals and values. Ideally a provider or agency will value Evidence-Based Practices as well as evidence-based decision making. The

latter basically means that decisions and policies developed are supported by data and rational weighing of benefits and limitations. This requires:

- Open, constructive communication to resolve problems and make new discoveries among families, practitioners/supervisors, and administrators;
- A “change management” approach (i.e., an organization that is open to change and innovation, and willing to adapt policies and procedures to accommodate change that will improve programs and outcomes); and
- Leadership that facilitates transformation to an evidence-based culture.

Below is a diagram of the mechanisms in an evidenced-based culture:



An agency would need to develop shared values and understanding about how the use of evidence leads to service planning and development, service delivery, outcomes, and continuous quality improvement. Additionally structure and methods that measure how well

new treatments and services are being implemented, and assess whether new services are having the expected impact.

It is often difficult to lead and make organizational changes. Relying on an evidence-based culture that uses data to guide decisions and priorities can help make these difficult changes. As noted previously a major constraint is on the fiscal support for mental health services. It is unlikely that sustainable new dollars will be available to go towards support of Evidence-Based Practices. Rather, dollars directed towards “services as usual” that do not have the data to support effectiveness will need to be shifted towards effective, outcome driven services. The agency and staff must **value** outcomes and data and allow changes to occur driven by outcomes and data—they must have a “we can do it” attitude. Some critical areas of commitment include:

- Involvement of all levels of the system (whether the system is the state, a region, an agency or a program) in the implementation process;
- Being grounded in a thorough understanding of the current treatment system, the interventions that are utilized, and the outcomes being achieved;
- A systematic approach to reviewing available evidence and recommending changes in intervention strategies as appropriate;
- Support for a reimbursement rate commensurate with the level of work required to implement new interventions;
- Provision of reimbursement for the training and clinical supervision that are essential to implementation of Evidence-Based Practices;
- Creation and maintenance of data collection and reporting mechanisms that will document evidence-based practice results;
- Development of and support for policies that facilitate adoption and implementation of Evidence-Based Practices;
- Support for bi-directional communication between researchers and clinicians;
- Promotion of an appropriate balance between fidelity and adaptation; and,
- Use of outcome data to drive systems change.

All levels of the system including administrative as well as clinical staff must address readiness and motivation for change. An organization/entity that believes simply training clinical staff on evidence-based interventions will be enough, is already taking the first steps towards failure or the inability to sustain the practice. Leaders within the organization must assess the readiness for change from the front desk, to billing, utilization management and clinicians. Many Evidence-Based Practices don't fit nicely into 50-minute therapy sessions in a clinic. There are tools and mechanisms developed to help an agency assess their readiness and guide their work towards being an evidence-based culture. Lehman (2002) and his colleagues developed a formal instrument, the *Organizational Readiness to Change (ORC)*, to assess the following domains:

- Motivational readiness – the perceived need for improvement, training needs, and the pressures for change;

- Institutional resources – office, staffing, training resources, computer access, and electronic communications;
- Staff attributes -value placed on professional growth, efficacy, willingness and ability to influence coworkers, and adaptability; and
- Organizational climate – clarity of mission and goals, staff cohesiveness, staff autonomy, openness of communication, level of stress, and openness to change.

Below are listed some key areas where an organization must define their values and subsequent commitment in support of Evidence-Based Practices.

- Scalability describes the adoption of an intervention resulting in wider usage that retains or improves its effectiveness, affordability, and sustainability;
- Sustainability is achieved when the evidence-based intervention is routinely executed. Long-term sustainability can be dependent upon funding availability and policies which support a functional infrastructure that maintains fidelity of the evidence-based intervention (e.g., training, laws, and reimbursement for services);
- The use of funding and reimbursement structures that support promising and Evidence-Based Practices and ongoing evaluation supports;
- Funding and reimbursement structures that support training for persons with mental health needs and family involvement in all phases of selection, implementation, and evaluation of interventions; and
- Structure and methods that measure how well new treatments and services are being implemented, and which assess whether new services are having the expected impact.

Implementation Strategies

Buy-in and leadership by a wide range of community stakeholders, boards of directors, program managers and professional organizations are critical to EBP implementation. Values clarification and examination of mission statements become necessary in light of the expectation of resilience and recovery in contrast with “maintenance and support.”

While it is true that committed line staff can transform service delivery to some extent from the bottom up, sustained implementation requires support of leadership. Exposure to EBP for this group can occur via state leadership and can be stimulated by indications that funding preferences will be leaning in the direction of EBP. Providers can support each other in a changing environment via professional organizations and communication with advocacy groups. The ideas of recovery and resilience are relatively recent. Boards of directors and executive staff of programs who entered the mental health arena decades ago are often operating under old assumptions.

