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An Evaluation of a Specialized Dual Disorder Treatment for Persons with Mental Illness and Substance Use: Effects of Treatment on Service Use and Outcome

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Bonnie Josephine BootsMiller

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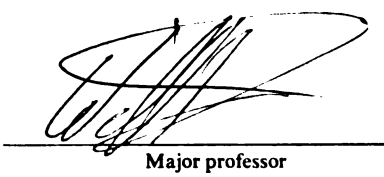

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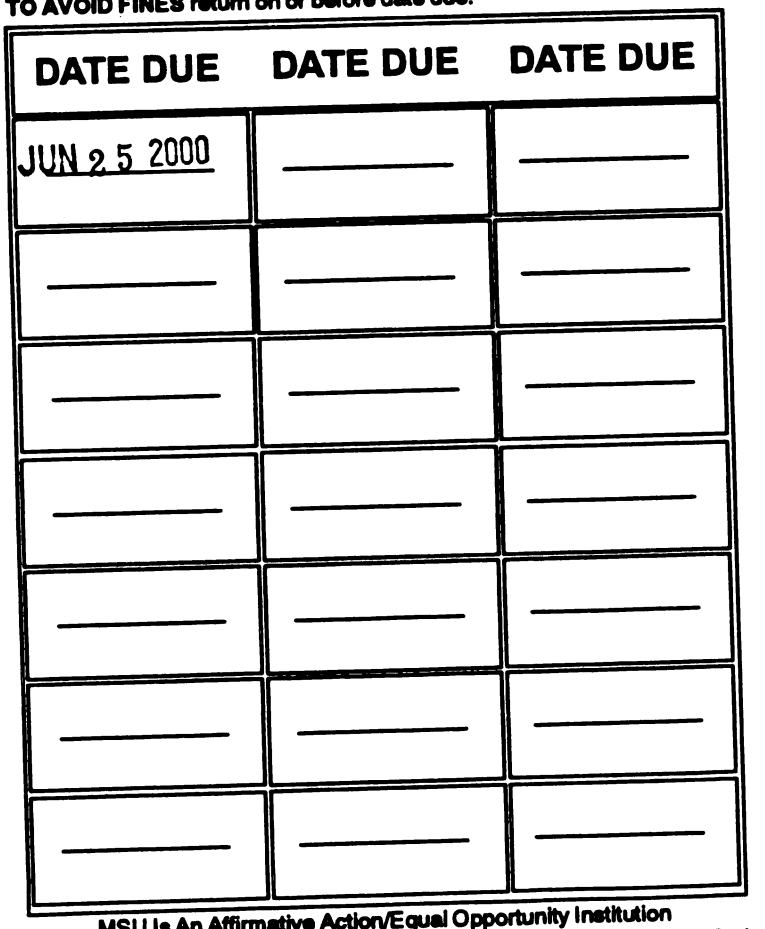

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AN EVALUATION OF A SPECIALIZED DUAL DISORDER TREATMENT FOR PERSONS WITH MENTAL ILLNESS AND SUBSTANCE USE: EFFECTS OF TREATMENT ON SERVICE USE AND OUTCOME

By

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ABSTRACT

AN EVALUATION OF A SPECIALIZED DUAL DISORDER TREATMENT FOR PERSONS WITH MENTAL ILLNESS AND SUBSTANCE USE: EFFECTS OF TREATMENT ON SERVICE USE AND OUTCOME

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Persons labeled dually diagnosed (PLDD) with mental illness and substance use face daily personal challenges, as well as pose challenges for the service system and policy makers. Some specialized chemical dependency treatment programs concurrently address the multiple problems that PLDD have introduced, but seldom has the effectiveness of these treatments been evaluated. Theoretically based evaluations are needed to evaluate the effectiveness of these treatments for PLDD.

This study measured the outcomes of a specialized dual disorder unit for PLDD. A path model investigated length of stay, treatment type, intentions to use AA/NA, intentions to manage mental health needs, Community Mental Health (CMH) services, state hospital services, community hospital services, AA/NA, and psychiatric, drug, alcohol, legal, employment, and residential stability outcomes.

Hierarchical multiple regressions were conducted to evaluate the model. Results showed that: (1) PLDD who received the dual disorder treatment indicated intentions to continue treatment beyond discharge than PLDD who received standard psychiatric treatment, (2) people with intentions to use AA/NA services used more AA/NA services than those without intentions, (3) people who received dual disorder treatment did not use significantly more services than those who received standard

psychiatric treatment, (4) use of AA/NA services post discharge related to better psychiatric functioning at 6 months, and (5) receipt of dual disorder treatment was not directly related to improved outcomes at 6 months. Other findings seemed to suggest that people who received more CMH services had more residential instability and people who received more state and community hospitalizations had worse psychiatric and employment problems, respectively.

