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The short-term effectiveness and efficiency of MST in Sweden: An example of evidence-based practice applied to social work

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CROSSING THE QUALITY CHASM?

The short-term effectiveness and efficiency of MST in Sweden: An example of evidence-based practice applied to social work

Tina Olsson

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ABSTRACT

The purpose of this dissertation is to evaluate the effectiveness and cost-effectiveness of Multisystemic Therapy (MST) in Sweden. This evaluation is set against the background of evidence-based social work practice and is organized around four separate but interrelated studies. The first of these studies used program theory reconstruction to investigate three conceptualizations of evidence-based practice (EBP). Here it is argued that evidence-based practice is not a homogeneous concept, and that interested parties within research, practice and policy may not have a shared vision of EBP, even though they may use the same terminology. The second study, a randomized trial, assessed the effectiveness of MST within the normally operating social services system for 156 youths who met the diagnostic criteria for conduct disorder. Youth were randomly allocated between MST and treatment-as-usual (TAU) groups. Assessments were conducted at intake and seven months after referral. Results from mulitagent and multimethod assessment batteries showed a general decrease in psychiatric problems and antisocial behaviors among participants across treatments. There were no significant differences in treatment effects between the two groups. The third study assessed the costs of treating conduct disorder with MST and TAU. From the perspective of the municipal social welfare system, all intervention costs were collected for the six-month period starting at randomization to treatment group. MST was not found to reduce the extent to which youth were placed outside of their homes. In addition, the costs of out-of-home placement were the same for both MST and TAU group youth. MST was, however, associated with a reduction in the use and costs associated with other non-placement services. This reduction was not found to offset the additional cost of MST. The fourth and final study investigated the treatment outcomes and costs associated with MST versus TAU for intervention with substance abusing and non-substance abusing conduct disordered youth. This study found no differences in treatment outcome between these two groups. This dissertation found MST to be equally effective but less cost-effective than TAU.

FORWARD

In January of 2004 I had lived in Sweden for two years. I was homesick. I missed my family, my friends, and my language. I missed feeling that I belonged as opposed to being in a constant state of searching for my place – my place within the culture, within the workforce. Because of this my husband and I had decided to move back to the U.S. Friends and family on both sides of the Atlantic had been notified, arrangements were being made to ship our belongings, job opportunities were being investigated – but, then I received a phone call that would change the course of our lives at that time. The call was from Elisabeth Hajtowitz, FoU i Väst.

FoU i Väst was involved in a project – an evaluation of an American treatment method for youth which recently had been imported to Sweden – and they were looking for somebody to work in the project in Göteborg. Soon thereafter, I met Håkan Frändemark, the local project coordinator, who explained the details of the project to me – randomized trial, MST, Stockholm, Göteborg, Malmö, Halmstad, two years, Ph.D. I was offered the position and with my broken Swedish, I could only hope that I was picking up on all of the details. What I could gather was that, in contrast to my prior positions in Sweden, this was a position that I would consider in the U.S. That is, it had value to me above and beyond the simple need to find work as a foreigner.

Since 1994, I had been working as a social worker in the U.S. – for the most part with families in which children had suffered abuse or neglect which at times drifted into work with youth. I had often reflected over the meaning of it all. What happens to these people after their contact with me? Does it work out? Does it get better? Are they ok? In short, what are the outcomes of my efforts? I wasn't sure.

These questions led me to become involved in program evaluation in the U.S. I was excited about the thought of becoming involved in the evaluation of MST in Sweden. In my experience as a social worker, there is no separating outcomes and the work of social work – they go hand in hand. Finally, I felt as if maybe there was a place for me in Sweden. I have been working with the evaluation of

MST ever since and this dissertation is a direct result of my involvement with the project that for me started in February of 2004. Many thanks go to Elisabeth Hajtowitz, Håkan Frändemark, Länsstyrelsen Västra Götalands län, Leena Odebo, FoU i Väst, Knut Sundell, Institute for Evidence-Based Social Work Practice, National Board of Health and Welfare and Kjell Hansson, Lund University, for giving me the opportunity to work in a project that I have found worthwhile on many levels.

Of course the road which finds its end with this dissertation has been paved by many. Here, I would like to thank especially Folke Hansson, Swedeval utvärdering, Annalena Berendtsson, Länsstyrelsen Västra Götalands län, and Lena Lindgren, University of Gothenburg, without whose kindness, support and friendship I would not have come into contact with FoU i Väst nor would I have started as a Ph.D. student. My gratitude to Knut Sundell for giving me the opportunity to spread my wings and for showing faith in my abilities deserves special mention. My advisors Kjell Hansson and Bo Vinnerljung deserve a special thank-you for their help and support during a time when it really mattered and for teaching me how to write a dissertation. I would also like to extend heartfelt thanks to everybody in my seminar group at Lund University, "Kjell & Co." including my advisors Kjell Hansson and Bo Vinnerljung, as well as Cecilia Andrée Löfholm, Lars-Henry Gustle, Pia Kyhle Westermark, Martin Olsson, Cecilia Kjellgren, Gisela Priebe, Jan Gassne, and Marlese Svensson for making me feel immediately welcome and for reading my text ***ad nasium*** – without airing one complaint! Here, I would like to extend a special thank-you to Cecilia Andrée Löfholm for being available to discuss anything under the sun whether work related, dissertation related or of a more personal nature (if these can be separated) as well as for providing the occasional bed while staying the night in Stockholm. A special thanks also to Martin Olsson for thoughtful comments on my work at my slutseminarium.

Special thanks go also to Lena Lindgren for advising during my time at the University of Gothenburg and especially for input during work on Study I. Your support and encouragement have been invaluable to my Ph.D. project. José Ferraz Nunez, University of Gothenburg and Krister Hjalte, Lund University deserve thanks for advising and input during work on Study III. I would also like to

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A sincere thank-you must also go to Frans Leeuw, Maastricht University and the Dutch Ministry of Justice, Edward Mullen, Columbia University, School of Social Work and participants at the European Evaluation Society / UK Evaluation Society Joint International Conference 2006 for comments and suggestions made on drafts to Study I. In addition, a special thank-you to Ken Young, Managing Editor, *Evidence & Policy* for inviting me to submit my paper for publication. Similarly, I would like to thank the several economists that have reviewed and commented on prior versions of Study III: Osvaldo Salas, University of Gothenburg, Louise Holm, University of Gothenburg, Steve Aos, Washington State Institute for Public Policy, and participants at the 64th International Atlantic Economic Conference. In addition, I would like to thank the Policy Press, the American Psychological Association, Wiley-Blackwell Publishing, and Pavillion Publishing for kindly allowing me to reprint Studies I-IV here.

Special acknowledgement and thanks also go to the 156 families, 27 municipal social welfare authorities, 6 MST teams, and 95 "non-participating" service providers for their efforts and willingness to provide the information necessary to complete the studies contained herein. In addition, special thanks go to the 5 additional members of the research team whose efforts made the studies provided herein possible: Knut Sundell, Kjell Hansson, Cecilia Andrée Löfholm, Lars-Henry Gustle and Håkan Frändemark.

Finally, heartfelt thanks go to my family Colleen & Jim Earp, Alois & Nancyann Twelker, Mark Johns, and Sam & Norma Johns for encouraging me to pursue an academic career and making that

pursuit possible. To Lennart & Solveig Olsson for always keeping me in their prayers. And, to my husband, Henrik and daughter Emily for several lifetimes' worth of support, encouragement, and understanding – without you none of my efforts would have meaning. I love you.

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LIST OF STUDIES

This dissertation is based on the following studies, which will be referred to by their Roman numerals in the text:

I. Olsson, T.M. (2007). Reconstructing evidence-based practice: An investigation of three conceptualisations of EBP. *Evidence & Policy*, *3*, 271-285.

II. Sundell, K., Hansson, K., Andrée Löfholm, C., Olsson, T., Gustle, L-H., & Kadesjö, C., (2008). The transportability of MST to Sweden: Short-term results from a randomized trial with conduct disorder youth. *Journal of Family Psychology,11*, 550-560.

III. Olsson, T.M. (in press). Intervening in youth problem behavior in Sweden: A pragmatic cost analysis of MST from a randomized trial with conduct disordered youth. *International Journal of Social Welfare.*

IV. Olsson, T., Leifman, H., Sundell, K. & Hansson, K. (2008). Effective services for alcohol and drug abusing youth: Perspectives from Sweden. In Stevens, A. (Ed) *Crossing Frontiers: International Developments in the Treatment of Drug Dependence*. Brighton, UK: Pavilion Publishing.

INTRODUCTION

Social work is a helping profession which aims to aid people in vulnerable positions in order to obtain security; enhance individual and societal well-being, and; empower people who are oppressed (cf. International Federation of Social Workers, 2002; National Association of Social Workers, 1999; Socialtjänstlagen[1] 2001:453). To achieve these ends, social work interventions are targeted for developmental, protective, preventive and/or therapeutic purposes. The outcomes of these interventions ultimately determine whether social work is fulfilling its promise to help and not harm those individuals it wishes to support.

Social work interventions, however, do not exist in a vacuum. To the contrary, the majority of social work in Sweden is conducted within the public realm (Sandström, 2007) and almost all of these publicly provided social services fall within the jurisdiction of the local municipality. Thus, social work is not only guided by professional ideals and codes of ethics but by political and public priorities as well. Examples of these priorities include expectations regarding the quality of social services (Socialtjänstlagen 2001:453), the provision of social services while maintaining economic stability within the municipality (Kommunallagen[2] 1990:900), and the importance of weighing a given intervention's effect with its relative cost when determining its appropriateness for individual service users (Regeringens proposition[3] 2000/01:80). In other words, effectiveness[4] as well as cost-effectiveness[5] are important aspects of publicly provided social work interventions.

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[1] The Swedish Social Services Act.

[2] The Swedish Local Government Act.

[3] Government Bill

[4] In this dissertation, *effectiveness* is a general term used to describe the variation in outcome when following one course of action as compared to another.

[5] In this dissertation, *cost-effectiveness* is used interchangeably with the term *efficiency* and refers to the relationship between costs (inputs) and effects (outcomes). *Cost-effectiveness analysis* is one of several methods for assessing cost-effectiveness and should not be confused with the use of the term cost-effectiveness in this text.

Despite the goals of and expectations placed on social work practice, very little is known about the outcomes of social service interventions. This is true for both their effectiveness (Cederblad, 2005) and efficiency (Mossler, 2008). This has led some to advocate for evidence-based practice (EBP) within the social services, spurring a wave of debate (see for example, Hansson, 2005; Jergeby & Tengvald, 2005; Månsson, 2000, 2001, 2007; Pettersson & Johansson, 2001; Sandell, 2005; Tengvald, 2001a, 2001b).

Though evidence-based practice applied to social work is concerned with improving the outcomes of social work interventions and decreasing harm to service users, EBP is not in itself uncomplicated. From an idea born over a decade ago in Canadian health care, EBP has spread to various fields in several nations. Still, there is no clear consensus regarding the meaning of evidence-based practice (Bergmark & Lundström, 2006). This was highlighted in a group of articles from a National Symposium on Improving the Teaching of Evidence-Based Practice held in Austin, Texas in October 2006 (*Research on Social Work Practice, Special Issue*, 2007). A common theme among the papers is the widespread disparity in the definition of EBP (Rubin, 2007; see also Gambrill, 2007; Proctor, 2007; Shlonsky & Stern, 2007; Soydan, 2007). And this lack of consensus can also be gleaned from the larger EBP debate. Critics of EBP argue that it is merely a cost-cutting tool (Straus and McAlister, 2000), that EBP is dangerous and is likened with therapeutic criminality (Sackett et al, 1996) and that certain views toward EBP are 'perverted' (Oscarsson, 2006). Others argue that EBP offers a philosophy that is compatible with professional codes of ethics (Gambrill, 2003) and enhances quality of care (Sackett et al, 2000).

Varying perspectives on evidence-based practice lead to confusion regarding its worth but also inconsistent approaches to its application. This dissertation can be seen as the marriage of two separate approaches to the application of evidence-based practice within the Swedish social services. These two approaches are described in the following two subsections.

Evidence-Based Practice: A National Example

In 1999 the Swedish government requested that the National Board of Health and Welfare develop a strategy for knowledge development within the social services. Interest as manifested in public policy in developing a knowledge base for the social services had been a reality since at least 1974 (Tengvald, 2001a). Intermittent attempts by the government guided towards increasing this knowledge base include, changes to the Social Services Act including a clause regarding quality in 1980, directive to the National Board of Health and Welfare in 1990 to assess how the need for evaluation of treatment methods and other interventions within the social services could be achieved, and the start of the Center for Evaluation of Social Work (CUS) in 1992. The goal of the 1999 request was to create a structure for systematic knowledge development and effective information dissemination so that public social service interventions could be evidence-based to a greater extent (National Board of Health and Welfare, 2000). According to the National Board, this was partly because of a longstanding need to be able to evaluate the worth of social service interventions for service users and for society in general. A need which was given increased priority by the 1980 Social Security Act, and the previously mentioned clause which stated that social service interventions shall be of good quality. It was perceived that there were shortcomings in the ability of the existing system to assess and evaluate the results of social service interventions and a more systematic approach was needed to bridge the gap between research and practice. To achieve this, a broad and collaborative strategic effort between social work educators, researchers and practitioners was encouraged. The strategy that was developed lead to a program, *Nationellt stöd för kunskapsutveckling inom socialtjänsten* (National support for knowledge development within the social services) which was implemented between 2001 and 2003.

Evidence-Based Practice: A Local Example

The importation of Multisystemic Therapy (MST)[6] to Sweden from the U.S. can also be understood as an approach to evidence-based practice within the social services. The importation of MST to Sweden, although maybe a result of the national policy was not an explicit part of the national program introduced above but instead, was initiated at the local municipal level in an attempt to increase treatment effectiveness and reduce the costs associated with the intervention in youth problem behavior. This was not the first attempt to import effective services from abroad. For example, Functional Family Therapy (FFT) had been in operation in Sweden since 1992 (Hansson, 2001). As one top social service administrator described the import of MST to Sweden: *the choice was not arbitrary; we looked at what was out there and chose MST because of its strong research base.*[7]

The first MST team to operate in Sweden was launched in a suburb of Stockholm in 2002. The hope was that MST would lead to a reduction in the placement of youth outside of the home, a reduction in costs associated with placing youth outside of the home, and an increase in treatment effectiveness (Högdin, 2002). MST swiftly spread across Sweden with the second MST team starting in the spring of 2003 in the west-coast town of Halmstad. Seven teams subsequently started between the autumn of 2003 and the spring of 2004, serving primarily the three largest cities of Sweden: Stockholm, Göteborg and Malmö.

PREVIDENS

These two worlds of evidence-based practice collided in 2004 when the first youth to receive MST as part of a randomized trial in Sweden was included in the study christened PREVIDENS – PReven-

---

[6] MST is an intervention for youth with severe problem behavior and will be described in more detail in an upcoming section.

[7] This was a spontaneous comment during a meeting between social services administrators, local politicians, and research staff before the evaluation of MST began (my translation).

tion via EVIDENS. This was the first randomized trial conducted within the normally operating social service system in Sweden.[8] Attempts to organize a national study of MST in Sweden by the former Center for Evaluation of Social Work Practice (CUS)[9] within the National Board of Health and Welfare had been underway since 2001. It was not until 2003 when Mobilisering mot narkotika (MOB)[10] showed interest in supporting an evaluation, however, that a project plan was commissioned. MOB, commissioned by the government, had the responsibility for implementing and following up the National Action Plan on Drugs, as well as for coordinating national drug policy in general. Where CUS was interested in the effects of social services interventions on a more general level, MOB was specifically interested in MST's impact on preventing/reducing substance use. Together, the two organizations funded PREVIDENS.[11]

The 9 million crown project that resulted included the Social Welfare Administrations in 27 local authorities from Sweden's three largest cities – Stockholm, Malmö and Göteborg – and the town of Halmstad. These served as the recruiting area for the study. The 27 local authorities were served by 6 MST teams. Referral of youth to the study began in March of 2004 and continued for one year. The goals of the study were to compare the effects of MST with traditional interventions available through the normally operating social services system to youth with severe behavior problems. These traditional interventions included all interventions usually available through the participating Social Welfare Administrations with the exception of MST – in other words, treatment as usual (TAU). Of

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[8] An earlier study using randomization of Functional Family Therapy (FFT) has been conducted within child and youth psychiatry in collaboration with social services (Hansson, Cederblad, Höök, 2000; Hansson, Johansson, Drott-Englén, & Benderix, 2004).

[9] In 2004, as a result of the completed program for knowledge development within the social services, the Center for the Evaluation of Social Work Practice became subsumed in the then newly formed Institute for Evidence-based Social Work Practice.

[10] The National Drug Policy Coordinator.

[11] CUS and MOB were the main financiers of PREVIDENS, contributions were also made by FoU-Stockholm, FoU i Väst, and Lunds University.

special interest in the study were outcomes related to juvenile delinquency, substance abuse, mental health, family and peer relationships and school achievement.

The project also prioritized and invested in scholarship and through PREVIDENS three Ph.D students were funded either in part or in full. In 2007 a dissertation entitled, *Implementering och Korttidsuppföjning av Multisystemisk Terapi: En Svensk Randomiserad Multicenterstudie Angående Multisystemisk Terapi*[12] by Lars-Henry Gustle was published by the Department of Psychology at Lund University. This was the first of three dissertations to be written within the context of PREVIDENS. The current text is the second dissertation to come out of the project and a third is forthcoming.

[12] Implementation and Short-term Follow-up of Multisystemic Therapy: A Swedish Multi-center Study of MST.