(Please refer to **Appendix 2**)

Summary

In spite of the level of complexity involved in implementing Evidence Based Practice, the field moves forward.

This paper was written to provide a base of understanding of the defining features of evidence based practice; to place this understanding in a context of Missouri values; to settle on a working “evidence ruler” for the consideration of state agencies; and to provide a framework for thinking about the factors affecting full implementation of any practice. Appendices present definitions of technical terms used in research, as well as models of experimental design. Further, we present a chart to depict a model of implementation of evidence based practice that matches stage of change to appropriate activity in each of the domains. We anticipate that mindful considerations of these ideas will assist in the full flowering of the highest quality services for the citizens of Missouri.

III. REFERENCES

- Lehman, W.E.K., Greener, J.M. and Simpson, D.D. (June 2002) Assessing organizational readiness for change. *Journal of Substance Abuse Treatment*:22, 4, pp. 197-210.
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APPENDIX 1

Terms and Definitions

Internal Validity = whether an experimental treatment/condition makes a difference or not, and whether there is sufficient evidence to support the claim. Inferences are said to possess internal validity if a causal relation between two variables is properly demonstrated. A causal inference may be based on a relation when three criteria are satisfied:

1. the "cause" precedes the "effect" in time (temporal precedence),
2. the "cause" and the "effect" are related (covariation), and
3. there are no plausible alternative explanations for the observed covariation (nonspuriousness)

External Validity -- a determination whether the results of the experiment can be generalized to an entire population from which the samples were drawn in the study. The methods of subject selection and/or control procedures and type of design strengthen inferences that the findings are representative. Scientists place great emphasis on replication of the results through repeated experimentation to bolster the generalizability of the initial findings. There are two types of external validity.

- **Population validity.** To what population can you generalise the results of the study? This will depend on the makeup of the people in your sample and how they were chosen. If you have used young, white middle class, above average intelligence, Western students as your subjects, can you really say your results apply to all people?
- **Ecological validity.** Laboratory studies are necessarily artificial. Many variables are controlled and the situation is contrived. A study has higher ecological validity if it generalizes beyond the laboratory to more realistic field settings.

Threats to Internal Validity

History: the specific events which occur between the first and second measurement

Maturation: The everyday human activities that lead to growth that occur naturally as the treatment program is being implemented are potential threats. These include maturation due to age, experience, physical development or anything that leads to increase in knowledge and understanding of the world which can affect program results.

Testing: If pre and post test design is used, the actual experience of the pretest may impact the result of the post-test.

Instrumentation: Caused by inconsistencies with the testing instrument i.e., interviewer, grader, or the test itself

Regression: The phenomenon of regression shows that there is a natural tendency for individuals who score on the outer extremes (either very high or very low) of the grade continuum, when retested will score closer to the mean.

Attrition/Mortality: The phenomenon of regression shows that there is a natural tendency for individuals who score on the outer extremes (either very high or very low) of the grade continuum, when retested will score closer to the mean.

Selection: A selection threat is generated when there are inconsistencies in the comparison groups.

Threats to External Validity

Reactive or interaction effect of testing – a pretest might impact a subject's sensitivity or responsiveness to the experimental variable

Reactive effects of experimental arrangements--it is difficult to generalize to non-experimental settings if the effect was attributable to the experimental arrangement of the research

Multiple Treatment Interference – as multiple treatments are given to the same subjects, it is difficult to control for the effects of prior treatments

Unrepresentative sample: The sample does not represent or "mirror" the population - usually results from an inability to randomly select the sample from the population you want to generalize to.

Hawthorne Effect: The fact that subjects *know they are being studied* affects the results.

Novelty Effect: This occurs when the responses of the study are partly a function of the *newness or novelty* of the experimental approach.

Experimenter Effect: One experimenter administers the treatment differently from the way another experimenter does (this ties in with inter-rater reliability).

Time: A historical event at the time of the study *that happens to all subjects* alters the results (they would be different if the experiment were conducted at a different time.)

Note: If the event happened to only one group, then it is *History*, a threat to internal validity, not external validity.

Other Threats:

Multiple-Treatment Interference: Multiple treatments are applied sequentially and subjects experience cumulative effects that cannot be sorted out. This is why you want to use that Latin Square, a *counterbalanced design*.

Nongeneralizability of the Dependent Variable: This is when the instrument used to measure the DV is not representative of the population of such measures (two anxiety scales may give different results for the same sample).

Ambiguous Independent Variable: This occurs when the IV is not clearly and operationally defined, so the study cannot be replicated exactly. Like "The DARE Program" - just what does it mean? How was it conducted?