This study revealed the usefulness of theoretical program models when evaluating treatment programs. Evaluating the treatment process uncovered relationships between intentions, service use and outcomes. Other effects of multiple types of services (both formal and informal) on multiple outcomes are important to consider, because services may have differential impacts on outcomes. Future research should consider other treatment components such as, motivation to continue treatment and actual discharge plans, as well as other types of service use (e.g. medical and dual disorder) that could influence outcomes.

To my mother Elizabeth Mae (Foote) Boots
a strong woman, good friend, and life confidant.

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Chapter 1

Introduction

When the general population is assessed, 20% to 30% are found to have some type of mental disorder or symptoms of a disorder (Lehtinen, Joukamaa, Lahtela, Raitasalo, Jyrkinen, Maatela, & Aromaa, 1990). Other studies have indicated that anywhere from 12% to 15% of the general population can be diagnosed as having a mental disorder (Klerman, 1986; Madianos & Stefanis, 1992). Within this population of persons labeled mentally ill (PLMI), a distinct subset of individuals exists who are labeled dually disordered (PLDD) with mental illness and substance abuse. Galanter, Castaneda, and Ferman's (1988) research revealed that over one half of the general psychiatric population suffered from a substance abuse or substance dependence problem. Other studies (Canton, Gralnick, Bender, & Simon, 1989; Drake & Wallach, 1989; Khalsa, Shaner, Anglin, & Wang, 1991) concurred with this finding, referring to at least one third of their mentally ill populations as dually disordered. Although there are several combinations of dual disorders, this dissertation will focus on those persons who have been identified as having a mental health and a substance abuse disorder.

This group labeled mentally ill and substance abusers is of great concern to service providers and policymakers. Individually PLMI and people labeled substance

abusers, have difficulty receiving appropriate treatment due to the extent and course of their problems. Yet, PLDD have even more difficulty because of the multiple effect of their co-occurring problems. For example, PLDD have had reportedly higher rates of rehospitalization and higher rates of emergency services usage than PLMI, which created special treatment issues for their service providers (Bartels, Teague, Drake, Clark, Bush, & Noordsy, 1993). PLDD have also been at greater risk than PLMI of suffering from negative effects of substance and alcohol use, such as severe reactions to drug effects and more difficulty making social adaptations (Brown, Ridgely, Pepper, Levine, & Ryglewicz, 1989; Moreines, 1991). Because these people pose a greater challenge to the mental health and substance use service delivery systems, these systems have had difficulty responding to their special needs. Service system problems include the following: lack of continuity of care, inadequate assessment and diagnosis, lack of trained staff, inadequate array of services, rigid funding streams, lack of communication and a working relationship between mental health and substance abuse fields, and limited dissemination of effective program models (Ridgely, Goldman, & Willenbring, 1990; Thacker & Tremaine, 1989). Policy makers are struggling with these problems and trying to reduce conflict between service providers, and between service providers and clients, by combining substance use and mental health treatment (Ridgely, 1991).

PLDD also have numerous personal dilemmas that they face on a daily basis. These people are not only battling the consequences of substance use and severe

psychiatric symptomatology (e.g., they are more likely to have one or more personality disorders), they are also younger (tending to have these problems throughout their lives), less able to manage their lives (e.g., money, meals, activities), more hostile, more suicidal, less medication compliant, more likely to use multiple drugs, more likely to have previous hospitalizations, more likely to be unemployed or under-employed, more likely to be at or below poverty level and to have received external financial support, more likely to be refused psychiatric care or discharged prematurely, and more likely to have a dysfunctional relationship with family and psychiatric care-givers (Brown et al., 1989; Drake & Wallach, 1989; Fernandez-Pol, Bluestone, & Mizruchi, 1988; Kanwischer & Hundley, 1990; Ridgely, 1991; Safer, 1987; Schmidt, 1992).

The Need for Evaluation

In light of the service delivery, policy, and personal problems faced by PLDD, a growing body of literature has indicated the need for specialized treatment for this population (Brower, Blow, & Beresford, 1989; Drake, Antosca, Noordsy, Bartels, & Osher, 1991; Minkoff, 1989; Mueser, Bellack & Blanchard, 1992; Osher & Kofoed, 1989; Ridgely, 1991; Sciacca, 1991; Weiss & Mirin, 1989;). Some of these treatments have been implemented (Drake, Antosca, et al., 1991; Minkoff, 1989; Sciacca, 1991). However, studies on treatment outcomes for these specialized programs are scarce (Blankertz & Cnaan, 1992; Drake, McLaughlin, Pepper, & Minkoff, 1991; Weiss & Collins, 1992; Weiss & Mirin, 1989). These specialized