RESEARCH QUESTIONS

Aim & Purpose

The purpose of this dissertation is to evaluate the effectiveness and cost-effectiveness of a social work intervention, Multisystemic Therapy (MST) relative to treatment as usual (TAU) within the normally operating social services system set against the background of EBP. The aim of this dissertation is to first clarify evidence-based practice by investigating three conceptualizations of EBP. In addition, this dissertation aims to assess the 7-month post-referral outcomes of MST in reducing youth behavior problems as compared with TAU for youth fulfilling the diagnostic criteria for a conduct disorder. A further aim is to compare MSTs effect on a group of youth identified as substance abusing with a group of youth not found to be substance abusing. Finally, this dissertation aims to assess the short-term incremental costs of intervention associated with a course of action including MST relative TAU.

Questions

The following questions are asked:

1. How is EBP conceptualized in the literature and is EBP as conceptualized in the examples presented a homogeneous concept?
2. What are the short-term treatment outcomes of youth receiving MST relative to youth receiving TAU in Sweden?
3. What impact does treatment fidelity, program maturity, and client characteristics have on treatment outcome?
4. What are the incremental costs associated with treating youth with a course of action including MST relative to TAU?

EVIDENCE-BASED SOCIAL WORK PRACTICE

This section provides a brief overview of evidence-based practice and the role of effectiveness and efficiency of social work interventions within evidence-based practice. EBP is described in more detail in Study I.

EBP and Social Work Interventions

Evidence-based practice is a theory,[13] an as yet untested theory, about how to improve outcomes. Applied to social work practice, EBP is theoretically concerned with how social work as a profession can make greater strides towards accomplishing its goals. A commonly cited definition of EBP with reference to social work is that of Sheldon (2003, p.1): EBP is "the conscientious, explicit, and judicious use of current best evidence in making decisions regarding the welfare of service-users and carers". Therefore, EBP has a number of important components:

1. It emphasizes the professional responsibility of the social worker to use their judgment and external evidence in mak-

[13] Evidence-based practice has been called for example a "movement" (Thyer, 2002), an "ideology" (Mantzoukas, 2007) and a "theory" (Mullen, 2004). Here, the term theory is used to describe evidence-based practice. It should be noted, however, that the term *theory* as used in this dissertation does not refer to grand or formal social science theories. That is, they are not explanatory frameworks for the social phenomena *of* evidence-based practice drawn from social science (Donaldson & Lipsey, 2006). Rather, they are what can be described as *program theories* (see Rogers, Hacsi, Petrosino, & Huebner, 2000). Simply put, a program theory specifies the causal processes underlying a program's or policy's expected, intended or unintended effects. Variations on the program theory theme in the program evaluation literature include for example: program specification (Savas, Fleming & Bolig, 1998; Solomon, 2002), logic modeling (Renger & Titcomb, 2002), causal modeling (Pawson & Tilley, 1997), and pattern matching (Trochim, 1985, 1989).

ing decisions (see for example, Haynes, Devereaux, & Guyatt, 2002 in Mullen, Shlonsky, Bledsoe & Bellamy, 2005; Sackett & Wennberg, 1997).
2. It refers explicitly to the welfare of service-users and carers, emphasizing its primacy (see for example, Gibbs, 2003).
3. It proposes that decision-making should be explicit and thus be open to question and examination (see for example, Gambrill, 2006).
4. It suggests that evidence is always incomplete and subject to revision.
5. It suggests that there are different types of evidence (see for example, Davies, Nutley & Smith, 2000).
6. It suggests that there is a hierarchy of evidence (see for example, McCabe, 2004; Davies & Nutley, 2000).
7. It encourages professional social workers to be conscientious which refers to the need for ethical and careful reflection over the use of evidence (Gambrill, 2003).

Importantly, EBP is not exclusively concerned with the outcomes, effectiveness, and efficiency of specific interventions (Gambrill, 2003; Proctor, 2004; Qureshi, 2004; Sackett & Wennberg, 1997; Soydan, 2007). Without information about the outcomes of social work interventions, however, EBP is unobtainable.

EBP and the Effectiveness of Social Work Interventions

One type of question of interest to EBP is those regarding effectiveness. That is, what are the outcomes, as measured in routine practice, of social work interventions (Mullen, 2004). In order to evaluate outcomes, evaluations of social work interventions must attempt to distinguish the effects of a given intervention on a given social problem from the effects of other factors. Thus, evaluations must isolate the specific effects of an intervention, they need to say something valid about how such effects might be replicated elsewhere, and they need to demonstrate both internal and external va-

lidity. A number of methods for assessing outcomes have been put forward as appropriate for use within evidence-based practice (see for example, Davies, Nutley & Smith, 2000; Quershi, 2004) including the classical experiment (Donaldson & Christie, 2004; Shadish, Cook & Campbell, 2002). Benefits of experimentation include such things as controls for selection bias, spurious effects and threats to internal validity. However, a number of practical difficulties arise when moving experiments to the field such as: faulty randomization processes, insufficient program implementation, high rates of attrition and insufficient statistical power (Shadish, 2002). Therefore, attention to these areas is important for the analysis of results from any randomized field experiment.

EBP and the Efficiency of Social Work Interventions

Efficiency-related questions are also of interest to EBP. Efficiency is concerned with understanding costs (inputs) in relation to effects (outcomes). It is not concerned with lowering costs but instead with achieving the greatest outcome from the resources that are available (Mullen, 2004). There are a variety of methods available for assessing the efficiency of social welfare interventions (Drummond, Sculpher, Torrance, O'Brien, & Stoddart 2005; Sefton, 2000, 2003). In general, what distinguishes these methods is the types of outcomes measured the number of outcomes measured and whether or not outcomes are monetized.[14]

Evidence-based practice has been criticized for being a cost-cutting tool. Although responses to this have been that EBP is cost-indifferent (Straus & McAlister, 2000), cost-effectiveness is an important aspect of evidence-based practice. The provision of social services cannot be cost-indifferent because all social services are provided within the context of limited resources. Therefore, EBP iso-

[14] Studies II-IV in this dissertation for example, taken together, provides a *cost-consequence analysis*. That is, together they assess the cost (input) of providing MST as compared to the alternative TAU as well as providing a range of non-monetized outcomes (output) of MST as compared to the alternative.

lated from economic issues is not realistic, and may ultimately harm service users and the public. A focus on effectiveness alone may lead to inefficient policy and greater inequalities in service provision (Donaldson, Mugford & Vale, 2002) as the most effective intervention may not be the most efficient.

The EBP Debate within the Context of Social Work Practice

Evidence-based practice applied to social work has been criticized for a number of reasons. Table 1 summarizes 19 common criticisms of EBP and provides counterarguments as well as important questions for the future of EBP.[15] According to proponents of EBP, the majority of these criticisms have grown from a lack of understanding regarding the nature of EBP.

[15] Arguments specific to the United States case as well as arguments regarding the teaching of EBP have not been included.

Table 1: Objections to EBP with Counterarguments Accompanied by Questions for the Future of EBP[16]

Objections to EBP	Counterarguments	Questions for the future of EBP
Arguments from Conflicting Perceptions of EBP		
It ignores clinical expertise	The definition of EBP shows that integrating clinical expertise is key in EBP	Will decisions regarding the evidentiary status of services be imposed on practitioners? Is it unnecessary for practitioners to learn how to critically appraise research related to questions that arise including research reviews? Is data collected regarding discrepancies between population data and individual clients?
It ignores client values and preferences	Considering the values and expectations of clients in making decisions is a hallmark of EBP	How and in what ways are clients to be involved? How can evidence be "personalized" to fit the unique circumstances of clients? How are clients to be involved in the design and critique of practice and policy related research?

[16] The contents provided in this table are taken directly from Gibbs & Gambrill (2002) and Gambrill (2006). The table shown is my summary.

Objections to EBP	Counterarguments	Questions for the future of EBP
		Will arrangements be made to learn from clients?
It is a cook-book approach	Consideration of client values and expectations as well as the extent to which research findings apply to specific situations shows that EBP is not a cook-book approach	Are practitioners given the flexibility they need to make optimal decisions in integrating external research findings with vital information regarding clients and resources?
It is simply a cost-cutting tool	EBP may increase costs	To what extent are practitioners given the freedom to choose from a variety of possible solutions and apply them to individual service decisions even if this results in increased costs?
It cannot be done: It is an ivory tower concept	Audits and surveys of clinicians suggest that it can be practiced. In addition professional codes of ethics call for many of the steps involved in EBP such as considering client values and integrating practice-related literature	How are professionals supported to address and overcome the challenges inherent in evidence-based practice?
It results in therapeutic nihilism. That is, professionals	EBP calls on professionals to search for practice related research findings and share what is found –	How does the field of social work engage with research to develop a know-

Objections to EBP	Counterarguments	Questions for the future of EBP
and clients are left helpless if research is wanting	including nothing- in order to include clients in decision making as informed participants.	ledge base which is relevant and practice related?
There is nothing new about EBP	Although social work texts have encouraged practitioners to apply research findings for decades, EBP attempts to develop procedures for integrating research and practice.	How will the division among research, practice, and policy be removed while honoring ethical obligations.
We are already doing it (i.e. teaching and using EBP)	Relatively speaking, the literature base within social work is sparse. In addition the problem-based learning model which is a method for teaching EBP clashes with the traditional teaching model within social work	How are decisions currently being made in regards to treating clients? What are the organizational, professional, political, etc barriers to improving decision making processes?
No clear evidence is available regarding questions social workers pose	It is true, searches may find slim pickings, however, searches may yield useful evidence regarding some questions. In addition, searches may have to stretch beyond professional boundaries.	How do we develop more relevant and practice related evidence?
It assumes that professionals are rational agents and thus ignores the process of deliberation and	EBP is about decision making and purports that evidence-based decision making in collaboration between professionals and clients is preferred to opinion based decision mak-	What factors impact decision-making in the practitioner-client relationship? How is collaboration between professionals and clients

Objections to EBP	Counterarguments	Questions for the future of EBP
choice involved in decision making	ing by professionals about clients.	enhanced?
Only randomized controlled trials are drawn on	EBP favors methods that critically appraise claims; different questions require different methods to critically test them. Thus the research being drawn on depends on the question being asked. Randomized controlled trials are important to evaluating effectiveness and prevention questions, other research methods are required to critically appraise other areas of interest.	What information needs to professionals and clients need in order to enhance collaborative decision making? Where are there gaps in information and how will steps be taken to fill these knowledge gaps.
It only applies if evidence is found	EBP is a systematic approach to helping clients in which research findings related to important practice decisions are sought and critically appraised, what is found – including nothing – is shared with the client, and clients are involved as informed participants.	How will steps be taken to develop an appropriate knowledge base?
Effectiveness is a matter of personal opinion	EBP emphasizes consideration of the values and expectations of clients regarding goals sought, methods used, and outcomes attained.	What outcomes will be used as indicators of success? Who will choose them? Will clients be involved in their selection?

Objections to EBP	Counterarguments	Questions for the future of EBP
		Will line staff and administrators be involved? Will they be determined by a governmental committee? Do indicators used actually indicate success?
It is derived from behaviorism[17] and positivism[18]	Logical positivism is not science as we know it today, the former approach to the development of knowledge with its inductive understructure has been all but cast away within the scientific community. EBP was initiated in medicine its origin has nothing to do with behaviorism.	Is EBP more than a disagreement over the philosophy of science?

[17] Behaviorism is a philosophy of psychology based on the proposition that all things which organisms do – including acting, thinking and feeling – can and should be regarded as behaviors. This school of thought maintains that behaviors as such can be described scientifically without recourse whether to internal physiological events or to hypothetical constructs such as the mind. Behaviorism comprises the position that all theories should have observational correlates but that there are no philosophical differences between publicly observable processes (such as actions) and privately observable processes (such as thinking and feeling).

[18] Logical positivism rests on an inductive view of science where observations are made, hypotheses are formed and experiments are undertaken in order to *verify* the hypothesis. Deductive reasoning on the other hand begins with a theory, which is tested. The main thrust of the approach is *falsifiability* as opposed to verification. The logical positivists wanted to do away with any knowledge that was not verifiable. Verifiability is not common in mainstream social science today.

Objections to EBP	Counterarguments	Questions for the future of EBP
Arguments Appealing to Tradition		
It does not match current agency technology, policy, or practices	It is true that encouraging practitioners to be evidence based may clash with expected behaviors in authority-based agencies. However, shouldn't we prepare students to take advantage of developments that may benefit their clients?	How do organizational processes and structures need to be developed in order to support EBP? Are agency technologies, policies and practices in conflict with EBP or can new processes be integrated into existing procedures? What are the organizational, etc factors that impact professional decision making and collaboration with clients?
Arguments on Ethical Grounds		
Those who promote EBP simply adopt reverence for another authority: that of the researcher	EBP includes a rigorous search for and critical appraisal of all research related to a practice or policy question and emphasizes sharing what is found with clients and considering client values and expectations.	Who will select the practice and policy questions on which research efforts are focused and on what basis? Will these questions be selected by some elite, such as a state or national board? Will administrators select them, or will clients and line staff select them?
You can always find evidence	Ethical reviews seek all published and unpub-	How can transparency in research be

Objections to EBP	Counterarguments	Questions for the future of EBP
for a favored point of view	lished research that meets standards for inclusion regardless of whether that research supports or refutes their assumptions because their focus is on what will benefit clients and on accurately informing clients.	improved? When will professionals know that their search has identified all relevant research? How can bias be avoided?
Emphasizing the uncertainty regarding the effects of practice methods undermines placebo effects	This concern should be balanced against concerns regarding informed consent requirements, scarcity of resources such as money to provide services, and possible creation of unnecessary dependence on helpers.	If indeed many of the positive effects seen in interpersonal helping are due to clients' and helpers' expectations of change rather than to specific interventions that produce such change, highlighting the lack of or tentativeness of related evidence may mute these effects.
Philosophical Arguments		
All methods are equally valuable in arriving at the truth	If this is so, what is the basis for claims that professionals provide special knowledge, skills, and values of unique value to helping clients? In the vacuum left by discarding evidentiary criteria, an elite will decide what is best (true) and what is not.	Which methods are appropriate for which questions? How are results from studies using different methods weighed? How are client preferences, professional experience and research results from studies using various me-

Objections to EBP	Counterarguments	Questions for the future of EBP
		thods weighed?

In Sweden, the debate surrounding EBP can be said to have had its beginning around 2000, when the National Board of Health and Welfare was developing its proposal for knowledge development within the social services. At that time, one of the most public critics, Sven-Axel Månsson (2000, 2001), came forward with several objections:

- EBP is limited to efficacy studies, effectiveness studies, and systematic reviews including meta-analyses.
- The importance of social services cannot be understood in terms of isolated interventions.
- EBP is too narrow a concept and can only apply to a very small portion of the work of social work.
- EBP doesn't have the ability to capture the complexity in the processes, relationships, and conditions that characterize the essence of social work and therefore the object of social research.
- EBP is characteristic of positivism, where the message is that it is only the measurable that has any worth from a scientific perspective.

The debate has been ongoing and can be followed in social work publications such as *Socionomen* and *Socialvetenskapligt Tidskrift*.[19] Additional objections have taken the following form (Bergmark & Lundström, 2006; Månsson, 2007; Sandell, 2005):

- EBP doesn't give room for knowledge on how various factors work together, obstruct or influence each other in the change process.
- EBP is dominated by a fragmented view of knowledge which is based on ideas from medical research and its criteria for evidence and quality.

[19] The debate is also ongoing within other disciplines such as psychology and can be found in journals such as *Psykologtidningen*. Here, I limit my comments to the discussion within social work.

- EBP promotes the application of certain standardized intervention methods in order to achieve objectivity.
- EBP will lead to the production of interventions designed to fulfill research requirements instead of clients needs.
- EBP is dependent upon the extent to which evaluations can identify interventions with better results than others.
- EBP projects a normative expectation for the future, a legitimacy based on what can be instead of what is.
- The current knowledge base isn't enough to establish an evidence-based practice.
- EBP is characterized by an inner conflict: control and security surrounding the effects of interventions and the basic scientific reality of uncertainty and questionability.
- EBP risks professionals' and clients' placing value on their own perspectives and experience in a wait for research evidence.
- The ability to evaluate the effects of methods, interventions, and programs within the normally operating social services is practically impossible.
- EBP undermines the ability to have meaningful dialogue between professionals and clients, including clients' families and social network.

As can be seen, the objections to evidence-based practice within social work in Sweden share many of the characteristics of the debate as voiced internationally. Generally speaking, these critics see EBP as: (1) relating solely to the effectiveness of interventions, (2) being closely related to positivism, (3) being too narrow a concept, (4) being about the application of a specific type of research finding in professional encounters with clients, (5) being dependent upon research results, and (6) being unrealistic.

Proponents of EBP within social work in Sweden agree that evaluating the effectiveness of social work interventions is an important aspect of EBP (see for example, Pettersson & Johansson, 2001; Tengvald, 2001a, 2001b). They maintain, however, that this is not the only aspect of EBP and that in order for EBP to be achieved client experiences and values as well as professional experience and

expertise must be integrated with the best available research evidence (see for example, Jergeby & Tengvald, 2005; Sundell & Gustafsson, 2007). The EBP debate in Sweden rests on a basic problem: proponents and opponents basing their argumentation on two very different perspectives of what is meant by evidence-based practice. Generally speaking, opponents equate EBP with randomized trials or systematic reviews while proponents see knowledge from randomized trials and systematic reviews as being one of many important components of evidence-based practice.