Research Designs

Barbara Ohlund and Chong-ho Yu, 1999

Three Experimental Designs

To make things easier, the following will act as representations within particular designs:

- **X**--Treatment
- **O**--Observation or measurement
- **R**--Random assignment

The One Shot Case Study

This is a single group studied only once. A group is introduced to a treatment or condition and then observed for changes which are attributed to the treatment

X O

The Problems with this design are:

- A total lack of control.
- History, maturation, selection, mortality and interaction of selection and the experimental variable are all threats to the internal validity of this design.

One Group Pre-Posttest Design

This is a presentation of a pretest, followed by a treatment, and then a posttest where the difference between **O₁** and **O₂** is explained by **X**:

O₁ X O₂

However, there exist threats to the validity of the above assertion:

- **History**--between **O₁** and **O₂** many events may have occurred apart from **X** to produce the differences in outcomes. The longer the time lapse between **O₁** and **O₂**, the more likely history becomes a threat.
- **Maturation**--between **O₁** and **O₂** students may have grown older or internal states may have changed and therefore the differences obtained would be attributable to these changes as opposed to **X**.
- **Testing**--the effect of giving the pretest itself may affect the outcomes of the second test (i.e., IQ tests taken a second time result in 3-5 point increase than those taking it the first time). In the social sciences, it has been known that the process of measuring may change that which is being measured--the reactive effect occurs when the testing process itself leads to the change in behavior rather than it being a passive record of behavior (reactivity--we want to use non-reactive measures when possible).

- **Instrumentation**--examples are in threats to validity above
- **Statistical regression**--or regression toward the mean. Time-reversed control analysis and direct examination for changes in population variabilities are useful precautions against such misinterpretations. What this means is that if you select samples according to their extreme characteristics or scores, the tendency is to regress toward the mean. Therefore those with extreme high scores appear to be decreasing their scores, and those with extreme low scores appear to be increasing their scores. However this interpretation is not accurate, and to control for misinterpretations, researchers may want to do a time-reversed (posttest-pretest) analysis to analyze the true treatment effects. Researchers may exclude outliers from the analysis.
- **Others**--History, maturation, testing, instrumentation interaction of testing and maturation, interaction of testing and the experimental variable and the interaction of selection and the experimental variable are also threats to validity for this design.

The Static Group Comparison

This is a two group design, where one group is exposed to a treatment and the results are tested while a control group is not exposed to the treatment and similarly tested in order to compare the effects of treatment.

$$\begin{array}{c} X \quad O_1 \\ O_2 \end{array}$$

Threats to validity include:

- **Selection**--groups selected may actually be disparate prior to any treatment.
- **Mortality**--the differences between O_1 and O_2 may be because of the drop-out rate of subjects from a specific experimental group, which would cause the groups to be unequal.
- **Others**--Interaction of selection and maturation and interaction of selection and the experimental variable.

Three True Experimental Designs

The Pretest-Posttest Control Group Design

This design takes on this form:

$$\begin{array}{c} R \quad O_1 \quad X \quad O_2 \\ R \quad O_3 \quad O_4 \end{array}$$

This design controls for all of the seven threats to validity described in detail so far. An explanation of how this design controls for these threats is below.

- **History**--this is controlled in that the general history events which may have contributed to the O_1 and O_2 effects would also produce the O_3 and O_4 effects. This is true only if the experiment is run in a specific manner--meaning that you may not test the treatment and control groups at different times and in vastly different settings as these differences may affect the results. Rather, you must test simultaneously the control and experimental groups. Intrasession history must also be taken into consideration. For example if the groups truly are run simultaneously, then there must be different experimenters involved, and the differences between the experimenters may contribute to effects.

A solution to history in this case is the randomization of experimental occasions--balanced in terms of experimenter, time of day, week and etc.

- **Maturation and testing**--these are controlled in that they are manifested equally in both treatment and control groups.
- **Instrumentation**--this is controlled where conditions control for intrasession history, especially where fixed tests are used. However when observers or interviewers are being used, there exists a potential for problems. If there are insufficient observers to be randomly assigned to experimental conditions, the care must be taken to keep the observers ignorant of the purpose of the experiment.
- **Regression**--this is controlled by the mean differences regardless of the extremity of scores or characteristics, if the treatment and control groups are randomly assigned from the same extreme pool. If this occurs, both groups will regress similarly, regardless of treatment.
- **Selection**--this is controlled by randomization.
- **Mortality**--this was said to be controlled in this design, however upon reading the text, it seems it may or may not be controlled for. Unless the mortality rate is equal in treatment and control groups, it is not possible to indicate with certainty that mortality did not contribute to the experiment results. Even when even mortality actually occurs, there remains a possibility of complex interactions which may make the effects drop-out rates differ between the two groups. Conditions between the two groups must remain similar--for example, if the treatment group must attend treatment session, then the control group must also attend sessions where either not treatment occurs, or a "placebo" treatment occurs. However even in this there remains possibilities of threats to validity. For example, even the presence of a "placebo" may contribute to an effect similar to the treatment, the placebo treatment must be somewhat believable and therefore may end up having similar results!