programs need to be evaluated to determine their effectiveness and to measure the participants' long term outcomes. Schuster (1991) suggested that mental health providers begin to encourage funding of studies to evaluate effectiveness of services, because outcome studies will be critical in preventing further funding limitations on psychiatric care. Bachrach (1982) noted that improved program evaluations are necessary to assess the efficacy of community services. Furthermore, Bachrach (1991) argued that outcome measures are needed, not only to ensure program effectiveness, but to ensure positive outcomes for consumers. Yet, the service delivery, policy, and personal problems will not be solved by merely conducting numerous outcome studies, rather, appropriate theoretically based program evaluations are needed. These evaluations will identify not only whether the treatment worked, but in what way the treatment worked.

Theoretically Based Program Evaluation. It has been strongly suggested that theoretically based program evaluation provides the best quality evaluations. In theoretically based program evaluation, evaluators identify the underlying theory for the treatment program (program theory) and this theory guides the evaluation. Program theory is both prescriptive and descriptive (Chen, 1989; Chen & Rossi, 1992). It is prescriptive in that it identifies what program components are needed to bring about the desired changes in the program participants. This is normative theory. Normative theory identifies the essential components of the treatment, the kind of environment in which the treatment is best implemented, and the necessary goals to

promote change. Program theory is also descriptive in that it explains the underlying causal processes of the program. This is causative theory; it identifies what the intended and unintended impacts are, how the impacts occur, and how the evaluation results could be generalized. In short, theory driven program evaluations attempt to describe the problem as well as prescribe a solution.

Bickman (1987) identified 10 ways that using program theory benefits program evaluation:

> *(1) Contributing to social science knowledge. By providing theoretically meaningful independent variables (the program) and dependent variables (the processes and outcomes), program theory ensures construct validity.*
>
> *(2) Assisting policymakers. Understanding the constructs of the program will allow policymakers to determine if the effects of one program will be beneficial for other populations, and further, to determine if different definitions of the program theory would produce similar results. The ability to understand the constructs of one program will help policymakers determine if different operationalizations of the program will work in a similar fashion to the program that was evaluated.*
>
> *(3) Discriminating between program failure and theory failure. When designing an evaluation, researchers need to be able to defend the design, measurement, and statistical analyses, so that a non-finding can be attributed to the program and not the theory. If the evaluation is defensible, the program failure is accurately portrayed.*
>
> *(4) Identifying the problem and target group. Program theory should identify the problem-program match and articulate how the program will impact the problem. If the appropriate problem is not identified, the program will not produce positive effects.*
>
> *(5) Providing program implementation description. Program theory describes the elements and components of the program and their relative importance. Critical components are identified.*

(6) Uncovering unintended effects. Using program theory enables evaluators to disclose effects not considered by program staff, either positive or negative.

(7) Specifying intervening variables. Linkages between the program inputs and outputs are identified and a schematic presentation describes how the variables are related.

(8) Improving formative use of evaluation. Program theory can determine intermediate effects of the program before the program is completed and/or the full effects are evident.

(9) Clarifying measurement issues. The use of theory can guide the choice and development of measures by determining which measure are valid and appropriate for the program.

(10) Improving consensus formation. The responsibility of developing program theory rests with all stakeholders as well as with evaluators. The process of developing the program theory is informative and educational in itself, which assists the program stakeholders more than merely identifying program shortcomings.

These 10 benefits show how much more knowledge theory driven evaluations provide when compared to traditional research studies.

Theoretically driven evaluations are needed because they consider inputs (the treatment) and outputs (outcomes) of programs, and also describe the relationships and processes that occur between the treatment and the outcome. In general, conducting evaluations using program theory is an improvement over the traditional "black box" evaluations that focus only on inputs and outputs because theory driven evaluations (1) emphasize the transformational relations between treatment and outcomes, and (2) are concerned with the contextual factors under which the transformational processes occur (Chen & Rossi, 1989). Theory driven evaluations of specialized programs for PLDD

will not only determine the effectiveness of the treatment, but also reveal how specific components of the treatment contribute to the effectiveness.

Purpose

The purpose of this dissertation is to review the literature on dual diagnosis treatments and outcomes to:

(1) show how previous literature has taken a piecemeal approach to evaluating specialized programs in relation to aftercare service use and outcomes by,

(a) not investigating components of the treatment that may impact service use,

(b) not evaluating all types of aftercare services, and

(c) not considering all domains in which outcomes could be impacted by specialized treatment and aftercare service use;

(2) present a research project that uses a multidimensional, theory based evaluation of a dual disorder treatment, and specifically,

(a) determines if participation in the dual disorder program leads participants to use more aftercare services, and

(b) evaluates the relationships between dual disorder treatment and aftercare service use and psychiatric, drug use, alcohol use, employment, legal, and residential stability outcomes.