INTERVENING IN YOUTH PROBLEM BEHAVIOR

In this section a general description of youth problem behavior is provided along with a general overview of the potential for effectiveness and efficiency of interventions for youth with behavior problems. There is a vast literature focusing on youth problem behavior. The goal here is not to provide an exhaustive review of the literature but instead to give a general overview of the major findings of this area of research.

Defining Youth Problem Behavior

There is a vast and varying literature regarding problem behavior during adolescence. There is not, however, one single term which captures the multifaceted nature of problem behavior during adolescence. In general, problem behavior refers to a range of activities and can be described as behavior that breaks the prevailing norms, values, or rules of that society within which the individual finds him- or herself. Youths who are arrested for engaging in illegal activities are, for example, designated delinquent (Loeber & Farrington, 1998). Youths, however, may engage in delinquent activities without ever coming into contact with the criminal justice system (Southamer-Loeber & Loeber, 2002). Within the mental health system, oppositional defiant disorder, conduct disorder, or the umbrella term disruptive behavior disorders (Loeber, Burke, Lahley, Winters & Zera, 2000; Olsson, 2007; Stouthamer-Loeber & Loeber, 2002) are used to describe youth who engage in a repetitive and persistent pattern of problem behavior according to DSM-IV-TR (American Psychiatric Association, 2000). Youths who engage in delinquent behavior may or may not meet the diagnostic criteria for oppositional defiant disorder or conduct disorder. Conversely, youths diagnosed with a disruptive behavior disorder may or may not have had contact with the police or juvenile justice systems. All of these terms, however, are

used to formally describe youths with behavior problems and there is often considerable overlap in the problem behaviors of delinquent youths and conduct disordered youths (Melton & Pagliocca, 1992). In addition, the term antisocial behavior is often used to describe a range of behaviors which may cause harm to self or others such as violence, crime, and drug or alcohol abuse. Studies assessing the effectiveness and/or efficiency of interventions for youth with problem behavior may therefore use any one of these terms to describe the youths that have been subject to study.

Interventions' Potential for Effectiveness

Antisocial behavior has been found to be a powerful predictor of later violence and criminality (Moffitt, 2001; Moffitt, Caspi, Harrington & Milne, 2002) across time and cultural settings. Studies undertaken over the past 30+ years in Sweden (Magnusson, 1988, 1985; Stattin & Magnusson, 1989), Norway (Olweus, 1979) England (Farrington, 1989; Mitchell and Rosa, 1981) and the United States (Ageton, 1983; Elliott, 1994; White, 1992) have all found problem behavior during adolescence to have high predictive value for later violence and/or offending. Youth problem behavior as assessed by peers (Olweius, 1979), teachers (Mitchell & Rosa, 1981; Statin & Magnusson, 1989), parents (Mitchell & Rosa, 1981), as well as self-reported problem behavior (Farrington 1989) has been found to be associated with later violence and offending as assessed by official records (Farrington, 1989; Mitchell & Rosa, 1981; Stattin & Magnusson, 1989) and self-reports (Ageton, 1983; Elliott, 1994; Farrington, 1989; White, 1992). Taken as a whole, reviewers (Hawkins, Herrenkohl, Farrington, Brewer, Catalano, and Harachi, 1999; Lipsey & Derzon, 1999; Loeber, 1990; Moffitt, 1993) agree that adolescents who display high rates of problem behavior are more likely to continue their antisocial behavior into adulthood than are youth without behavior problems.

Youth problem behavior has also been found to predict health problems later in life. Early studies (Farrington, 1991; Pulkkinen & Pitkanen, 1993) found that antisocial and delinquent behavior during adolescence increased the risk for later substance abuse and de-

pendence. The predictive relationship between antisocial behavior and substance abuse has also been identified in more recent studies (Loeber, Farrington, Stouthamer-Loeber & van Kammen, 1998; Moffitt, 2001).

In addition to alcohol and drug abuse, other physical and mental health outcomes have been predicted by behavior problems in youth. For example, Moffitt (2001) found that antisocial behavior among both males and females predicted elevated adult symptoms of anxiety, psychosis and mania, as well as self-ratings of poorer health and self-reports of disability. A diagnosis of conduct disorder predicted more depression symptoms, and more medical problems, as well as increased suicide attempts. Risky sexual behavior and sexually transmitted diseases (STDs) have also been found to disproportionately burden those with an antisocial history (Ramrakha, Caspi, Dickson, Moffitt & Paul, 2000). This includes an increased likelihood of early childbearing and/or teenage pregnancy (Fombonne, Wostear, Cooper, Harrington & Rutter, 2001; Jaffe, 2002; Olsson, Hansson & Cederblad, 2006) for both boys and girls (Vinnerljung, Franzén & Danielsson, 2007). This fits squarely in line with earlier studies reporting on the health outcomes of youth with behavior problems (Cairns & Cairns, 1994; Kratzer & Hodgins, 1997; Magdol, Moffitt, Caspi & Silva, 1998; Moffitt & Caspi, 1998; Robins, 1966)

Problem behavior during adolescence has also been found to have strong predictive value for truncated educational attainment, including lower test scores and drop-out, as well as instability in employment during adulthood (Miech, Caspi, Moffitt, Wright & Silva, 1999; Moffitt, 2001). This supports earlier research (Cairns & Cairns, 1994; Farrington, 1991; Sampson & Laub, 1994, 1993, 1990) which found that antisocial and delinquent behavior during adolescence was associated with a higher occurrence of school dropout, decreased educational ambitions and employment problems including employment instability and decreased job status.

Youth problem behavior has also been found to impact the ability of individuals to develop meaningful social bonds. Youth with identified behavior problems have been found to have to a greater extent conflict-filled marriages in adulthood (Sampson & Laub, 1993) including involvement in domestic violence situations (Moffitt, 2001).

This is true for self-reported as well as partner-reported violence (Magdol et al., 1998; Moffitt & Caspi, 1998). Difficulties in close interpersonal relations, increased divorce and/or separation, increased spousal/partner abuse, increased childrearing problems and decreased relationship satisfaction have all been found to have strong empirical links to antisocial and delinquent behavior during adolescence (Farrington, 1991; Huesmann, Lefkowitz, Eron & Walder, 1984; Serbin, Schwartzman, Moskowitz & Ledingham, 1991).

Taken together, youths identified as having a pattern of relatively severe problem behavior which differs from normal development can experience negative consequences from adolescence through adulthood. An interventions' potential for effectiveness lies in its ability to impact the onset and/or continuation of these antisocial behavior patterns (Figure 1).

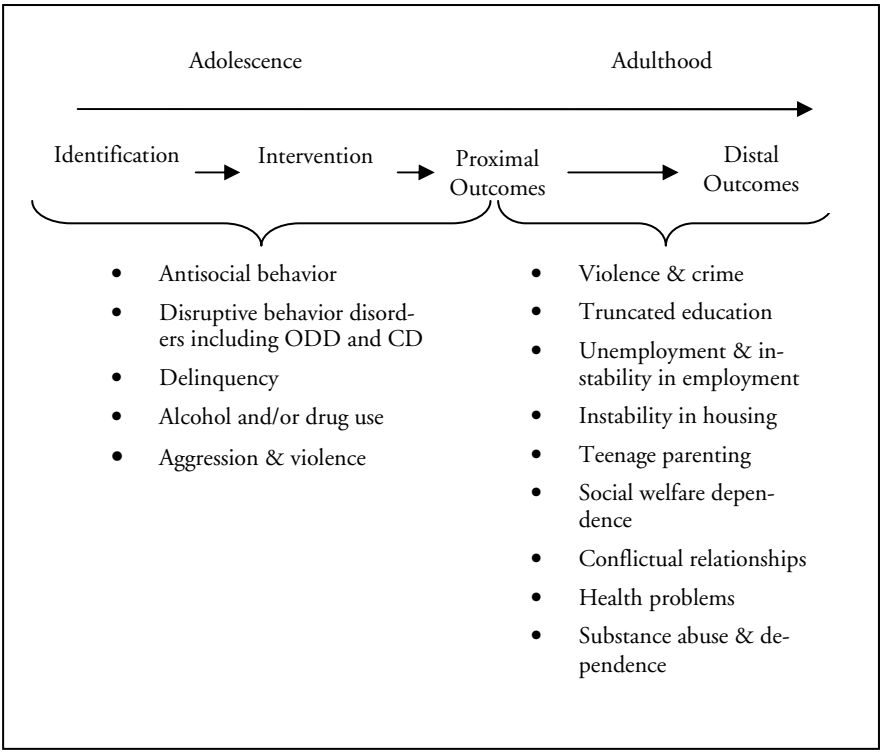

Figure 1: Interventions' potential for effectiveness

Interventions' Monetized Potential for Effectiveness

In 1998, Mark A. Cohen asked the novel question, "Absent long-term controlled experimental data, what are the potential benefits from intervention programs designed to assist high-risk youth?" (p. 6). To answer this question, Cohen estimated the costs imposed by a career criminal, a heavy drug user, and a high-school dropout. The estimates for the costs imposed by a career criminal included in this study were based on criminal processing costs, opportunity cost of offenders' time, victim costs, criminals' forgone earnings as well as estimates of the number of crimes and timing of crimes of the average career criminal. The final estimate in 1997 real values was that the average career criminal costs over a lifetime between $1.3 – 1.5 million. Similar estimation methods were used to arrive at the lifetime costs imposed by a heavy drug user ($370,000 – 970,000) and the average high-school dropout ($243,000 – 388,000). Combining these costs and eliminating overlap, Cohen estimated the monetary value of saving a high-risk youth to be between $1.7 – 2.3 million. In the estimates presented here, the costs associated with intervention in youth problem behavior were not included.

In 2007, the analysis by Cohen was updated (Cohen & Piquero, 2007). Using the same methodology as in the 1998 study, estimates were improved by including more recent data on individual crimes, the underlying offending rate for high risk juvenile offenders as well as longitudinal data on real criminal careers. In addition, the authors have broken down their analysis to include cost estimates at various ages depending upon the age upon which a youth prevention program is targeted. The results showed that the potential (lifetime) savings associated with a program targeted to a high-risk 14 year old was $2.7 – 4.8 million for crime, $840,000 – 1,100,000 for drug use and $390,000 – 580,000 for dropping out of high-school, or $3.2 – 5.8 million total.

In another study conducted by Scott, Knapp, Henderson and Maughan (2001), cost data was applied to children that had been

participants in an inner London longitudinal study. The study began in 1970 when the children were 10 and tracked their progress to their late 20s. All 10 year olds (n = 2281) in the borough had been screened. For the cost analysis a random sample of 1 in 12 of the total population and a 1 in 2 sample of children who had screened positive for emotional and behavioral problems was taken, resulting in a sample of 142 individuals. The objectives of the study were to compare the cumulative costs of public services used through adulthood by individuals. Individuals were divided into three groups based on antisocial characteristics during childhood: no identified conduct problems, conduct problems without a clinical diagnosis, and conduct disorder. Costs were calculated for each individual across six domains: foster and residential care in childhood, special educational provision, state benefits received in adulthood, breakdown of relationship (domestic violence and divorce), health, and crime. It was found that crime was the costliest domain in all the groups and constituted almost two-thirds of the total cost in the conduct disorder group. In addition, the conduct disorder group cost 10 times more (£ 70 019) than the no problems group (£ 7 423) and the conduct problem group cost over three times more (£ 24 324) (reported in 1998 values).

In 2004, the Swedish National Institute of Public Health, the National Board of Health and Welfare, and the National Agency for Education undertook a study which included examples of the long-term costs of unemployment due to psycho-social problems and the long-term costs of substance abuse (National Board of Health and Welfare, 2004). When the costs associated with these problems were extended over a 30-year period, the most conservative estimates (5% discounting) found that unemployment was associated with costs of just over 1.8 million SEK[20] and substance abuse with just over 11.8 million SEK. In other words, the potential savings[21] associated with preventing these problems was between 1.8 and 11.8 million SEK.

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[20] SEK is the official financial abbreviation for Swedish currency.

[21] *Cost-benefit analysis* is one of several methods for assessing *cost-effectiveness*. It is unique from other methods in that both costs (inputs) and effects (outcomes) are monetized, therefore, the results of cost-benefit analyses can be summarized with a single monetary value enabling comparison over a wide range of programs.

Effectiveness of Social Work Interventions

Intervening in youth problem behavior may benefit not only individuals but society as a whole by impacting outcome areas such as violence and crime, physical and mental health, academic achievement and employment as well as social and interpersonal relationships. Relatively few interventions, however, have demonstrated effectiveness in reducing the onset, prevalence, or individual offending rates of problem behavior for juveniles. Although various scholarly reviews have identified exemplary programs, the methodological standards used in evaluating program effectiveness have been criticized for their wide variation and lack of explicitness. As a result, the Blueprints for Violence Prevention Initiative was initiated in 1996 to identify and replicate effective youth violence prevention programs (Mihalic, Irwin, Fagan, Ballard & Elliott, 2004). Effectiveness measures of interest to the initiative are violence including childhood aggression and conduct disorder, drug use, and/or delinquency. To date more than 500 interventions have been reviewed. Three of these interventions have been targeted at youth with behavior problems and have been identified as meeting a strict scientific standard of program effectiveness.[22] That is,

- they have been evaluated with either a randomized or quasi-experimental design resulting in evidence of a deterrent effect;
- sample sizes have been large enough to provide statistical power to detect effects;
- attrition has been low;
- tests to measure effects were administered consistently to all study participants;

[22] A total of 11 interventions have been identified as meeting their standards for effectiveness, eight of which are not targeted at youth with an identified behavior problem. The three interventions identified were Multisystemic Therapy (MST), Functional Family Therapy (FFT), and Multidimensional Treatment Foster Care (MTFC). It should be noted that interventions are added and removed from this list continuously. For current interventions see www.colorado.edu/cspv/blueprints

- effects have been sustained for at least one year beyond treatment;
- effects have been replicated across studies or results have been consistent across sites in multi-site studies;
- additional considerations included analysis of mediating factors and costs versus benefits (efficiency).

A review of the research on social interventions for children and youth with special focus on Swedish interventions has also been undertaken (Cederblad, 2005). Research was found concerning five types of interventions[23] for youth with behavior problems. It was found that a majority of the studies reviewed were of a descriptive character and measured client satisfaction.[24] The author concluded that in order to develop social service interventions it is important to evaluate those interventions available with experimental and quasi-experimental designs using large client groups and preferably in multi-center projects. In addition, evaluations of methods which have been found effective in other countries should be undertaken in order to assess whether they show similar results in Sweden or if they need modification.

A focus on the extent to which interventions are effective, however, may hide an even more important question. That is, to what extent are well-meaning interventions harmful? In 1989 Mark Lipsey conducted a meta-analysis[25] of the treatment effectiveness of community and correctional interventions for juveniles. Based on 294 tests of intervention effects on recidivism, Lipsey (reviewed and

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[23] This refers to non-placement interventions: mentorship, addiction treatment, family therapy, youth groups and FFT. Placement interventions were also reviewed but are not discussed here.

[24] One of the studies included was the randomized study mentioned in the introduction to this dissertation and assessed the effect of FFT for use with delinquent youth (Hansson et al, 2000). Results showed that youth who received FFT exhibited reductions in their mental health symptomology as measured by self-reports as well as reductions in delinquency as measured by official records.

[25] A meta-analysis is the statistical aggregation of the results from a large collection of independent studies for the purposes of integrating the findings. The results from studies are converted into a common metric, termed an effect size, to enable cross-study comparison (see, Lipsey & Wilson, 2001).

cited in Andrews & Bonta, 1998) found the overall mean difference between the recidivism rates of the intervention and comparison groups to be about 9 percentage points. That is, 45.4 percent of the intervention group reoffended compared with 54.5 percent of the comparison group. However, the study reporting the poorest outcome found the mean difference between groups to be about 40 percentage points and favored the comparison group. In addition, 29 percent of the studies included in his meta-analysis showed negative effects (Lipsey, 1995). In other words, one out of every three to four of the interventions included in the meta-analysis were found to harm participants.

Efficiency of Social Work Interventions

In order to improve efficiency and thus be cost-effective, interventions must be more effective than the alternative at a cost that does not offset the effectiveness gains or interventions must be at least as effective as an alternative at a lower cost. For example, in an analysis conducted by Greenwood, Model, Rydell and Chiesa (1998) the cost-effectiveness of implementing programs aimed at improving conditions for youth in California was estimated. The authors were interested in estimating intervention costs and intervention effectiveness of programs to address the needs of children at risk of future criminality. Parent training and social-skills development, programs aimed at improving the educational attainment of disadvantaged youths and correctional interventions for young juvenile delinquents were included in the analysis. The authors found that the cost per participant ranged from $3,000 - $12,520 depending on the program. In addition, they found that although graduation incentives were the most costly of the three programs per participant, they were also by far the most effective of the interventions which made graduation incentives the most cost-effective. Parent training came in second due largely to its low cost per participant.

Similarly, Welsh and Farrington (2001) reviewed the literature on the monetary value of preventing crime. They included studies which reported the information needed to estimate intervention costs and monetize intervention effects. They identified twenty-six studies

that met their criteria for inclusion. Due to the small number of studies found for the analysis, studies included were not limited to those which employed an experimental design although this was their stated ideal. Of these studies, six were identified as 'developmental' crime prevention programs. That is, they aimed "to influence the scientifically identified risk factors or 'root causes' of juvenile delinquency and later criminal offending" (p. 90). Of the six studies included, five produced favorable cost-benefit ratios. That is, for every dollar invested in these programs, between $1.06 and $7.16 of savings were generated per participant.