The factors described so far effect internal validity. These factors could produce changes which may be interpreted as the result of the treatment. These are called **main effects** which have been controlled in this design giving it internal validity.

However, in this design, there are threats to external validity (also called **interaction effects** because they involve the treatment and some other variable the interaction of which cause the

threat to validity). It is important to note here that external validity or generalizability always turns out to involve extrapolation into a realm not represented in one's sample.

In contrast, internal validity are solvable within the limits of the logic of probability statistics. This means that we can control for internal validity based on probability statistics within the experiment conducted, however, external validity or generalizability cannot logically occur because we can't logically extrapolate to different conditions. (Hume's truism that induction or generalization is never fully justified logically).

External threats include:

- **Interaction of testing and X**--because the interaction between taking a pretest and the treatment itself may affect the results of the experimental group, it is desirable to use a design which does not use a pretest.
- **Interaction of selection and X**--although selection is controlled for by randomly assigning subjects into experimental and control groups, there remains a possibility that the effects demonstrated hold true only for that population from which the experimental and control groups were selected. An example is a researcher trying to select schools to observe, however has been turned down by 9, and accepted by the 10th. The characteristics of the 10th school may be vastly different than the other 9, and therefore not representative of an average school. Therefore in any report, the researcher should describe the population studied as well as any populations which rejected the invitation.
- **Reactive arrangements**--this refers to the artificiality of the experimental setting and the subject's knowledge that he is participating in an experiment. This situation is unrepresentative of the school setting or any natural setting, and can seriously impact the experiment results. To remediate this problem, experiments should be incorporated as variants of the regular curricula, tests should be integrated into the normal testing routine, and treatment should be delivered by regular staff with individual students.

Research should be conducted in schools in this manner--ideas for research should originate with teachers or other school personnel. The designs for this research should be worked out with someone expert at research methodology, and the research itself carried out by those who came up with the research idea. Results should be analyzed by the expert, and then the final interpretation delivered by an intermediary.

Tests of significance for this design--although this design may be developed and conducted appropriately, statistical tests of significance are not always used appropriately.

- Wrong statistic in common use--many use a t-test by computing two ts, one for the pre-post difference in the experimental group and one for the pre-post difference of the control group. If the experimental t-test is statistically significant as opposed to the control group, the treatment is said to have an effect. However this does not take into consideration how "close" the t-test may really have been. A better procedure is to run a 2X2 ANOVA repeated measures, testing the pre-

post difference as the **within-subject factor**, the group difference as the **between-subject factor**, and the interaction effect of both factors.

- Use of gain scores and covariance--the most used test is to compute pre-posttest gain scores for each group, and then to compute a t-test between the experimental and control groups on the gain scores. Also used are randomized "blocking" or "leveling" on pretest scores and the analysis of covariance are usually preferable to simple gain-score comparisons.
- Statistics for random assignment of intact classrooms to treatments--when intact classrooms have been assigned at random to treatments (as opposed to individuals being assigned to treatments), class means are used as the basic observations, and treatment effects are tested against variations in these means. A covariance analysis would use pretest means as the covariate.

The Solomon Four-Group Design

The design is as:

$$\begin{array}{cccc} \mathbf{R} & \mathbf{O}_1 & \mathbf{X} & \mathbf{O}_2 \\ \mathbf{R} & \mathbf{O}_3 & & \mathbf{O}_4 \\ \mathbf{R} & & \mathbf{X} & \mathbf{O}_5 \\ \mathbf{R} & & & \mathbf{O}_6 \end{array}$$

In this design, subjects are randomly assigned to four different groups: experimental with both pre-posttests, experimental with no pretest, control with pre-posttests, and control without pretests. By using experimental and control groups with and without pretests, both the main effects of testing and the interaction of testing and the treatment are controlled. Therefore generalizability increases and the effect of **X** is replicated in four different ways.

Statistical tests for this design--a good way to test the results is to rule out the pretest as a "treatment" and treat the posttest scores with a 2X2 analysis of variance design--pretested against unpretested.

The Posttest-Only Control Group Design

This design is as:

$$\begin{array}{ccc} \mathbf{R} & \mathbf{X} & \mathbf{O}_1 \\ \mathbf{R} & & \mathbf{O}_2 \end{array}$$

This design can be thought of as the last two groups in the Solomon 4-group design. And can be seen as controlling for testing as main effect and interaction, but unlike this design, it doesn't measure them. But the measurement of these effects isn't necessary to the central question of whether or not **X** did have an effect. This design is appropriate for times when pretests are not acceptable.

Statistical tests for this design--the simplest form would be the t-test. However covariance analysis and blocking on subject variables (prior grades, test scores, etc.) can be used which increase the power of the significance test similarly to what is provided by a pretest.