Description of Literature Search

Literature in this review spans the years from 1960 to 1994. A search was conducted through Psych INFO using the keywords dual diagnosis, outcome, mental health services, treatment effectiveness, treatment outcome, aftercare, evaluation, effectiveness, program evaluation, and program theory alone and in combination. The reference lists of the articles found using these keywords were scanned for additional articles, books, and other relevant materials. Published articles were included if they provided information about adult PLDD and their use of services or service use and outcomes. Articles were excluded from this review if the samples were entirely adolescents, the elderly, or persons labeled mentally retarded or developmentally disabled.

Theory Driven Models and Mental Health Research

Traditionally, psychiatric programs have assessed treatment outcomes with little regard for the underlying theory of the program. Early studies did not consider how components of the treatment program lead to the outcomes, rather, they either compared types of treatments to show which treatment produced superior outcomes, or merely assessed outcome (Braun, Kochansky, Shapiro, Greenberg, Gudeman, Johnson, & Shore, 1981; Friedman, West, & Clark, 1987; Herz, Spitzer, & Endicott, 1972; Hoult, Reynolds, Charbonneau-Powis, Weekes, & Briggs, 1983; Keisler, 1982; Mosher, 1991; Teesson and Hambridge, 1992) . Furthermore, many of these studies (1) suffered methodological flaws such as short follow-up periods, poor measures of

outcome, small samples, (2) measured only one type of outcome, either drug use or psychiatric, and (3) failed to consider all the important components of the treatment program.

Aftercare service use is especially lacking investigation in the above studies. Aftercare is a particularly important component of the treatment process because use of aftercare can effectually extend treatment, therefore becoming part of the overall treatment process. It may be misleading to consider only one type of treatment, when in fact people receive multiple treatment types and all of these treatments can impact outcomes.

A second treatment component that is important to consider, and that has been completely ignored in the literature is intention to use services. Intention to use services is important to the treatment process because it is an indicator of treatment effect. If a person intends to use services once they leave the hospital, this could be a sign that the treatment was a positive experience for them and they want to continue their progress, or that treatment somehow connected them (either physically or theoretically) to the appropriate aftercare services. Furthermore, intentions to use services could impact actual aftercare service use. If persons who have intentions to use services actually use more services, it would be important to build this component into the treatment process. The process of treatment cannot be accurately understood unless all of the treatment components are identified. This knowledge, if applied, will

facilitate more effective service combinations being provided to PLMI and PLDD and encourage the revision or cancellation of ineffective services.

Figure 1 shows a comprehensive model for a theory driven evaluation of a dual disorder psychiatric treatment program. This model is derived from Finney and Moos' general conceptual model of evaluation research (1989). This model includes admission characteristics of both the participants (individuals) and the treatment. Individual characteristics are important to establish a baseline record of the participants as they enter the hospital. It is also important to identify which type of treatment the person was admitted to, to investigate differences in the type of treatment provided. Community behaviors and experiences reveal what happened to the participants once they left the formal treatment setting. This component is important in order to assess if participants continued with treatment, what type of aftercare treatment was used, and how their attitudes may have changed once they were outside of the structured hospital environment. Outcomes measures are necessary in order to evaluate how the process of treatment and aftercare experience affected the participants and made changes in their functioning.

As stated above, the research on dual disorder treatments is scarce, thus, many of the relationships posed in this model (Figure 1) have barely been investigated (e.g., the relationship of individual and treatment characteristics to attitudes and beliefs (B & D), individual and treatment characteristics to services and resources to community functioning (A → F and C → F), and individual and treatment characteristics to