In addition to these studies, the Washington State Institute for Public Policy undertook a meta-analysis of the comparative costs and benefits of 60 prevention and early intervention programs for youth (Aos, Lieb, Mayfield, Miller, Pennucci, 2004). Five of the programs assessed in the Welsh and Farrington study were also included in this study. The authors were specifically interested in seven outcome areas: crime, substance abuse, education, teen pregnancy, teen suicide, child abuse and neglect, and domestic violence. These outcome areas were monetized from a Washington State perspective in order to compare intervention costs over a wide range of programs with possible long-term benefits if implemented. In order to be included in the analyses, the studies assessing program effectiveness were restricted to randomized, quasi-experimental, or non-experimental design with a well matched comparison group. Results from studies that were not randomized trials were adjusted to reflect the increased uncertainty in results. More than half of the programs assessed (35) produced favorable long-term return on investment. Benefit-cost ratios for these programs ranged from $1.01 to $102.29.

In 2006, RAND Europe, an independent not-for-profit research organization, published a report entitled, *Interventions to Reduce Anti-Social Behaviour and Crime: A review of effectiveness and costs* (Rubin, Rabinovich, Hallsworth & Nason, 2006). The investigators used a snowball method of conducting their literature review and consulted relevant literature in English, French, German, Dutch and Spanish. The purpose of the study was to identify lessons from existing research on interventions to tackle antisocial behavior and crime. The studies they identified as relating to the economic outcomes of social work interventions for youth have already been discussed in

the three studies presented above. The authors concluded that data on the effectiveness of interventions rely heavily on research from the U.S., that certain types of developmental interventions can significantly reduce the rate of recidivism amongst young offenders, and that there is very limited data on the economic worth of different types of interventions, although analyses conducted primarily in the U.S. reveal that interventions for at-risk youth can provide value for money.

MULTISYSTEMIC THERAPY

MST: An Overview

MST is an intensive in-home and community based intervention developed in the U.S. during the 1970's for youth with severe behavior problems (Sheidow & Henggeler, 2008). MST was introduced as an alternative to out-of-home placements of juvenile delinquents but has since been developed further and is now considered an effective treatment for other target groups such as young criminals with substance abuse problems as well as youth with psychiatric problems. Today, there are active MST teams in many U.S. states as well as other countries such as Canada, England, Australia, New Zealand, Ireland, Holland, Norway, Denmark and Sweden. There are over 90 licensed MST programs in more than 30 U.S. states. Every year, approximately 14,000 youth are aided through a MST intervention in the U.S. and Europe.[26]

MST is built upon social ecological (Bronfenbrenner, 1979) and family systems (Haley, 1976, Minuchen, 1974) theories. In addition, a key assumption of MST is that treatment effectiveness rests upon a thorough understanding of the developmental processes and risk factors associated with antisocial behavior. MST focuses on the systems that have been identified as most important for youth – family, school and peer group. The idea central to MST is that a young person's behavior is impacted by factors in all of the social environments within which a youth is involved. Through intervention, MST intends to impact these systems. MST interventions are goal oriented. Examples of treatment goals include:

- improve parenting skills
- improve familial bonding
- reduce the youth's association with antisocial peers

[26] www.mstservices.com

- improve the youth's school achievement
- involve the youth in pro-social activities
- engage the family's network (extended family, neighbors, friends) in order to support parent(s) in their role.

Treatment goals developed within the context of an intervention drive the choice of intervention method and help determine intervention targets (i.e., youth, parents, peer group). The methods MST employs have empirical support for their effectiveness (Henggeler, 1999). Examples of methods used during a MST intervention include strategic family therapy, structural family therapy, parent training and cognitive behavioral therapy. Treatment plans are evaluated at least once a week in collaboration with the family and others deemed important to treatment success. The primary goals of MST programs are to (1) decrease rates of antisocial behavior and other clinical problems, (2) improve functioning (e.g., family relations, school performance), and (3) achieve these outcomes at a cost savings by reducing the use of out-of-home placements.

MST interventions are organized and carried out through small teams which consist of three to four therapists and a team-leader. Every therapist works with three to six families for three to five months. Low case loads are important due to the intensity of the interventions. MST therapists are available for crisis intervention with families 24 hours per day, seven days per week. MST interventions are delivered in the natural environment (e.g., home, school, community). MST Services[27] is responsible for the training and licensing of MST teams worldwide. MST Services provides telephone consultation every week as well as quarterly training sessions called "booster-sessions". In addition, MST Services assess whether MST therapists follow MST principles through their Therapist Adherence Measure (TAM). TAM is registered through telephone interviews with parents which take place approximately once per month.

[27] MST Services is affiliated with the Medical University of South Carolina and the Family Services Research Center and is the leading source of information about MST and technical assistance for implementing the MST model with fidelity. (www.mstservices.com)

Clinical Foundations of MST[28]

Treatment specification is an important task in the development, validation, and dissemination of a given therapeutic approach. For the purposes of specifying MST, developers have identified nine treatment principles. MST developers see the treatment principles as advantageous because they provide a flexible treatment protocol where therapists can adapt interventions based on their own professional strengths and use these strengths to the families' advantage (Henggeler et al., 1998). In other words, MST does not follow a rigid protocol where therapists conduct sets of prearranged tasks in an invariant sequence. Treatment integrity is evaluated by measuring therapist adherence to the principles. Parent and therapist ratings of adherence to the MST treatment principles have predicted long-term outcomes (e.g. Henggeler, Melton, Brondino, Scherer & Hanley, 1997). A brief description of the MST treatment principles and the clinical procedures accompanied with each follows.

Principle 1: The primary purpose of assessment is to understand the fit between the identified problems and their broader systemic context. Here MST therapists attempt to 'make sense' of behavioral problems in light of their systemic context. It is thus necessary for MST therapists to have a thorough understanding of the factors that contribute directly or indirectly to behavior problems. MST therapists then attempt to determine how each factor, singularly or in combination, increases or decreases the probability of youth problem behaviors. Several steps are required to develop a comprehensive understanding of fit, including hypothesis development and hypothesis testing. The hypotheses developed help MST

[28] As this dissertation does not aim to evaluate the individual treatment components of MST only a brief review of MST's clinical foundations is given here. The reader interested in more details about the intervention methods employed during a MST intervention and/or the theory underlying MST is referred to the MST treatment manual (Henggeler et al., 1998). See especially chapters 2-8.

therapists choose targets for intervention and intervention method. For example, interventions chosen may be family focused and center around changing parenting practices or improving parental relations. Interventions may focus on peer relationships, academic or social competence, or they may be individually focused.

Principle 2: Therapeutic contacts emphasize the positive and use systemic strengths as levers for change. The goal throughout an MST intervention is to develop and maintain a strength focus. In order to do this several techniques are developed and maintained throughout interventions. For example, techniques for using non-pejorative language in verbal and written communications, reframing, using positive reinforcement liberally, maintaining a problem-solving focus, providing hope and finding and emphasizing what families do well.

Principle 3: Interventions are designed to promote responsible behavior and decrease irresponsible behavior among family members. According to MST developers, conceptualizing the purpose of MST as enhancing responsible behavior is a point of view that can be readily communicated and understood by diverse groups of individuals and is less daunting than many diagnostic labels. MST aims to impact both parental responsible and irresponsible behavior such as providing basic needs, nurturance, protection as well as being constructive and proactively addressing barriers to fulfilling parental responsibilities. In some cases enhancing responsible parental behavior may include the engagement of others in sharing some of the parent's many responsibilities. For children and adolescents, the systematic application of positive reinforcement and discipline is usually used to promote responsible behavior and decrease irresponsible behavior.

Principle 4: Interventions are present focused and action oriented, targeting specific and well-defined problems. MST interventions emphasize changing the family's present circumstances as a step toward changing future functioning as opposed to devoting a great deal of attention on the family's past. MST interventions are also action oriented giving the family the opportunity to make incremental successes often which in turn can bolster the motivation of the family members to sustain their efforts and make additional changes. MST interventions target specific and well-defined prob-

lems which include defining overarching goals and intermediate goals that can be assessed daily.

Principle 5: Interventions target sequences of behavior within and between multiple systems that maintain the identified problems. This principle orients the practitioner toward modifying those aspects of family relations and of the social ecology that are linked with identified problems. Thus, interventions are based on the therapist's assessment of the sequences of behavior within the family that attenuate or contribute to the behavioral problems. MST focuses on interpersonal transactions as the mechanism for achieving treatment goals.

Principle 6: Interventions are developmentally appropriate and fit the developmental needs of the youth. MST interventions recognize that children and their caregivers have different needs at different periods of their lives. For children and young adolescents for example, considerable efforts may be extended to increasing parental control. For older adolescents, interventions might be more viable if they focus on preparing the youth for entry into the adult world. Here consideration is made of not only chronological age but cognitive and social development.

Principle 7: Interventions are designed to require daily or weekly effort by family members. A basic assumption of MST is that therapists can help families resolve their problems more quickly if everyone involved works together diligently. When therapists and families agree on and collaborate with the goals of treatment, the family and therapist are also agreeing to address any barriers that interfere with achieving these goals. The expectation is thus that through collaboration and agreement maximum effort should be evident in the daily behavior of all involved.

Principle 8: Intervention effectiveness is evaluated continuously from multiple perspectives with providers assuming accountability for overcoming barriers to successful outcomes. The purpose of this principle is to ensure that the therapist will have a continuous and relatively accurate view of treatment progress and, therefore, receive ongoing and prompt (between 1-2 weeks) feedback regarding the viability of interventions. If an intervention is not working, prompt feedback allows the therapist and family to consider alternative interventions or alternative conceptualizations of the

target problem. MST assumes that problems can be solved in a number of ways and therapists are encouraged to consider alternative solutions when the present ones are not effective.

Principle 9: Interventions are designed to promote treatment generalization and long-term maintenance of therapeutic change by empowering caregivers to address family members' needs across multiple systemic contexts. This means that families are empowered to solve their own problems and the skills they learn during a MST intervention can be readily applied to new situations. MST interventions should do the following (1) emphasize the development of skills that family members will use to navigate their social ecology, (2) develop the capacity of family members to negotiate current and future problems, (3) be delivered primarily by caregivers, with therapists playing primarily supportive and consultative roles, (4) accentuate and build family strengths and competencies, and (5) make abundant use of protective and resiliency factors available in the natural environment.

The analytical processes involved in an MST intervention are supported through ongoing clinical supervision designed to assist clinicians in carrying out the above functions. Supervisors reinforce critical thinking throughout the treatment process and encourage clinicians to engage in hypotheses testing when they have hunches, beliefs, or theories about the causes and correlates of particular problems within a family, the reasons that improvements have occurred, and the barriers to change. Figure 2 depicts these functions, the relationships among them, and the analytical process used to identify and execute them.

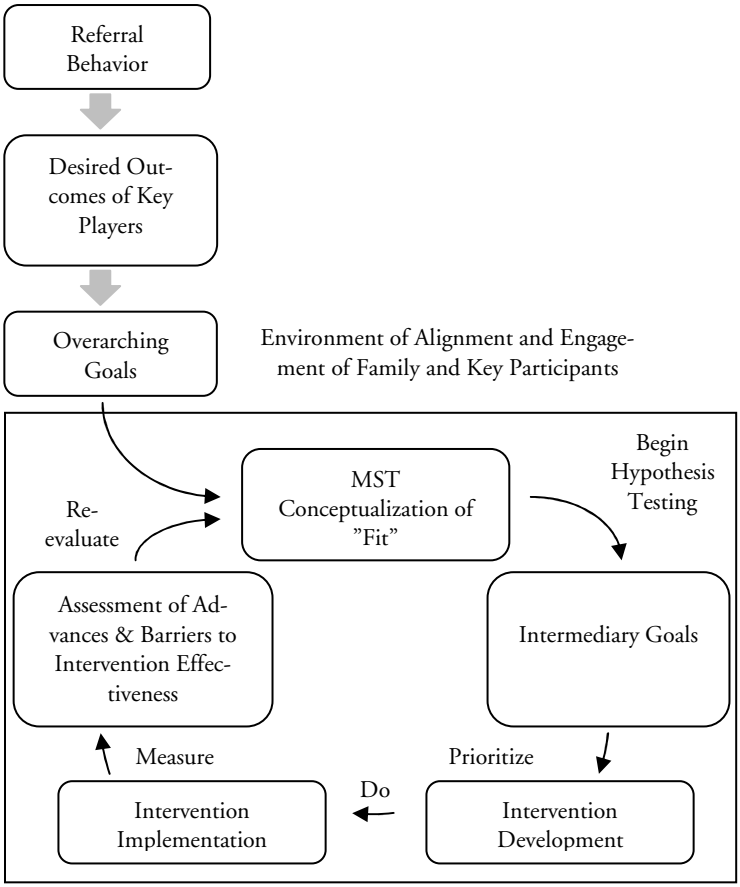

Figure 2: MST Analytical Process (Henggeler et al., 1998)

Research on MST

MST is rather unique in that it has an extensive research base and has been found in several studies (Borduin et al, 1995; Curtis, Ronan & Borduin, 2004; Henggeler et al., 2006; Henggeler et al., 1997;

Henggeler, Melton & Smith, 1992; Henggeler, Pickrel & Brondino, 1999; Rowland et al., 2005; Schaeffer & Borduin, 2005; Timmons-Mitchell, Bender, Kishna & Mitchell, 2006) to be a more effective form of treatment than the alternatives it has been compared against. In addition, MST has been cited as a treatment model with proven effectiveness by several organizations interested in the effectiveness of treatment interventions for various target groups (see Table 2).

Table 2: Organizations that have cited MST as a treatment model with proven effectiveness with rating description.

Organization	Rating	Description of Rating
Center for Substance Abuse Treatment (1998)	emerging model	Unspecified
U.S. Department of Health and Human Services (1999)	demonstrated effectiveness	At least two experiments with group designs or similar types of studies must have been published to demonstrate efficacy.
National Institute on Drug Abuse (1999)	scientifically based	Approaches that have been developed and tested for efficacy through research.
Center for Substance Abuse Prevention (2000)	exemplary	Well-implemented, rigorously evaluated, and consistent positive findings.
U.S. Department of Health and Human Services, U.S. Public Health Service (2001)	model program	Rigorous experimental design (experimental or quasi-experimental); Significant deterrent effects on: Violence or serious delinquency (Level 1); Any risk factor for violence with a large effect (.30 or greater) (Level 2) Replication with demonstrated effects; Sustainability of effects
President's New Freedom Commission on Mental Health (2003)	evidence-based practice	Treatments and services whose effectiveness is well documented; the integration of best-researched evidence and clinical expertise with patient values
National Alliance for the Mentally Ill (2003)	evidence-based practice	Research-based, generally structured and manualized practices that have been examined using randomized trial designs
National Institutes of	effective	Experimental design (RCT);

Organization	Rating	Description of Rating
Health (2004)		statistically significant positive effect; effect sustained for at least 1 year post-intervention; at least one external RCT replicating the results; RCTs adequately address threats to internal validity; and no known health compromising side effects.
National Mental Health Association (2004)	promising practice	A practice with promising design characteristics.
Office of Juvenile Justice and Delinquency Prevention (2007)	exemplary	In general, when implemented with a high degree of fidelity these programs demonstrate robust empirical findings using a reputable conceptual framework and an evaluation design of the highest quality (experimental).
Substance Abuse and Mental Health Services Administration (2007)	evidence-based practice	Generally refers to approaches to prevention or treatment that are validated by some form of documented scientific evidence
The Center for the Study and Prevention of Violence - Blueprints for Violence Prevention (2007) (www.colorado.edu/cspv)	model program	Experimental design (RCT); statistically significant positive effect; effect sustained for at least 1 year post intervention; at least one external RCT replicating the results; RCTs adequately address threats to internal validity; and no known health compromising side effects.
National Alliance for the Mentally Ill (2008)	evidence-based practice	Unspecified

MST is one of the most highly evaluated interventions for youth with serious behavior problems. It is also considered internationally to be one of the most effective interventions for youth with social, emotional, and conduct problems. In several systematic reviews of interventions for youth with behavior problems, MST is considered one of the most promising interventions (See for example, Carr, 2002; Farrington & Welsh, 1999; Sherman, Farrington, Welsh, & Mackenzie, 2002).

Today, there are eleven randomized studies of MST where the target population is youth with antisocial behavior problems. In addition to these, there are studies of MST for use with controlling diabetes, obesity and psychiatric problems (e.g. suicidality and psychosis), as well as child neglect and abuse (Henggeler, Sheidow, & Lee, 2007). Of the eleven studies with antisocial youth, ten have found MST to be more effective than the alternative with which it has been compared and none have reported harmful effects.

In addition to the individual effect studies, there are to date, two systematic reviews of MST which describe the effectiveness of MST across a range of outcome studies in order to assess MST's cumulative effects across various client groups in varying contexts. In addition there are three studies which have assessed MSTs efficiency in achieving positive outcomes for youth with problem behavior.

The Effectiveness of MST: Meta-Analyses

Curtis et al (2004) conducted a meta-analysis of the results of seven primary studies and four secondary studies of MST. A total of 708 youth were participants in these studies. The results showed that across the various presenting problems, target groups and outcomes the average effect size of MST was d = 0.55. The result also showed that the average results of efficacy studies was larger (d = 0.81) than that of effectiveness studies (d = 0.26).[29] MST was shown to have a

[29] *Efficacy studies* are those which have been conducted under highly controlled conditions usually carried out by program developers while *effectiveness studies* are those which are undertaken in more natural settings usually without the involvement of program developers.

greater impact on family relations than on social skills or peer relationships.