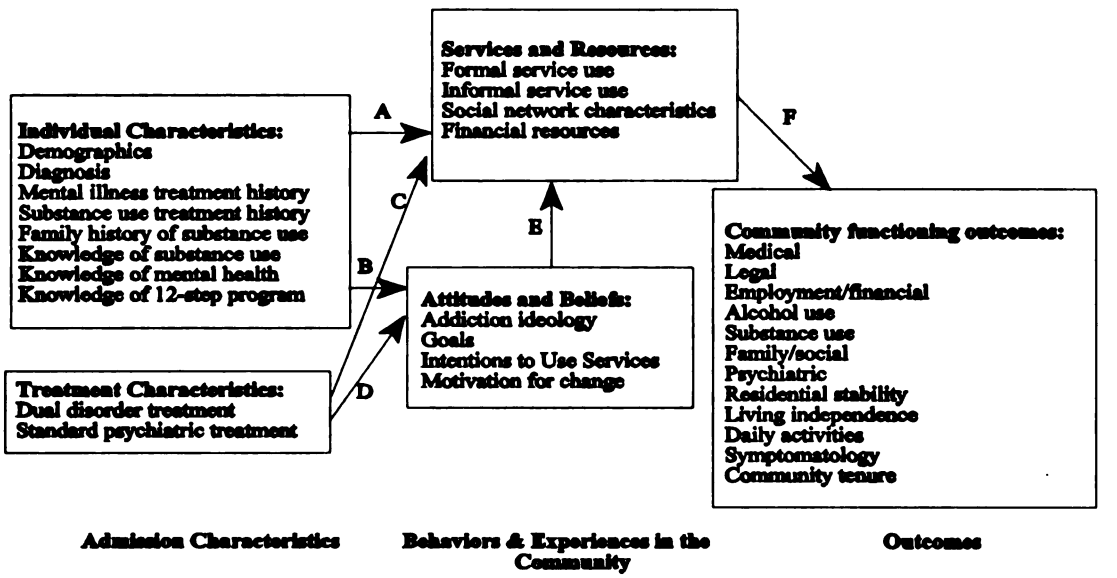

Figure 1.
Comprehensive Model

attitudes and beliefs to services and resources to community functioning outcomes (B → E → F and D → E → F)). Theoretically, these relationships are important to evaluate service usage and the process of treatment (e.g., how people maintain treatment and manage their problems once they leave inpatient treatment). Yet, the literature has focused on the individual components of this model in isolation.

Studies investigating the predictive effects of individual characteristics such as age, gender, race, socioeconomic status, and education on treatment outcome for PLMI and substance users are so varied in samples and methods that the results are difficult to summarize in a meaningful way. Most of these studies considered only a few of the variables included in Figure 1. For example, Macdonald (1987), in a study of women alcoholics, found no significant differences in treatment outcome based on age or

marital status. Bachrach (1982) noted that the gender and diagnosis of groups of PLMI vary greatly depending on the community in which they live. McLellan (1986) has shown that premorbid functioning is one of the best predictors of outcome for PLDD. Important information on the impact of prior treatment and family history of substance use has also been revealed by Kendler, Heath, Neale, and Kessler (1993).

As stated earlier, evaluations of treatment characteristics unique to PLDD are scarce (Blankertz & Cnaan, 1992; Drake et al., 1993, Drake, McLaughlin, Pepper, & Minkoff, 1991; Durell, Lechtenberg, Corse, & Frances, 1993; Jerrell & Ridgely, 1995; Weiss & Collins, 1992; Weiss & Mirin, 1989) because the programs are fairly new and outcomes studies have not yet been conducted. More studies are needed that evaluate the effectiveness of these services (Schuster, 1991).

Information on services and resources such as state and community hospitalizations, community mental health services, and self-help for PLDD are also relatively rare. Narrow, Regier, Rae, Manderscheid, and Locke (1993) found that most PLDD use mental and addictive disorder specialty settings (e.g., psychiatric hospitals, alcohol and/or drug units) (40.5%), as well as their social network consisting of friends, relatives, and self-help group members (37%). Alterman, McLellan and Shifman (1993) have shown that substance abusers who have more psychiatric problems use somewhat more services than abusers who face less psychiatric severity. The lack of research and treatment effectiveness for PLDD is not surprising due to the lack of appropriate treatment settings for PLDD. Most services focus on PLMI or

substance users in specific situations. Services research has also tended to focus on individual treatment programs (Drake, McLaughlin, et al., 1991) rather than the array of services available in the community (NIMH, 1991). It is important to consider all available services to determine how the services combine to produce positive outcomes (NIMH, 1991).

Social networks can also impact outcomes. Crotty and Kulys (1985) have shown that for PLMI, social networks tend to be smaller than for the rest of the population. Although little is known about the social networks for PLDD, this component is expected to have impact on treatment. Alcoholics Anonymous, for example, encourages people to change their networks and replace substance using friends with sober friends. This transition in social support could positively affect outcomes (Barrera, 1986).

It is generally accepted that economic and financial resources are strongly negatively related to mental illness, yet Hudson (1988) indicated that there is confusion about how this relationship occurs. Traditionally, research has focused on the relationships between economic resources and functioning (Ensminger & Celentano, 1988; Graetz, 1993; Scott, 1993; Snow, Baker, Anderson, & Martin, 1986; Sosin & Grossman, 1991), family issues (Franks, 1990; Jones, 1990), and service use (Trainor, Boydell, & Tibshirani, 1987; Wallen, 1992). Similar discussions have occurred on the relationship between economic factors and substance use (Lerner & Raczynski, 1988), yet little work has been done with PLDD.