A meta-analysis has also been conducted as a Campbell Collaboration review.[30] Among the supporters of this review was Sweden's Institute for Evidence-based Social Work Practice (IMS). The researchers who produced this analysis identified eight randomized trials of MST's effect on youth exhibiting social, emotional, or behavior problems which included enough statistical information to complete a meta-analysis and fulfilled their quality requirements. Even though seven of the eight evaluations included in the analysis showed that youth who received a MST intervention made significant improvements when compared to an alternative, the result of the meta-analysis did not confirm the results of these individual studies and concluded that there was no statistical difference between MST and the alternatives under investigation (Littell, Popa & Forsythe, 2005). The report is generally critical to the quality of prior studies of MST. The authors point to shortcomings regarding the reporting of the number of youth who were randomized to various treatment groups, unclear procedures regarding randomization, as well as non-standardized follow-up periods. In addition, they are critical of studies in which a treatment-of-treated (TOT) approach to data analysis is used instead of an intent-to-treat (ITT) approach.

This result has been debated openly in several articles (see, Henggeler, Schoenwald, Borduin & Swenson, 2006; Littell, 2005, 2006; Ogden & Hagen, 2006b; Sundell, 2005). The general thrust of the critique of this meta-analysis is that the investigators seem to lack basic understanding for conceptual, methodological, and practical issues critical to treatment and services research. Specifically, critics maintain that the investigators show confusion regarding the purpose of randomization, misunderstandings in reading and interpreting research results, the importance of treatment fidelity,[31] the distinction

[30] For more information visit www.campbellcollaboration.org

[31] *Treatment fidelity* refers to the extent to which a treatment is carried out as designed. In the example of MST, if treatment fidelity is low questions arise as to whether MST was actually provided, while if treatment fidelity is high, MST can be said to have been provided.

between efficacy, effectiveness, and transportability research,[32] site effects[33] in transportability research, and program maturity effects.[34] It is generally believed by independent reviewers of the meta-analysis that the results should be interpreted with caution (Ogden & Hagen, 2006b; Sundell, 2005). An update to this meta-analysis is currently underway (Campbell et al, forthcoming). The results, however, are not yet available.

The Efficiency of MST: Economic Analyses

Of the MST outcome evaluations involving youth with behavior problems, only one has been extended to assess the cost-effectiveness of MST.[35] Schoenwald, Ward, Henggeler, Pickrel & Patel (1996) analyzed the economic outcomes of MST compared to usual services for 118 substance abusing or dependent juvenile offenders. Outcomes measured were drug use, criminal activity and out-of-home placement. Results after approximately 11 months (six-months after treatment completion) showed that youth in both groups reduced their use of alcohol, marijuana and other drug use as assessed

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[32] *Efficacy* refers to studies which are carried out under highly controlled conditions usually with high involvement by program developers in both implementing and supervising treatment as well as research. *Effectiveness* refers to studies which are carried out under more natural conditions, such as community setting, where program developers are less likely to be involved in the actual implementation of treatment or research. *Transportability* refers to studies which investigate factors that affect the implementation and outcomes of a treatment when it is implemented in practice conditions

[33] *Site effects* refer to the variation in outcome within different sites which may be attributable to such things as variations in program treatment fidelity, client characteristics, therapist characteristics, etc.

[34] *Maturity effects* refer to changes in outcome achieved over time. That is, as programs mature (i.e., therapists become more competent with treatment components, implementation components become more solidly grounded in the organization, etc) better outcomes may be produced.

[35] Two additional studies have been extended to include economic analyses of MST for use with different populations. See, Henggeler et al. (1999) together with Schoenwald, Ward, Henggeler & Rowland (2000) and Sheidow et al. (2004); as well as Ellis, Naar-King, Frey, Rowland & Greger, (2003) together with Ellis et al. (2005).

through both self-reports and toxicology screening, but that there were no significant differences between groups. This finding was similar for self-reported delinquency as well as official arrest rates (Henggeler, Pickrel & Brondino, 1999). In regards to out-of-home placement, youth in the MST group experienced substantially fewer days in out-of–home placement. The economic analysis showed that youth in the MST group used fewer treatment services than youth in the comparison group as measured by hours for all outpatient services and days for all inpatient and residential services. It was found that service utilization costs associated with substance abuse and mental health services for the youth in the comparison group was almost three times that of the MST group. However, when considering total costs (including MST intervention costs), the course of intervention including MST was 50% more costly. Thus, a 50% increase in total intervention costs for youth in the MST condition during the period under review was associated with 46% fewer days incarcerated and 64% fewer days in psychiatric and residential facilities relative to comparison group youth. The authors furthered the analysis by adding incarceration costs to total intervention costs. When incarceration costs were added to the total cost estimates, the extra cost of providing MST was nearly offset.

In addition to this study, Aos et al (2004) used meta-analytic techniques to assess the costs and benefits of MST among other programs. Six effect sizes for MST were found in the literature relating to juvenile crime. It was found that based on the adjusted effect size as estimated from the studies reporting on MST,[36] if the State of Washington would implement MST and experience similar results, Washington State taxpayers would save $2.64 for every dollar invested (expressed in 2003 real dollars). A similar study conducted by Aos, Miller & Drake (2006) found 10 effect sizes for MST and estimated the net benefit of MST to be $18,213 per participant in regards to its impact on reducing crime (2006 dollars).

[36] Adjusted effect size after accounting for differences between studies and quality of outcome measure and study design -.169

PRESENTATION OF STUDY I

Aim

The aim of Study I is to clarify evidence-based practice by investigating three conceptualizations of EBP and reconstructing their underlying theories. Two of these models were based on definitions of EBP found in the literature. These examples were chosen because of their accessibility and were found using basic literature-searching methods. They are not the outcome of an exhaustive search of the literature on EBP. These were then contrasted with the program introduced earlier: National support for knowledge development within the social services.

Purpose

The purpose of presenting Study I here is to provide a background to Studies II-IV by answering the following questions:

1. What is EBP and are the three examples presented homogeneous,
2. What are the mechanisms underlying EBP and how are they expected to lead to intended outcomes,
3. Can program theory help to advance an understanding of EBP through the development of a conceptual framework?

Program Theory

There is no single understanding or definition of theory (Chen, 1990). A theory, as used here, is a broad attempt to organize and explain evidence-based practice. The three theories are presented as conceptual frameworks consisting of symbolic representations of the mechanisms, structures, and causal processes presumed to underlie the relationships between them (Marx & Godson, 1976; Worthen,

1996). Thus, the theories present a consistent group of statements that present a systematic view of EBP. Here, the statements identify, define, and describe the phenomena involved in evidence-based practice, and specify the nature of their interrelationships. It should be noted that the theories provided here do not attempt to be nor should they be considered formal social science theories. That is, they are not explanatory frameworks for the social phenomena of evidence-based practice drawn from social science (Donaldson & Lipsey, 2006). They are what can be described as program theories (Rogers et al., 2000). Simply put, a program theory specifies the causal processes underlying a program or policy's expected, intended or unintended effects.

Method

The reconstructions are based on the policy-scientific approach as described by Leeuw (2003) and used by Ehren, Leeuw and Scheerens (2005). This method has six steps:

1. Identify the social and behavioral mechanisms that are expected to solve the problem.
2. Compile a survey of these statements and link the mechanisms to the goals of the program under review.
3. Reformulate the statements into conditional 'if-then' propositions or propositions of a similar structure.
4. Search for warrants that will identify disconnects in or among different propositions using argumentation analysis.
5. Reformulate these warrants in terms of conditional 'if-then' (or similar) propositions and draw a chart of the (mostly causal) links.
6. Validate the models.

This approach is concerned with the identification of the behavioral mechanisms expected to solve a particular problem (Leeuw, 2003). A mechanism is a hypothesis or set of hypotheses about the behavior of

individual actors and their interaction with other actors, or a social aggregate that explains a particular phenomenon (Hedström & Swedberg, 1998). The theories are presented as basic structures. That is, all of the possible relationships are not necessarily included in each of the three conceptual frameworks presented, but only those that contribute to a foundational structure.

Results

Evidence-based practice as described in the three examples used in Study I were not found to be homogeneous (see Appendix I, Figures 1, 2, & 3 for presentation of models). The examples presented varied in many respects, not only in regard to research and evaluation but also in the role of research, policy, practice and professional education within EBP (Table 3). Service users are considered differently in the examples presented, as are methods for bridging the research-policy-practice gap.

Table 3: Differences in evidence-based practice theories as reconstructed from three examples of EBP (Adapted from Olsson, 2006).

EBP and:	**Substantive theory of evidence-based practice (ex 1)**	**Dynamic theory of evidence-based practice (ex 2)**	**Structural theory of evidence-based practice (ex 3)**
Research and Evaluation	Focus on outcomes research to varying degree	Focus on access to all forms of current best research relevant to policy and practice	Focus on developing a framework for the support of systematic research and evaluation of practice methods and professional processes
Practice & Policy	Consumers of EBP	Participants in EBP	Part of an EBP environment
Service users	Through EBP harm reduced	Informed consumers are involved in the decision making process as well as being active participants in EBP	Equal to practice and policy via a common knowledge base thereby decreasing service user vulnerability

EBP and:	Substantive theory of evidence-based practice (ex 1)	Dynamic theory of evidence-based practice (ex 2)	Structural theory of evidence-based practice (ex 3)
Professional education	Not addressed	Students supplied with additional knowledge through greater access to research evidence	Enhanced through knowledge generation
Research - policy – practice gap	Through outcomes research, effective programs can be identified and disseminated	Research evidence accessible to practice and policy; practice and policy inform research	Research that lies close to practice expanded. Through evaluation, methods for bridging the gap will be developed. A common knowledge base will highlight gaps.

Discussion

Although the reconstructions presented in Study I differ, there are very few contradictory points between the conceptualizations. As the models presented in Study I were basic structures, the examples may be component parts of the whole of EBP. In other words, EBP as considered in example one could very well be encompassed within EBP as considered in example two and, these two examples may be

component parts of example three. The main points of conflict between the three conceptualizations presented are the breadth of 'evidence' that they will accept, and the static versus dynamic nature of EBP. This is not to imply that these elements are contradictory but does highlight the difference in focus of the theories presented. That which is underdeveloped for a program theory of EBP is attention to the social mechanisms involved in EBP. In other words, little attention is given in the EBP literature reviewed here on how the various components of EBP are assumed to impact individual behavior (e.g., policy maker, practitioner, service user) or through what processes any specific change in behavior will impact outcomes. Developing a program theory of EBP may help an understanding of EBP by highlighting the elements assumed necessary for its success, explaining how these elements fit together, as well as uncovering contradictory, conflictual or missing elements.

PRESENTATION OF STUDIES II-IV

Studies II-IV are based on the same sample of individuals. The three studies investigate the effectiveness and efficiency of MST relative to TAU within the normally operating social service system in Sweden. Therefore, Studies II-IV are presented together.

Aim

The aim of Study II[37] (Appendix II) is to investigate the treatment outcomes of youth receiving MST as compared with youth receiving TAU seven-months after randomization to treatment group. In addition, the effects of program treatment fidelity, program maturity and demographic and clinical variables are also investigated for their impact on treatment effectiveness.

The aim of Study III (Appendix III) is to investigate the incremental costs of providing intervention for the group of youth assigned to MST as compared to TAU during the six-months following randomization to intervention group. In particular this study investigated the extent to which youth enrolled in Study II received social welfare interventions, which interventions they received, and the costs of these interventions. Of particular interest in this study was the economic impact of MST on municipal social welfare spending and whether MST impacted the system of services through either an increase or decrease in intervention costs in the short-term.

The aim of Study IV[38] (Appendix IV) is to investigate the short-term treatment and economic outcomes for a sub-sample of youth

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[37] My individual contribution to Study II included study implementation and data collection in 10 of the 27 communities involved in the project which encompassed 2 of the 6 MST teams. In addition, I was involved as a collaborator for data analysis and interpretation of results, including being active in authorship of the article published in conjunction with Study II.

[38] My individual contribution to Study IV included study implementation and data collection in 10 of the 27 communities involved in the project which encompassed 2 of the 6 MST teams as well as all aspects of planning and data collection,(including

from Study II with an identified substance-abuse problem as compared with non-substance abusing youth.

Design

A 2 (treatment type: MST vs. TAU) X 2 (time: pretreatment vs. posttreatment) X 6 (site: MST team) mixed factorial design was used with a 50/50 random allocation between MST and TAU groups. Data was collected before randomization and approximately seven months after randomization.

Study Population

The target group for the study was defined as youth aged 12-17 years that fulfilled the criteria for a clinical diagnosis of conduct disorder according to the DSM-IV-TR (American Psychiatric Association, 2000) whose parents or parent surrogates were motivated to start an intervention. Exclusion criteria included (1) ongoing treatment by another provider, (2) substance abuse without other antisocial behavior, (3) sexual offending, (4) autism, acute psychosis, or imminent risk of suicide, and (5) the presence of the youth in the home was a serious risk to the youth or to the family. Families were recruited from 27 local authorities from Sweden's three largest cities (Stockholm, Göteborg, Malmö) and one west coast town (Halmstad). These areas were served by six MST teams.

Procedure

All youth referred to the study during the 12-month period starting March 2004 had been screened for conduct disorder by their Social Welfare Administration case worker. The families who met the in-

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data entry) in regards to intervention costs. In addition, I was solely responsible for all aspects of data analysis. Authorship of the chapter published in conjunction with Study IV was a collaborative effort.

clusion criteria and where both youth and guardian(s) agreed to participate were asked to sign an informed consent form as well as baseline data collection instruments. A total of 168 families were asked to participate in the study, and 156 (93%) accepted the offer (79 MST; 77 TAU). The final sample consisted of 95 boys (61%) and 61 girls (39%) with a mean age of 15 years (SD = 1.35). In regards to Study IV, 64 (41%) of the youth were identified as having a substance-abuse problem while 92 (59%) were identified as non-substance abusing youth.

Randomization took place immediately following initial data collection. After research staff received completed instruments from both the youth and parent, research staff opened a sealed, numbered envelope which contained the results of the computer generated randomization for that specific youth. To ensure that all sites were operating with approximately the same number of MST and TAU cases, the sites (N = 6) were used as a blocking variable.

Interventions

MST

Families and youths who participated in MST were served by a program licensed by MST Services, Inc., Charleston, South Carolina. Weekly expert consultation via telephone, quarterly on-site booster sessions, and biannual implementation reviews were provided by the MST consultant in charge. The on-site MST supervisor delivered supervision and program direction according the MST Supervisory Manual (Henggeler & Schoenwald, 1998), and the organization adhered to the MST Organizational Manual (Strother, Swenson, & Schoenwald, 1998). Each MST team consisted of a clinical supervisor and 3-4 therapists, totaling 6 clinical supervisors and 20 therapists.

Of the 79 youths that were assigned to the MST group, 75 started the MST treatment. The MST team was unable to engage two of the families in treatment, 1 youth was placed in residential care on account of an event that occurred before the beginning of the MST treatment, and 1 youth was sent back to the adolescent's home

country. According to the data that were reported to MST Services, 55 of the 75 cases (73%) were discharged on the basis of the mutual agreement of the primary caregiver(s) and the MST team. This is similar to the average treatment completion rate (74%) for MST programs worldwide. The reasons for premature termination of a MST intervention included the inability of the MST team to engage the families in the treatment (n = 9), youth placement in a detention center because of ongoing delinquent behavior (n = 8), youth placement in a detention center as a result of an event or offence that occurred before the beginning of MST treatment (n = 2), and administrative issues or decisions by the funding source unrelated to the progress of the case (n = 1).

Fidelity to MST model

Fidelity to the MST treatment model was measured by therapist adherence to the nine principles of MST which was assessed with caregiver report on the 26-item MST Therapist Adherence Measure (TAM; Henggeler & Borduin, 1992).

Treatment as usual

Youths assigned to the group receiving TAU were referred back to the Social Welfare Administration for determination of intervention. All interventions normally available to youth were available to this group of youth with the exception of MST. The most common intervention received directly following randomization was individual counseling provided by the case manager or a private counselor financed by the Social Welfare Administration (n = 20). The second most common was family therapy (n = 16). Other TAU interventions included mentorship services (n = 12), out-of-home care (n = 8), Aggression Replacement Training (n = 4), addiction treatment (n = 2), and special education services (n = 2). Thirteen of the youths in this group received no services.

Fidelity to TAU

Fidelity measures were not available for TAU. In most cases interventions received as part of TAU were unspecified interventions, that is, program developers and/or administrators could not provide detailed information regarding the unique components of the interventions they provided.

Follow-Up and Attrition

Follow-up data was collected from youth, parents, and Social Welfare Administration case workers seven-months after randomization. Of the 156 families that entered the study, seven (4%) withdrew from the evaluation during the follow-up period. Seven youth (4 MST; 3 TAU) refused to complete the follow-up questionnaire, although data provided by the parent were collected. Internal attrition – missing answers on single questions – was relatively infrequent.

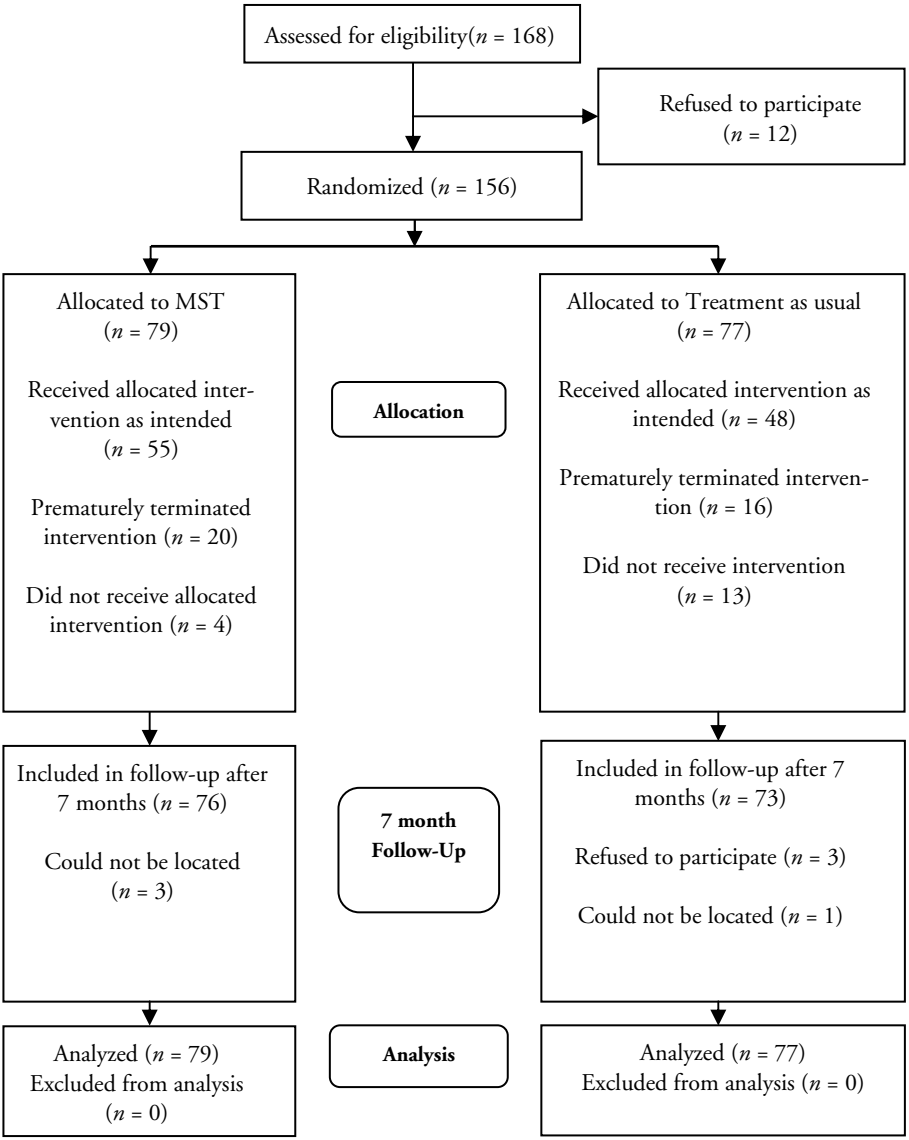

Figure 3: Flow Diagram of the Process through the Phases of the Study

Measures

- Youth symptomology was assessed using caregiver ratings on the Child Behavior Checklist (CBCL) and adolescent ratings on the Youth Self Report (YSR) (Achenbach, 1991a; 1991b).
- Youth reported their Sense of Coherence through a shortened version of the SOC scale (Antonovsky, 1987).
- Delinquency was measured through youth reports with the Self Report Delinquency Scale (Elliott, Ageton, Huizinga, Konowles & Canter, 1983) as well as through official reports.
- Substance abuse was measured through youth reports regarding consumption and through self-reports on the Alcohol Use Disorder Identification Test (AUDIT) (Babor, de la Fluente, Saunders & Grant, 1992; Bergman, 1994) and Drug Use Disorder Identification Test (DUDIT) (Berman, Bergman, Palmstierna & Schlyter, 2005).
- The Social Skills Ratings System (SSRS) (Gresham & Elliott, 1990) was used to assess a broad array of social skills.
- One subscale from the Pittsburgh Youth Study (PYS) (Keenan, Loeber, Zhang, Stouthamer-Lober & van Kammen, 1995), Bad Friends, was used to measure relationships with antisocial peers.
- Youth social competence was measured through caregiver and adolescent ratings on the Social Competence with Peers Questionnaire (SCPQ) (Spence, 1995) and adolescent ratings on an adapted scale from the Social Skills Ratings System (SSRS) (Gresham & Elliott, 1990).
- Parenting skill was assessed through adolescent and caregiver ratings from questions adapted from a longitudinal study by Håkan Stattin (Örebro University).
- The Symptoms Checklist-90 (SCL-90; Derogatis & Cleary, 1997) was used to assess parental mental health.
- In addition, data on social services received and school attendance by participating youth was also collected.

Cost Analysis

The viewpoint of the cost analysis is that of the municipal Social Welfare Administration. All interventions in youth problem behavior are the responsibility of the municipal Social Welfare Administration regardless of whether these interventions are provided directly by a public agency or provided through a private organization. All interventions are provided free of charge to youth and families. Direct costs borne by the youths and families involved in this study such as the costs of transportation were not included. Furthermore, indirect costs such as productivity losses associated with lost or impaired ability to work or to engage in leisure activities were not included. As this study is interested in incremental costs, those costs that are common to both groups are not considered (e.g. assessment by the local Social Welfare Administration, Social Welfare Board case reviews, on-going case management provided by the local Social Welfare Administration). Intervention costs were collected retrospectively. All intervention costs are calculated by multiplying resource use (quantity) by unit cost.

Resource use

Resource use is based on the number of days an individual's case was open for any treatment intervention during the six-month follow-up period starting at randomization. Information on type (i.e., MST, counseling, foster care, mentorship services, etc.) and duration (i.e., opening and closing dates of service) of interventions received by study participants was collected from the Social Welfare Administration and validated through unit supervisors and third party treatment providers. Data was available on resource usage at the individual level for all participants.

Unit costs

Unit costs were estimated for each of the interventions received by study youth. All cost calculations are based on per unit cost estimates where an intervention unit is equal to an open case day (with

the exception of toxicology screening where one unit is equal to one test). For those organizations providing more than one type of intervention, unit costs were calculated on a per intervention basis. Unit costs were estimated separately for 2004 and 2005.

Intervention costs

Intervention costs are divided into three categories: (1) MST intervention costs, (2) non-placement intervention costs and (3) placement intervention costs. Non-placement interventions are provided while youth remain living at home, while placement interventions refer to the placement of youth outside of their own homes.

MST intervention costs

Information was provided by five of the six participating MST teams regarding the resources used to sustain a MST team and the families served for the two calendar years (2004 and 2005) during which youth were recruited into the study and provided MST. Across participating MST teams, personnel costs (i.e., salaries, benefits, employer paid social security, etc) averaged 75% of total operating costs.

The cost for a MST intervention at the individual level has been estimated in two steps. First, a unit cost was estimated per participating MST team per (calendar) year. The average unit cost for MST per team per year was calculated as follows:

(E1)

$$MSTu_{team} = \frac{TOC_{team}}{FS_{team} \cdot LOS_{team}}$$

Where,

$MSTu_{team}$ = MST unit cost per team per year

TOC_{team} = Total operating costs per team per year

FS_{team} = Families served per team per year

LOS_{team} = Average length of stay across families served per team per year

The next step was to estimate the total MST treatment cost per youth in this study. The unit cost as estimated in E1 above was applied to each individual study participant (youth) and multiplied by the number of days the participant received intervention. For the youth receiving MST from the one team that did not provide information on operating costs and workload during the years in question, the average cost across MST teams by calendar year was used as a proxy. Total MST treatment costs per youth were estimated as follows:

(E2)

$$MST_{youth} = \sum_{Year=1}^{N} MSTu_{team} \cdot LOS_{youth}$$

Where,

MST_{youth} = Total MST treatment cost per study participant

$MSTu_{team}$ = MST unit cost per team per year(E1)

LOS_{youth} = Length of stay for participant during (calendar) year

Year = Calendar year (2004 or 2005)

Other non-placement costs and placement costs

In addition to MST, the youth involved in this study received a combined total of 143 interventions delivered by 95 providers during the six-month period under review. Three methods were used to

estimate the unit cost for these interventions. First, for 62% (n = 45 placement; n = 43 non-placement) of the interventions received (63% of provider organizations), cost estimates were available from case records and are equal to the actual price paid by the Social Welfare Administration to the provider organization. Studies have shown that using charges as opposed to costs can impact the unit price estimate. In general, charges are higher than costs. However, it has been shown in studies comparing costing methods that the main results of economic evaluations within trials have not been impacted by choice of costing method (Drummond et al., 2005). In addition, under conditions of competitiveness, price is considered an appropriate proxy for cost (Boardman, Greenberg, Vining, & Weimer, 2006).

Second, when cost estimates were unavailable through the participating Social Welfare Administration, unit costs were estimated from data collected from provider organizations on actual annual operating costs and actual annual workload measures. For 20% (n = 28 non-placement) of the interventions received (9% of provider organizations), provider organizations were able to supply enough information to estimate a unit cost. Across these interventions, data provided showed that personnel costs accounted on average for 92% of total operating costs. Prior studies of operating costs within the social welfare sector in Sweden have shown that 75% - 85% of total operating costs can be attributed to personnel costs (National Board of Health and Welfare, 2004). This estimate is similar to the distribution between the two major cost categories for the MST teams in this study. Therefore, there is reason to believe that important cost categories were omitted from the estimates provided by these organizations. Due to this, total operating costs were calculated by weighing personnel costs at 75% of total operating costs. Specifically, the average unit cost for these interventions was estimated as follows:

(E3)

$$UC_{\text{int}ervention} = \frac{TOC_{\text{int}ervention}}{YS_{\text{int}ervention} \cdot LOS_{\text{int}ervetnion}}$$

Where,

$UC_{intervention}$ = Unit cost per intervention per year

$TOC_{intervention}$ = Total operating costs by intervention per year (personnel cots / 0.75)

$YS_{intervention}$ = Number of youth served by intervention per year

$LOS_{intervention}$ = Average length of stay across youth served by intervention per year

Third, for 18% (n = 27 non-placement) of the interventions received (28% of provider organizations), provider organizations were unable to supply enough information to estimate a unit cost for the intervention through the methods described above. For these interventions, the average unit cost for that group of interventions during a given year (for example, each individually estimated unit cost for foster care during 2004 averaged or each individually estimated unit cost for counseling during 2005 averaged) is used as a proxy.

Total intervention costs

For the MST group, total intervention costs are made up of MST intervention costs, placement intervention costs, and non-placement intervention costs. The TAU group's total costs are made up of placement intervention costs and non-placement intervention costs only as no youth in the TAU group received MST. These total costs per intervention per youth were then summed for each youth to arrive at the total cost per youth during the six months under review.

Currency and inflation

Costs were calculated in Swedish crowns (SEK) for that year in which the costs were incurred and inflated when necessary to 2005 real values using the change in producer price index of 0.045%

(Official Statistics of Sweden, 2006). As the costs incurred and reported in this study do not stretch over one year, no discounting was conducted.

ITT vs. TOT

Although an intent-to-treat (ITT) analysis is preferred to a treatment-of-treated (TOT) analysis in outcome studies (Lachin, 2000), treatment conditions in which participants do not engage in treatment may have better economic outcomes as non-receipt of services equates to negligible costs. The MST group in this study engaged significantly more youth in treatment during the period under review (non-receipt: 2 MST; 13 TAU, 2 9.241, $p < .01$). Therefore, it is uncertain as to whether non-receipt of services is an ignorable event (Gross & Fogg, 2004). It should be noted that these youth were not study drop-outs, but were youth that did not engage in any treatment during the study period. Thus, although an ITT analysis gives a real world picture of the economic outcomes of referring youth with conduct disorder to treatment and therefore provides a relevant picture for policy, a TOT analysis may be a more fair comparison of the economic worth of MST vs. TAU and a more relevant picture for individual treatment decisions (Sheiner, 2002). In addition, an increase in service engagement may have value that is not estimated in this study. Due to this, both the full sample (ITT) and the reduced sample (TOT) are included in the analyses presented here.

Sensitivity analysis

Changes in resource use levels are also tested for their impact on total expenditure levels. Specifically, in the only known cost analysis of MST involving a similar target group, Schoenwald et al (1996) reported that MST resulted in a 50% reduction in resource use in the form of placement interventions and an almost 40% reduction in resource use related to non-placement interventions. Absent similar reductions, these effects are tested for their impact on total intervention costs in the sensitivity analysis.

In addition, changes to MST unit costs are investigated. MST's average unit cost is based on total operating costs and annual workload measures as described previously. The average MST team as described by the developers of MST aims to work with 4-6 families under a 3-5 month period per therapist. At this rate, the average MST-team has the ability to engage between 25 and 84 families per year. The MST teams involved in this study engaged on average 27 families per year during 2004-2005. During the inclusion period an average of 13 families per MST-team engaged in a MST intervention. Which means that although the average number of families served per year by the MST-teams involved in this study falls within the range described by the developers of MST, there is reason to believe that during the time of this study, the MST teams involved may have been working at anywhere from 25% to 50% of their full capacity. If the MST teams would have been working at full capacity, the average unit cost of MST would be lower than that estimated in this study. The impact of this is explored.

Data Handling and Analysis

Baseline differences between treatment conditions on demographic and psychosocial variables were examined using chi-square for categorical variables and one-way analysis of variance (ANOVA) for continuous variables. Data were analyzed by intention to treat: All randomized participants were included in the analysis under their original group assignment. All values of missing subjects at the postmeasure were imputed by carrying forward the pretreatment measure. The number of missing subjects at the post-measure varied between 14 (9%) and 19 (12%) for youths and between 12 (8%) and 18 (12%) for guardians, with the exception of guardian's mental health, where the number of missing subjects was 30 (19%).

Repeated measures analysis of variance and chi-square analyses tested the effectiveness of MST 7 months after intake on all measures except for investigation of differences in the average number of days in out-of home care, number of days with services, percentage change in alcohol and drug use, school attendance, police arrests, re-referrals for new services, and out-of-home care. In these instances, one-way

ANOVA and chi-square test were used where appropriate. Effect sizes (Cohen's d) were calculated by taking the difference in pre- to postmeasure means for each group and dividing these by their pooled standard deviations of pre- and posttest values (cf. McCart, Priester, Davies, & Azen, 2006). Multiple regression analyses were conducted to evaluate the effect of potential moderators of MST effectiveness on each of the outcome measures. With an alpha set at .05 and a sample size of 156, the power of detecting an effect size of .26 – the average effect size for key outcomes in published MST trials (Curtis et al., 2004) – was .87.

Resource use and intervention costs for the two groups were compared and statistically assessed for significant differences. Differences in resource use and intervention costs between treatment groups were tested using the standard *t* test. Despite the potential skewness of cost data, the arithmetic mean and standard *t* test are considered appropriate for comparing mean costs between two groups (Barber & Thompson, 1998), and the most relevant statistic for informing decision making (Thompson & Barber, 2000). Despite this, the non-parametric Mann-Whitney U was also used to test for differences in median total costs between groups. In addition, chi-square was used to test the difference between groups in the total number of youth receiving services. Due to uncertainty around the point estimate, 95% confidence intervals are also reported in the cost analysis.

Ethical Considerations

Participants were informed in regards to the purpose and method of the study as well as regulations regarding the handling of sensitive materials. This included information on confidentiality. In addition, all participants were informed that study participation was fully voluntary and that they could remove themselves from participation and request all materials to be destroyed at anytime. All participants signed an informed consent form. All forms and consent procedures were approved by the Review Board at the National Board of Health and Welfare, Stockholm.

Study II Results

Study II found no statistically significant differences between youth in the MST and TAU groups in the extent to which their mental health improved. Youth in both groups made improvements between pre-test and follow-up. Similar improvements were made between pre-test and follow-up in parenting skills and parental mental health although no differences were found between treatment groups. In addition, youth reduced their engagement in criminal activity between pre-test and follow-up and improved their social skills. Again, there were no differences found between groups. There were no differences found over time or between groups in the extent to which youth used alcohol or drugs. Similarly, there were no differences between groups in the extent to which youth were enrolled in school. Youth in both groups were placed outside of the home to a similar extent – no differences were found in the rate or length of placement between groups. Youth in both groups exhibited a significant increase in antisocial peers. There were no site-differences that could be found to explain the lack of significant differences between groups. This included investigation into possible variations in treatment fidelity, program maturity, as well as clinical and demographic variables. This study found that MST and TAU are equally effective in reducing youth problem behavior and increasing family functioning and youth social skills.

Study III Results

This study found mean and median total intervention costs during the period under review to be higher for the MST group than for the TAU group. The average daily cost of MST was found to be one of the highest daily rates for non-placement services provided within the context of this study. The adolescents in the MST group used on average fewer non-placement intervention services than did the TAU group. The MST group, however, used on average more intervention resources than the youth in the TAU group. There were no

differences found between groups in the extent to which they were placed outside of the home and there were no significant differences found between the groups in placement intervention costs. When considering the reduced sample (n = 141) no significant differences were found between treatment groups on any outcome tested.

The findings from this cost analysis show that a course of intervention including MST in Sweden cost the local municipality on average significantly more per conduct disordered youth after six months than treatment as usual. Although non-placement intervention costs were lower for the MST group, this reduction did not offset the extra cost of MST.

Study IV Results

Analysis of baseline characteristics for the substance abusing (SA) and non-substance abusing (NSA) subsamples of youth showed that the two groups differed in many respects:

1. SA youth were on average one year older than NSA youth;
2. SA youth were found to have significantly fewer antisocial peers than NSA youth;
3. SA youth had significantly more psychiatric symptoms, familial problems, and antisocial behavior problems than NSA youth;
4. SA youth had more problems in parent-reported family functioning and in self-reported externalizing problem behavior than NSA youth;
5. Sense of coherence among SA youth was significantly lower than that of their NSA peers.