The substance abuse, medical, and psychology fields have identified and debated the importance of attitudes and beliefs with regard to outcomes, treatment involvement, relapse, and policy. Colon and Massey (1989) unsuccessfully attempted to change the health attitudes of substance users to alter length of stay in treatment settings. Faulkner, Sandage, and Maguire (1988) described attitudes toward drinking and the disease model of alcoholism. Lind (1988) found that attitudes toward drug use were related to actual use and noted that focusing on the positive aspects of abstinence is important in order to encourage decreased substance use. Other authors (Alexander, 1987; Brickman, Rabinowitz, Karuza, Coates, Cohn, & Kidder, 1982; Miller & Gold, 1990; Roman, 1988) have discussed the models of chemical use and addiction. Miller (1985) noted the importance of motivation for change. Furthermore, Ware and Davies (1983) reported that intentions to use different types of medical services was linked to satisfaction. Salmon and Quine (1989) investigated participants intentions of what medical services would entail with regard to their presenting problems. Carney, Savitz, and Weiskott (1979) evaluated students intentions to use university psychology counseling services. Intentions to use services is an important link to investigate. In order for services such as self-help to be effective people need to change their attitudes along with their behaviors. Intentions can be seen as a measure of treatment effect and also as a measure of motivation. Ditman, Crawford, Forgy, Moskowitz, and Macandrew (1967) noted that people who are forced to go to AA/NA do not benefit

from that treatment. This would indicate that people need to be motivated to use self-help and intentions can be viewed as a specific of a type of motivation.

Community functioning outcomes include the following variables: medical, legal, employment/financial, alcohol, drug, family/social, psychiatric, residential stability, living independence, daily activities, symptomatology, and community tenure. These components cover the areas in which a mental illness and substance use affect a person's life in the community, as noted by Bachrach (1982), Benda (1987), and Drake, Antosca, et al. (1991).

Summary

This literature review has described studies that assess some of the variables in Figure 1. Pieces of the model have been considered, but the collective set of relationships between admission characteristics, community behaviors and experiences, and outcomes have not yet been fully considered or explained. Research is needed to investigate these linkages and evaluate the relationships between the domains. Specifically, the assessment of multiple outcomes is necessary in order to gain a comprehensive understanding of the impact of these variables. Investigating only one or two outcomes ignores effects in other domains and precludes examining the interrelationships between outcomes. Furthermore, considering the entire treatment process, provides a better understanding of how outcomes are achieved. The proposed research will seek to resolve these problems by investigating intentions to use services

as a link to multiple types of service use, and evaluate service use in relation to multiple outcomes.

The Current Model

Due to the size and complexity of the evaluation presented in Figure 1, numerous treatment processes may be evaluated. This dissertation evaluates part of the outcome process. A model for the current study is provided in Figure 2. This figure is presented to elucidate the following relationships: (1) Does the specialized treatment program produce the short term effects specified by the model. Namely, does addressing both mental health and substance use problems concurrently impact intentions to use services, and do intentions to use services and actual aftercare service use mediate multiple outcomes for PLDD. (2) Do intentions to use services act as a linkage to actual aftercare service use and subsequent outcomes or as a measure of motivation to use services. and (3) Does aftercare service effect important mental health outcomes. Multiple outcomes and measures of service use were used in this study to extend the current literature and provide a comprehensive and cohesive analysis of the treatment process.

This theoretical model is important to investigate because it evaluates how participants are affected by specialized dual disorder treatment program. By investigating the mediating effects of the participants' intentions to use community services after discharge and their aftercare service use, the treatment paths that people take can be examined. If the specialized dual disorder treatment leads PLDD to have

more intentions to use services, it could affect their actual service use and eventual outcomes. Thus, treatment could be modified to encourage PLDD to start thinking of aftercare services early in the treatment process. Concomitantly, better linkages could be encouraged by community based services.

Figure 2 identifies a model that suggests intentions to use services and actual service use could mediate outcomes of PLDD who have previously received a specialized dual disorder treatment. In this model, standard psychiatric treatment is compared to specialized dual disorder treatment. Intentions to use AA/NA and intentions to manage mental health needs are evaluated as well as, community services, state hospital services, community hospital services, and AA/NA services. Due to the prominence of these components in the theoretical literature and the lack of research evaluating their role as mediators of outcomes, the effects of intentions to use services and actual service use on multiple outcomes (legal, employment, alcohol use, drug use, psychiatric functioning, and residential stability) were explored. It was important to know if these components extend the treatment process and affect outcomes. The direct impact of dual disorder treatment on intentions to use services, actual service use, and outcomes were also examined to identify direct effects.

The next section will review dual diagnosis research and show how it fails to consider the entire treatment process proposed in Figure 2 when evaluating participant outcomes. Due to the lack of evaluations of dual disorder treatments, research was included that evaluates outcomes for PLDD in inpatient specialized, inpatient non-

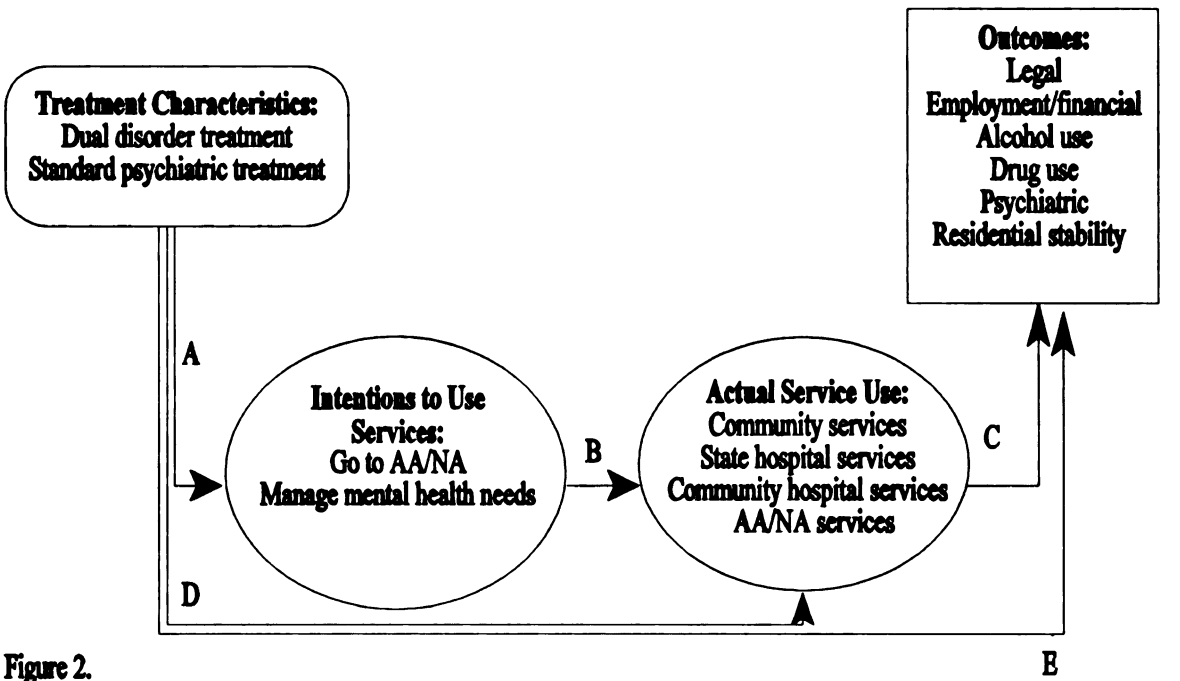

Figure 2.
Proposed Model

specialized, and community settings for PLDD.

Dual Disorder Research

This section will first review dual diagnosis outcome studies to show that these studies have explained parts of the model presented in Figure 2, but have not considered the entire process of treatment, service use, and outcomes. Most of these studies evaluate outcomes without linking them to service use. With the exception of one study, the articles that do consider service use typically do not consider informal service use and do not relate service use to psychiatric, drug use, alcohol use, employment, legal, and/or residential stability outcomes. Some studies lack quantitative results. None of the research includes all three critical issues of linking

treatment process to outcomes, linking aftercare service use to outcomes, and linking treatment process to service use.

Dual Disorder Outcome Research

Case (1991) measured response to treatment. Using a controlled design, 24 PLDD were matched on age, gender, and diagnosis with 24 PLMI. Variables measured included length of stay, number of suspensions and absences, type of discharge (planned or unplanned), diagnosis, and number of years of substance abuse. The dual disorder group had fewer planned discharges (16%) than the mental health group (54%). The average length of stay was significantly lower for the dual disorder group (16 weeks) as compared to the mental health group (25.5 weeks). Furthermore, 58% of the PLDD left treatment prior to or at eight weeks of treatment. Only 21% of the PLMI left treatment by that time. Another significant difference was noted in the percent of unauthorized absences and suspensions per week, with PLDD having 71% per week and PLMI having only 16% per week. Psychiatric diagnosis and years of substance abuse were not related to outcome. Case (1991) concluded that psychiatric day treatment was unsuccessful in treating PLDD.

The outcome measures in Case's study (1991) reflect response to treatment, rather than showing actual participant outcome (e.g., psychiatric functioning, drug use). As Bachrach (1991) noted, better outcome measures are needed to assess participants' progress. Case's study did not measure post-treatment outcome or aftercare service use. Outcomes should be assessed in the form of participant

functioning so that changes in the participants' functioning can be evaluated rather than solely behavioral changes (e.g., did they go to treatment). This study does reveal that PLDD tend to leave treatment earlier and have more absences than PLMI. Information such as this reinforces the need for specialized treatment for PLDD. Yet, this study did not evaluate particular aspects of treatment that could impact outcome or service use after discharge.