There were no significant differences in treatment outcomes between the two groups. This was true for parent-reported family functioning, self-reported externalizing problems and self-reported sense of coherence as well as for all measures related to alcohol and drug use. Comparison of resource use and intervention costs during the period under review for the entire sample (n = 156) showed that there were no differences in intervention costs for the substance abus-

ing versus non-substance abusing youth (SA = 122 142 SEK; NSA = 99 209 SEK; t = 1.09; p = .28). In addition, there were no differences in the number of interventions received (SA = 1.42; NSA = 1.32; t = .77; p = .44), no differences in the number of days placed outside of the home (SA = 18.02; NSA = 11.03; t = 1.08; p = .29) and no differences in the total number of days youths received intervention (SA = 132.64; NSA = 130.32; t = .25; p = .81) for substance abusing versus non-substance abusing youth. No interaction effects were observed. These findings were similar for the reduced sample. Findings from this study indicate that MST and TAU were equally effective in treating substance abusing and non-substance abusing youth.

Stability after Two-Years

Preliminary results from a recent follow-up with this same group of youth has shown these results to be stable two years after intake (Andrée Löfholm, Olsson, Sundell & Hansson, forthcoming). Between intake and two-year follow-up, youth involved in this study showed reductions in their self-reported delinquency and drug use, as well as improvements in their mental health (including externalizing problems), peer and family relationships and social skills. However, association with antisocial peers and alcohol consumption increased. There were no changes in self-reported internalizing problems. In general, the largest changes occurred between pre-test and 7-month follow-up. There were no differences found between groups in any of the above measured outcomes. In addition, there were no differences found between groups in the extent to which they used social service resources or in the extent to which they were placed outside of the home. There were also no differences between groups in the extent in which they engaged in services (Non-receipt of services MST = 2; TAU = 4).

This study also included a short-run cost-benefit analysis of MST relative to TAU. No modeling or forecasting was undertaken to extend results past the two-year follow-up period and all costs and benefits assessed were collected for the two year period under review. The estimated average cost of providing MST per youth for the two year period was found to be 105,400 SEK (reported in 2007 values).

Benefit categories investigated included behavioral outcomes and downstream costs associated with intervention provided by both the Social Welfare Administration and the National Board of Institutional Care.[39] Relative TAU, there were no costs or benefits found to be associated with MST in regards to youth behavioral outcomes or familial mental health outcomes. In addition, there were no costs or benefits found to be associated with placement interventions provided by either the Social Welfare Administration or the National Board of Institutional Care. Downstream costs associated with providing non-placement interventions for TAU group youth (145,700 SEK) were found to be significantly higher than for MST group youth (83,600 SEK; $t = -2.258$, $p = .02$) resulting in an average benefit of 62,100 SEK per youth. The benefit of MST in impacting downstream non-placement intervention costs, however, did not offset the cost of providing MST. After 3.5% discounting, MST resulted in a net loss of 45,400 SEK per participant after 2 years.

[39] Statens institutionsstyrelse (SIS).

DISCUSSION

Summary of Results

Study I showed that EBP as presented in the literature reviewed is not a homogeneous concept. The theories presented, however, may be component parts of a whole of EBP. Regardless, more attention needs to be paid the underlying mechanisms in any program theory of EBP. One consequence of the lack of unity in the definitions and descriptions of EBP may be confusion within and between policy, practice and research groups about how best to apply evidence-based practice to social work and about the worth of evidence-based approaches to social work.

The importation of MST to Sweden from the U.S. is one example of an approach to evidence-based practice within social work. Results from Studies II-IV showed that MST was no more effective than TAU in reducing youth problem behaviors or improving social competencies. In addition, MST was not found to increase the efficiency of treating youth with conduct disorder. The positive impact MST had upon non-placement intervention costs did not offset the extra cost of providing MST, making MST just as effective as treatment as usual at a higher cost to the municipal social welfare system.

Implementation, EBP and MST

EBP is a complex idea and much of the criticism surrounding EBP has been said to be due to misunderstanding regarding the nature of EBP. Study I identified three very different conceptualizations of EBP. Therefore, criticism or support of EBP is next to meaningless without clear identification of what is meant by EBP and which aspects of EBP are the targets for criticism or support. Effort toward clarifying EBP may help further the debate and highlight and differentiate concerns that are relevant and irrelevant for improving social work for the benefit of vulnerable populations – a goal that is of

interest to stakeholders on both sides of the debate, a goal that is of importance to social workers and a goal that is of importance to service users. However, it is not only a matter of clarifying the *what* of evidence-based practice that is necessary in this effort; it is also clarification of the *how*. That is, *what* is EBP and is EBP worthwhile; if so, *how* do we realize EBP, and *how* will social work be improved to benefit vulnerable populations. One approach to this is the development of a unified program theory of EBP highlighting social mechanisms. That is, hypotheses or sets of hypotheses about the behavior of individual actors and their interaction with other actors, or a social aggregate that explains how the concrete steps within EBP will benefit service users. One area of research that can aid in this effort is implementation research. Although implementation research has a history of over 30 years (Hill & Hupe, 2002), its application to EBP is relatively recent (Eccles & Mittman, 2006; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). Within this area of research, social mechanisms of importance for EBP are beginning to be identified, conceptualized and tested. For example, an improved understanding of the attitudes professionals hold has been identified by some investigators as necessary to evidence-based practice (Kettlewell, 2004; Michie, Hendy, Smith & Adshead, 2004; Rosen, 2003). In addition, this area of research has shown that simply providing practitioners with access to knowledge (c.f., Appendix I, figure 1), while important, is not sufficient for the success of EBP (e.g., Barratt, 2003). A related finding is that strength of evidence scores relatively low as a factor impacting professional decisions regarding the use of specific interventions (Dearing, 2007). Understanding professional, service user, and policy-maker behavior seems paramount to the future of EBP.

In addition to uncovering the social mechanisms necessary for a program theory of evidence-based practice, implementation research may also be of value in increasing understanding of the processes and steps involved in transferring interventions between settings (Olsson & Sundell, 2008). For example, developing an understanding of the current status of efforts before introducing a new intervention has been identified as an important first step in the implementation process (Adelman & Taylor, 2003). As described previously, little was known about the effectiveness or efficiency of social service in-

terventions prior to the importation of MST to Sweden. Therefore, it would have been difficult to assess at that time the ability of MST to strengthen the system of services already in place. Although an understanding of the extent to which current initiatives are effective and efficient has been identified as important in assessing the potential match between community needs, new interventions and community resources, little attention has been given to this in the research (Fixsen et al., 2005). This lack of attention can also be seen in the process of site-assessment for implementation of MST specifically. As part of the pre-implementation phase of MST (Schoenwald, Heiblum, Saldana & Henggeler, 2008) a process is undertaken to assess the compatibility of MST with the goals and needs of the host community. This includes identification of funding incentives and disincentives, establishing interagency collaboration, and aligning structure, procedures, and culture of the new host organization in order to support various aspects of MST. The site-assessment process does not, however, include an assessment of the outcomes of current efforts for impacting the identified problem. Therefore, the process does not assess the potential for MST to achieve its goals of increasing treatment effectiveness and reducing treatment costs in the new context.

Transportability of Interventions between Cultural Contexts

It is important to remember that effectiveness and efficiency in terms of evidence-based practice and social work interventions is always relative. One way to understand the results of Studies II and IV, for example, is that MST is less efficacious in Sweden than in the U.S. However, comparison of CBCL change scores from this study, a Norwegian study (Ogden & Hagen, 2006a; Ogden, Hagen & Andersen, 2007; Ogden & Halliday-Boykins, 2004), and two evaluations from the U.S., which found significant differences between MST and TAU group youth, give a somewhat different picture. The change in CBCL between intake and follow-up for MST group youth in Sweden and Norway was similar. This change was greater

than or equal to that of the U.S. studies (Henggeler et al., 2006; Rowland et al., 2005). In other words, MST group youth in Sweden showed reductions in CBCL symptomology at least as great as MST group youth in Norway and the U.S. This indicates that the youth in the MST group in Sweden tended to perform equally well, or better, when compared to the Norwegian and U.S. MST groups. The Swedish and Norwegian TAU groups, however, decreased their CBCL scores considerably more than the two U.S. TAU groups resulting in a significant difference in effects between the MST and TAU groups in the Norwegian and U.S. studies but not in the Swedish study (see Appendix IV, Figure 2). Absent a non-treated control group it is difficult to determine how much of this improvement would have been present without any intervention. However, this does indicate that MST may be just as efficacious in Sweden as in Norway and the U.S. When evaluated in routine practice, however, an efficacious intervention may not be effective if the quality of the alternative is relatively high.

One indication that the relative quality of TAU may vary between Sweden and the U.S. is in the traditional approach to treating problem behavior youth. In Sweden, social services for youth with behavior problems are provided from a child welfare perspective (Levin, 1998). For example, the standard procedure for prosecutors or criminal courts is to refer youth to the social services without any legal sanctions imposed on the individual. This makes in-home services quite frequent (Sundell, Vinnerljung, Andrée-Löfholm & Humlesjö, 2007) and is not exclusive to MST. This is in contrast to the system in the U.S. which has been criticized for the virtually nonexistent, inaccessible and when available, inappropriate (narrowly focused and overly restrictive) services available to meet the needs of youth with severe behavior problems and their families (Henggeler et al., 1998). Due to this, the U.S. Congress authorized a federal matching program in 1993;[40] the Comprehensive Community Mental Health Services for Children and their Families Program, which

[40] A matching program is one in which Federal funds are used to "match" funds invested at the state and tribal level. For example, in the program described here, the non-Federal contribution ratio varies from $1 - $3 to $2 - $1 depending on the length of Federal involvement in system change initiatives.

was intended to change the way child mental health services were delivered in the U.S. The program rests on a 'system of care' philosophy. That is, services and supports to youth and their families should be (U.S. Department of Health and Human Services, 2004b):

- Family focused
- Individualized
- Culturally competent
- Interagency
- Collaborative/coordinated
- Accessible
- Community based
- Least restrictive

In a 2004 draft guide for communities sponsoring systems of care for children and their families, the U.S. Department of Health and Human Services writes (p. 5), "Ten years later, the program may have a long way to go in order to achieve these high expectations." Although absent in the U.S. context, many of these principles are already present in the system of care available to youth in Sweden. In addition, this system of care is characteristic of the MST treatment model (Henggeler et al., 1998). Taken together, MST may be much more similar to the Swedish system of care or TAU than it is to TAU in the U.S.

In addition, services to youth with behavior problems in Sweden are almost entirely provided on a voluntary basis (National Board of Health and Welfare, 2006; National Council for Crime Prevention, 2008) which may mean that placements are used as a last resort, on relatively rare occasions. Of the youth over 15 referred to social services for intervention due to delinquency, for example, only 14% were placed outside of the home (National Council for Crime Prevention, 2005). In the U.S. youth offenders are processed within the juvenile justice system, which is a risk factor in itself (Lipsey, 1999) and services provided through the juvenile justice system are compulsory. Placement of youth with severe behavior problems may be the intervention of choice as opposed to a last resort (Lipsey & Wilson, 1998). This is also an important difference when considering the

results of the Norwegian study. In Norway, the youth involved in the study evaluating the effectiveness of MST were referred by their social services case worker to a special services department. Historically, special services' role in the system was to refer youth for placement in youth institutions. However, MST had been added to their referral options (Ogden et al., 2004). In other words, in Norway, MST was being used as an alternative to placement services. Thus, the role of MST in Norway may be more similar to that of the U.S. This might have disfavored the Norwegian TAU group given that residential care is an intervention with well-known risks for iatrogenic effects (e.g., Dodge, Dishion, & Lansford, 2006). Indeed, in the Swedish study the rate of youth placement in out-of-home care at some time during the seven-month follow-up period was similar for both groups and fewer TAU youths received residential care (18% of all TAU youth) when compared with the TAU group from the Norwegian study (42% of those at home at pre-test).

These differences have consequences for the relative effectiveness and efficiency of "traditional services". For example, for placement-bound youth in the U.S., non-placement services are largely designed to address institutional crowding and save money (Alschuler, 1998) as opposed to being primarily focused on care, as in the Swedish child welfare system. Comparing the costs of MST to placement, MST is a relatively inexpensive intervention; however, comparing MST costs to other non-placement interventions, MST is an expensive intervention. Although the hope was that importation and implementation of MST in Sweden would lead to a reduction in the placement of youth outside of the home, this was not the case. The results presented here show that MST may be being used as an alternative to non-placement services which in turn would increase the relative cost of intervention as opposed to decreasing intervention costs which has consequences for the results of Studies III-IV.

In addition to the relative role that MST plays within the system of services for youth with behavior problems, operating costs unavoidably vary between cultural contexts. This is due to variations in expenditure categories such as salaries, property, materials, employer-paid taxes and the like. One difference between the U.S. and Sweden that may impact total operating costs is the difference in employer contributions to social benefits (Hill, 2006). Sweden is known

for its generous public provision of social benefits such as education, healthcare, childcare, pensions and unemployment insurance. This is in contrast to the U.S. where provision is more often private. Labor costs in Sweden are, generally, higher than in the U.S. as is the relative burden on employers due to their increased contribution to social welfare benefits (OECD, 2008). Therefore, total operating costs for social welfare services may be generally higher in Sweden due to differences in labor costs. This could explain, in part, the higher cost of treating youth with a course of action including MST in Sweden as found in Study III.

Another factor impacting the relative cost of an MST intervention is the relative workload of the MST teams; that is, the number of families served, by the MST teams during the period under review. The MST teams involved in this study were operating at a level consistent with official descriptions of MST during the two years during which unit costs were estimated. Level of operation is dependent upon the severity of problems displayed by the families receiving services (Henggeler et al., 1998). Pre-test results show that the youth in this study had severe behavioral and psychosocial problems at intake. At intake the psychiatric symptom load as assessed by CBCL and YSR measures differed significantly from the normal population and did not differ significantly from an inpatient clinical group of youth (Gustle, Hansson, Sundell, Lundh, & Andrée Löfholm, 2007). Although this could explain the decreased client load during the time of this study, this is difficult to investigate as the economic analyses from the U.S. studies do not report on either workload measures or symptom loads which may vary between studies. For example, comparing the symptom loads from this study with a U.S. study (Henggeler et al., 2006) shows that youth in this study had on average a total CBCL score over one-half of one standard deviation higher than that of the youth in the U.S. study. This is also true when comparing total CBCL scores from the Norway study (Ogden & Hagen, 2006). The importance of this difference is enhanced when considering that the average CBCL score for children aged 6-16 in population based samples in Sweden is 7% lower than that of Norway and about 36% lower than that of the U.S. (Bilenberg, 1999). In other words, compared to the normal population in Sweden the group of youth in this study can be understood as

having severe psychosocial problems but they can also be understood as having severe psychosocial problems from a U.S. perspective. Unfortunately, these studies are not accompanied by economic analysis so the relative impact of varying problem levels on workload is difficult to assess.

Other factors that may impact the effectiveness of traditional interventions and therefore the results from Studies II - IV are sociodemographic in nature. Within a cumulative stressors model (e.g., Rutter, 1979), high rates of poverty in the neighborhood might moderate youth motivation for rehabilitation, either directly through low social cohesion and informal social control or indirectly in which negative parenting mediates the relation between poverty and youth psychosocial symptoms (e.g., Grant et al., 2003). Other contextual stressors are relatively high crime and substance abuse neighborhoods that might produce ample opportunities for sustaining antisocial attitudes and role models. Rehabilitation from antisocial behaviors might depend on the number of stressors that a youth faces (Jaffe, Caspi, Moffitt, Polo-Tomás & Taylor, 2007). For example, lifetime experience with cannabis use among 15 year olds in the U.S. has been found to range from 30.5 (girls) - 41.6% (boys) while in Sweden the comparison is between 6.6 - 7.6%. Similarly, heavy cannabis use in the U.S. among 15 year olds has been estimated at 5.5 - 11.4% while in Sweden the comparison is only 0.5 - 0.7% (ter Bogt, Schmid, Gabhainn, Fotiou, & Vollebergh, 2006). Other examples include higher crime rates in the U.S. as compared to Sweden (Farrington, Langan, & Tonry, 2004) and higher rates of teen-pregnancy in the U.S. as compared to Sweden (Lawlor & Shaw, 2004). These types of contextual stressors may negatively impact TAU in the U.S.

In sum, differences between the U.S. and Sweden in contextual stressors and the traditional approach to youth with problem behavior may have had consequences for the relative effectiveness of MST. That is, TAU in Sweden may be more effective than TAU in the U.S. In addition, differences between the U.S. and Sweden in the relative role MST plays within the system of services as well as differences in operating costs may have impacted the relative costs of MST. That is MST in Sweden costs more than MST in the U.S. Taken together these factors impact the relative cost-effectiveness of MST in Sweden compared to the U.S.

Non-Receipt of Services

Another factor to consider when interpreting the results of this study is that 13 youths in the TAU group did not receive any services during the period under review. In comparison 2 youths in the MST group did not receive any services. Is this an indication that MST is an inferior choice or is this an indication that MST is a superior choice when compared to TAU? One way to see this is that MST is inferior because it is more intensive and absent differences in outcome, the more intensive choice is the inferior choice due to the difference in dose received by youth in the respective groups. That is, TAU achieved similar results by means of a much lower dose. However, the parents in the MST group did tend to be more satisfied with treatment than parents in the TAU group (Sundell et al., 2006). As MST is an intervention that targets parents to a greater extent than the interventions found in TAU it is these individuals that experience the consequences of the greater treatment intensity which means that even though MST was not found to be more effective than TAU, there may be something in the treatment form that appeals to parents in the short-term and thus increases their level of satisfaction with services. However, it should be noted, that non-receipt of services can be a direct result of randomization in that families randomized to TAU may have experienced disappointment at not receiving MST and therefore may have been less motivated to participate in other interventions. It should be noted, however, that youth reported client satisfaction showed that youth in both groups were equally satisfied with services (Sundell et al., 2006).

Another interpretation is that MST may be better at motivating youth towards treatment readiness than TAU. In the MST group 4 youth did not receive MST as assigned due to various reasons; in addition, 9 cases were terminated prematurely due to the inability of the MST team to engage the families in treatment. Therefore, in 13 cases in the MST group, MST was unable to engage youth in treatment. However, a larger majority of this group of 13 (85%) opened their doors to some form of intervention and some went on to receive additional services. Although this does not necessarily mean that these youth engaged in services as service engagement is charac-

terized by active participation (Broome, Joe, & Simpson, 2001). It does indicate that these youth had progressed farther along the sequential stages of intervention which begins with induction and early therapeutic engagement and results finally in positive outcomes (Simpson, Joe, Dansereau, & Chatham, 1997). What is of interest here is whether or not simple receipt of services has value above and beyond ultimate treatment outcomes or if the additional intensity is a sign of social services intrusion on families. As the youth and families involved in this study were not mandated to services there is reason to believe that those who participated in services valued participation at least as much as they valued alternative activities. In addition, there is no indication that either MST or TAU were harmful in regards to both treatment outcome or client satisfaction.

Non-receipt of services has consequences for economic analysis as non-receipt of services is associated with negligible costs. That is, youth that do not receive intervention, do not incur intervention costs. Youth in the MST group in this study, engaged to a greater extent in intervention than did youth in the TAU group. This difference is disregarded in the TOT analysis which shows that for those youth who received at least one intervention during the period under review, MST group youth and TAU group youth used to similar extent intervention resources and cost the local municipality about the same during the period under review. This may mean that although MST does not appear at this time to be a good choice for widespread implementation, it may very well be an appropriate choice for individual treatment decisions, especially in those cases where treatment motivation is relatively low or in cases where parents are highly motivated. In addition, as other service providers improve their ability to engage clients in services, intervention cost differences may lessen. A question that can be asked is: is there value in engagement above and beyond the treatment outcomes that were assessed in this study? This is a question not easily answered by the current literature on service utilization and may therefore be an interesting area for further research.

MST through the Eyes of EBP

It has been said that evidence-based practice has a delivery problem (Månsson, 2007). That is, there are very few studies of intervention effects and when there are studies the results are disheartening for evidence-based practice. So, are the results of MST discouraging from an EBP perspective? Here, the results of Studies II-IV are examined from the three perspectives of EBP presented in Study I.

First, from the perspective of a substantive theory of evidence-based practice (Study I, example 1), MST can be seen as a product. A product specifically developed, transferred, and implemented in order to solve the problems of (1) youth problem behavior and (2) high intervention costs. In many ways, the product metaphor also characterized the importation of MST to Sweden from the U.S. The municipalities shopped around, they found a product which fit their needs, the product had a quality stamp and it was chosen from among alternatives. From this same perspective, however, Studies II-IV failed to give MST the same stamp of quality in Sweden which it has achieved in the U.S. That is, from this perspective MST in Sweden cannot be classified as an evidence-based practice because it has not been found to be more effective than the alternative at reducing problem behavior or intervention costs. This failure to replicate prior results has happened with other interventions when imported to Sweden (Lindahl & Galanti, 2006) but not all (Forster, Sundell, Melin, Morris & Karlberg, 2005; Hansson et al, 2000; Kling, Sundell, Melin & Forster, 2006).

From the perspective of a substantive theory of evidence-based practice, these results are less than discouraging. The results presented here challenge the belief that MST is more effective and efficient than the alternative in the Swedish setting. It is exactly this that proponents of a substantive theory of EBP hope EBP will do: guard against unsupported beliefs and opinions that may prove to be harmful to individuals in vulnerable situations (Kennedy, Mercer, Mohr & Huffine, 2002). The substantive theory of EBP is, however, rather inflexible. MST in this study was shown to be no better, no worse from an effectiveness perspective than TAU. Therefore, from this perspective of EBP, MST does not have a function to fill

within the social services. In addition, MST was found to be less cost-effective, which means that for every youth treated with MST the ability to serve others is diminished because valuable resources are drained from the system without being balanced out by greater gains in treatment effectiveness. From the perspective of a substantive theory of EBP, therefore, MST is a poor option. It should not be forgotten, however, that most proponents of this perspective of EBP require replication before drawing any final conclusions. What will be of interest to a substantive theory of EBP is how these results impact social mechanisms - that is, how will these results ultimately impact professional behavior?

Second, a dynamic theory of evidence-based practice (Study I, example 2) is interested in the application and integration of research results in policy and practice decision making processes. That is, it is less concerned with knowledge generation and more concerned with knowledge use. Here again, the results of Studies II-IV from this perspective are less than discouraging. Although TAU was found to be the more cost-effective intervention option, MST was found to have one identified benefit over TAU in the Swedish setting: the extent to which youth engaged in services. Although this significant effect was only present at the seven-month follow-up,[41] this indicates that MST may be better than traditional interventions in motivating youth toward treatment. Service engagement has been empirically linked to treatment readiness and motivation (e.g., Broome, Joe & Simpson, 2001; Czuchry, Sia & Dansereau, 2006). Therefore, for individual treatment decisions, MST may be a viable option. Here, it could also be noted that studies have shown a tendency for professionals to underestimate the rate of client dropout (Pulford, Adams & Sheridan, 2008). Therefore, from this perspective of EBP, organizations need to have enough information about their organizational

[41] It should be noted that studies have shown that youth with antisocial peers often develop treatment readiness over time (Broome et al., 2001). It is theorized that this is due to the increased amount of negative experiences with which a young person comes into contact as a result of his/her antisocial peer relationships. As shown in this dissertation, youth increased their engagement with antisocial peers during the period under review. This finding would be in keeping with the finding that after two years more youth engaged in treatment.

processes, functions and service users to be able to integrate new information readily.

In addition, from a dynamic theory of EBP perspective, for these studies to be useful, the results need to be made available to professionals and students. Professionals and students must also be given time to reflect upon how these results can be (1) integrated into decision making processes, (2) matched with service users unique circumstances and values, and (3) discussed with service users in order to make them active participants in decision making processes. Simply generating the research results is not sufficient for EBP from a dynamic theoretical perspective.

Finally, the structural theory of evidence-based practice has its starting point in the development of structural support for the systematic testing and evaluation of intervention methods among other things. Again, the results of Studies II-IV are important from this perspective. A cornerstone of the theory, however, is the development of a common knowledge base which is shared between students, professionals, service users and the general public. Therefore, although producing the results of Studies II-IV is one step along this path, the journey towards an evidence-based practice does not end here. From this perspective, the results of individual studies such as those presented here do not determine whether or not EBP is successful. Rather, from a structural perspective, for EBP to be successful the dissemination of this knowledge to these four actor groups is necessary for the future of EBP.

METHODOLOGICAL CONSIDERATIONS

Study I

Study I has at least one methodological limitation. Study I provided three conceptual models of how evidence-based practice is expected to lead to intended outcomes. The method used was the policy-scientific approach (Ehren et al, 2005; Leeuw, 2003). The first step in this approach is to identify the social and behavioral mechanisms that are expected to solve the identified problem. Although the first two models developed in Study I were taken from the relevant literature on EBP, the search for the social and behavioral mechanisms involved was not carried out as an exhaustive literature review. Therefore, there may be mechanisms identifiable in the relevant literature on EBP that are not included in the models developed in Study I. The purpose of Study I however, was to clarify evidence-based practice by presenting basic structures as opposed to developing models of minute detail. Therefore, the models constructed in Study I are useful for furthering an increased understanding of the differences in perspective in regards to evidence-based practice and may be used as a starting point for further development. Further, confidence in the models was increased through professional validation, including solicitations for assessment and commentary from identified EBP experts. After comments received were integrated, the models were also presented at an international conference (Olsson, 2006). Here a large audience was invited to comment on the models developed and the feedback received was incorporated into the final models presented in Study I.

Studies II-IV

Studies II-IV are based on a randomized field experiment. A randomized field experiment assesses effectiveness in the 'real world' of

practice and does not attempt to control intervention conditions. This inevitably leads randomized field experiments to have some implementation challenges (Shadish, 2002) and at least three of these should be discussed here. The first is treatment variation and refers to the amount of each treatment component that was actually received by participants which affects the strength of the experimental contrast. In this study, MST treatment fidelity was measured and assessed through TAM. Although it was found that TAM was lower in this study than in other studies of MST, this difference did not have any clear impact on treatment outcomes. For youth in the TAU group, however, adherence measures were unavailable. In most cases basic descriptions of program components (duration, concentration, method, content, etc) were unavailable. Therefore, it is not possible to discuss whether or not a treatment contrast actually existed in the studies presented here. As has been discussed, TAU in this study may have similar treatment content as MST.

A second consideration is treatment contamination. When interventions take place in the context of normal operation, the passing of knowledge or resources from the experimental group to the comparison group can reduce the differences between the interventions and the likelihood that different outcomes will be observed. One way to avoid this is to blind providers and/or participants. This means that the individuals blinded are unaware of which group participants have been assigned to. In the case of this study, that would have involved withholding information on individuals' group assignment from participating case workers and treatment providers as well as participant families. As this study was conducted within the normal operating social service system and impacted the extent to which youth could be referred to MST, it was impossible to blind providers and it is difficult to know if and how this impacted study results. One possibility is that families in which youth were not assigned to the MST group accessed information on MST themselves. There is, for example, quite a bit of information available regarding the MST treatment principles on the internet as well as in books and journal articles. Another possibility is that families in which youth were not assigned to the MST group were disappointed, impacting their ability to engage in or follow-through with traditional interventions. A third possibility is that information regarding the MST treatment model

was accessed by non-MST treatment providers, or that non-MST treatment providers provided an intervention that was not in keeping with treatment as usual simply due to the fact that the youths they were in contact with were engaged in an effectiveness study.

A third consideration is potentially inadequate numbers of cases. This is the result of case-flow estimates that were higher than those actually experienced which can in turn impact statistical power and make it difficult to detect a difference in treatment outcome between groups. In the planning of this study, it was estimated that each of the four geographic areas involved would be able to refer 38 youth to each of the six MST-teams involved for a study total of 228 youth. In actuality, only 74% of the expected number of youth were referred to the study and only one of the four geographic areas involved in the study referred the expected number of youth. Even so, the power for detecting a difference in treatment outcome similar to that reported in other studies was estimated to be 0.87, and although there are no formal standards for power, it is customarily set to a number greater than or equal to 0.80 (Cohen, 1992).

Studies III-IV

Study III can be seen as a pilot study. This is the first attempt to conduct a cost analysis within the context of a randomized trial carried out within the normally operating social service system in Sweden. Little was known prior to this study about the extent and availability of economic data at the intervention level. Whereas, average per diem costs over all categories of clients and services are relatively easy to estimate more detailed cost estimates based on each component of resource use (assessment, hours in therapy, case consultation, case coordination, etc) are more complex and require more preparation, funding, and manpower within the context of the research study if the organizations providing intervention are not already keeping detailed records for use in economic analysis. For this reason, it is important to incorporate the planning of economic analyses into the design of the outcome study as well as having ongoing support from economists or others experienced in economic analysis. This will be an important area to develop from both a research pers-

pective and organizational perspective in the future - a priority being developing routines within the social services for maintaining ongoing data on costs and workload including micro-costing routines.

Study III employed a municipal perspective in the cost analysis. A broader societal perspective would have taken into consideration those costs incurred by the families involved in the study. This cost is made up of time and travel costs, and would not have included actual financial outlays by any of the participating families as all interventions were provided free of charge. MST is an intensive intervention; in all likelihood costs associated with families' loss of time would have increased the total cost of MST. On the other hand, participation in the study was voluntary, which implies that families valued participation at least as much as they valued other activities with which they could have engaged. MST is also a home-based intervention, which reduces the likelihood of families incurring costs due to travel. Taken together, it is unlikely that inclusion of the costs incurred by families would have offset the difference in cost between the two groups as found in Study III.

In addition, this study was conducted retrospectively which means that information on resource use and costs were collected after the study began. Although information was available regarding resource usage at the individual level for all participants, the retrospective nature of this study has impacted the ability to estimate a unit cost for a portion of interventions received during the study period. Although the average estimates used in these few instances may have resulted in an estimate that was either too high or too low, these interventions were included in that group of interventions that cost the least (non-placement interventions) and apply to a minority of study participants. In order to impact the main results of this study, the possible error in these estimates would need to be large enough to result in an increase in the average total costs of non-placement services for the TAU group by about 50%. This seems unlikely.

Additionally, the retrospective nature of this study placed limitations on the ability to report more precise cost estimates. Although micro-costing, that is cost estimates based on each component of resource use at a more exact level such as per hour or fraction thereof, is the most precise method of estimating intervention costs, this study used a less precise method and calculated unit costs based on a

case day. Even so, this study used a method that is ranked two on a scale of four in level of precision for costing methods (Drummond et al., 2005) and estimated costs by intervention type and actual length of stay measures as opposed to using average costs estimated at the organizational level over all types of clients. In addition, the same costing methods were applied to both groups of participants. This means that even though the estimates of absolute costs for each group should be interpreted with caution, the main results of this study or the incremental cost difference should not be impacted by the use of a daily rate.

Finally, cost analyses are always based on estimates, which has consequences for study results. In this study 62% of the interventions received were given a cost estimate based on price which is more than likely higher than the actual cost of these interventions. In addition, interventions in which estimates were based on information received from service providers (other than MST service providers) on operating costs and workload measures were inflated based on the high personnel to total cost ratio. Therefore, these unit cost estimates may over estimate the actual unit cost. Both of these estimates impact the TAU group more than the MST group as TAU received more of these interventions. However, this study found the TAU group to cost significantly less than the MST group. This means that even if these costs are over estimates, main study results would remain unchanged with lower unit cost estimates and the difference between MST and TAU would be even larger than that reported here.

Study IV

It should be noted that in Study IV the randomization procedure was not designed to detect a difference in effectiveness between substance abusing and non-substance abusing youth. Substance abuse characteristics were not used to stratify participants (Kernan, Viscoli, Makuch, Brass & Horwitz, 1999) in the randomization procedure. Although randomization protects against severe imbalance in the distribution of differences among treatment groups, subgroup analysis may increase the threat of making a type I error and finding a false

positive. Study IV found no statistical differences between groups, implying that a type I error threat due to non-stratification was not a problem for this study.

Finally, it should be noted that in certain cases (e.g. number of days placed outside of the home) the absolute difference between groups is relatively large. This may be an indication that the sample size was too small to detect a difference between the two groups. As the distribution of resource use and cost data is characteristically skewed and thus characterized by higher variance, detecting a difference in these variables requires larger sample sizes than for detecting differences in clinical outcomes given similar effect differences (Briggs, 2000).

CONCLUSIONS & RECOMMENDATIONS

It is too soon to discuss the reality of evidence-based practice because evidence-based practice is not a reality. Efforts are being made to make EBP a reality but one must question the extent to which that is possible with the level of confusion which surrounds EBP. Understanding EBP as a program theory may help efforts to clarify EBP. This may move debates plagued by changing definitions to more fruitful discussions about the future of EBP with focus on specific components necessary for success. Actors on both sides of the EBP debate are interested in the future of social work and the impact social work interventions have on vulnerable populations. EBP requires engagement by the spectrum of individual actors within social work in order to become a reality. In other words, EBP is about social mechanisms. By highlighting these, those interested in the future of social work and the impact social work interventions have on vulnerable populations are given the opportunity to identify contradictions and weaknesses as well as identify and test key components assumed necessary for success. Today we cannot say 'evidence-based practice' and assume that the term is meaningful for the individual actors whose behavior is paramount to the future of EBP.

MST is one of many social welfare interventions now available through the municipal social service system. However, MST has not fulfilled its purpose – at least in the short-term – of improving client outcomes, reducing placement intervention use and reducing placement intervention costs. In fact, MST was not found to impact client outcomes at all and was found to cost significantly more than the alternative. What does this mean for the future of MST in Sweden? That is difficult to say as the spread of MST across Sweden has continued, with teams now in Värmdö and Östersund, even after the results of Study III were first made available in 2006. The results of this study call into question the appropriateness of wide-spread implementation of MST across Sweden. Results of this study indicate that wide-spread implementation of MST may lead to increased

stress on the social welfare system – that is similar outcomes at a higher cost. However, in areas where MST is already in use, there is reason to believe that for individual treatment decisions MST may be a viable option.

As has been shown in this dissertation, there exists a lack of information within the social services regarding the status of current efforts. In order to adequately assess where improvements can be made through the implementation of new programs such as MST, the incorporation of new information, or by identifying gaps in current knowledge a general understanding of current outcomes, processes and methods needs to be developed. For example,

- Descriptions of programs (interventions) currently available including duration, concentration, method, content, target group, desired outcomes, etc. These basic descriptions should include some explanation of what constitutes adherence. That is, what are the most important aspects or 'core components' of the intervention?
- Documentation regarding service user participation as opposed to interventions granted. That is, information regarding the services that are actually received and not just referral information. This includes feedback mechanisms for documentation of when interventions begin and end as well as follow-up processes to assess how often individuals actually participate in interventions.
- Documentation for cost analyses including the resources necessary to support and maintain interventions as well as utilization patterns at the individual and group level on a per intervention basis as opposed to a per organization basis.
- Documentation of case flow and service utilization patterns.
- Integrated assessment procedures which can be administered initially at intake/referral to all interventions and at completion of all interventions in order to assess service user progress.

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