Munsey, Galanter, Lifshutz, and Franco (1992) showed that participants improve over the course of treatment. This research used a randomized design to study 40 persons (randomly selected from 10 inpatient psychiatric wards) diagnosed with schizophrenia who also abused substances. A psychiatric rating scale and a questionnaire covering clinical and demographic data were used to evaluate the participants at admission and discharge. Results showed that 98% of the participants had received prior treatment and that the entire group improved in treatment from admission to discharge. There were no differences in psychiatric functioning between occasional drug users (once or twice per week or less) and daily users (one or more times per day). Daily and occasional drug users differed significantly on impact of parental substance abuse. As a group, the participants improved psychiatrically from admission to discharge.

Munsey et al. (1992) measured psychiatric treatment response from admission to discharge for PLDD, but no follow-up was conducted to assess long-term outcome or post treatment service use. Furthermore, no drug use outcome was evaluated and no

specific treatment components were evaluated. This study merely shows that all participants improved over the course of their inpatient treatment. This finding is not surprising considering that patients enter treatment in a state of crisis and are released when their functioning has stabilized. This study failed to show how the treatment process produced positive outcomes.

Bond, McDonel, Miller, and Pensec (1991) compared formal service use for persons using an Assertive Community Treatment group (ACT focused on home and community visits) (N=31) or a reference group (RG focused on group interventions) (N=23), to a control group (standard community mental health center treatments) (N=43). All three groups treated PLDD. Interviews and record reviews were conducted at pre-treatment, and at 6 months (N=80), 12 months (N=69), and 18 months (N=75) post discharge. Results showed that at 12 months, 83% of the RGs and 81% of the ACT participants were still receiving these services. This result was significantly better than the 47% for controls. At 18 months, 83% of the RGs and 65% of ACT participants were still receiving significantly more services than controls (40%). Other results suggested that RGs had significantly fewer hospitalizations (psychiatric, drug use related, and other) than the ACT or control groups at 6 and 12 months. RGs also had significant reductions on alcohol and drug use at 6 and 18 months. However, ACT had significantly fewer days hospitalized at 6 months, and controls had significantly fewer days at 18 months.

This study is noteworthy because it considered formal service use, though it did not evaluate this service use in relation to the prior inpatient treatment, nor did it evaluate psychiatric functioning outcomes or informal service use. However, this study shows that RGs and ACT are effective in treating PLDD. Both ACT and RGs are successful in keeping participants involved in services. RGs helped to reduce substance use and ACT was successful in reducing rehospitalization.

Lyons and McGovern (1989), in a controlled experiment, investigated length of stay and rate of rehospitalization in a standard state hospital program and aftercare services at 30, 60, and 90 days post discharge. Of 127 participants, 88 were PLMI and 39 were PLDD. There were no demographic differences between the two groups. Results showed that PLDD had significantly shorter length of stays during the admission defined by this research study. However, PLDD had been rehospitalized for significantly more days than the PLMI by the 90-day follow-up. No differences were found in the rate of rehospitalization between the two groups. In an attempt to investigate aftercare linkages, the authors measured attendance at the first scheduled aftercare session. This measure was insufficient and showed no differences between the two groups.

This study considered previous standard inpatient treatment, but used a poor measure of aftercare service use and failed to consider informal aftercare services (e.g., self-help). Rehospitalization was the only outcome measured. This study did reveal that there were no differences between PLDD and PLMI in attendance at the first

formal aftercare session, or in the rate of rehospitalization. PLDD were shown to have shorter lengths of stay during the index admission, but once they were rehospitalized in the community they were there longer than the PLMI. This study attempted to consider prior treatment, formal aftercare service use, and outcome, but failed to consider informal aftercare service use or components of the treatment that may have impacted service use and outcomes.

A controlled study by Solomon (1986-87) investigated people discharged from two standard state psychiatric hospital treatments, their receipt of formal aftercare, and their rate of rehospitalization. Participants (N=497) were categorized into the following three groups: psychiatric, PLDD, and substance users. Rehospitalization and aftercare were evaluated for 1 year post discharge.

Results revealed that overall a greater proportion of the people in the psychiatric than in the PLDD group contacted a community mental health agency during the follow-up. Within the group of people receiving services, persons in the substance use group were more likely than people in the other groups to receive intake, case management, and emergency services, but less likely to obtain individual treatment. Further, people receiving services in the PLDD group received more evaluation and testing, intake, vocational services, day treatment, and emergency services than persons in the psychiatric group. No differences were found in rate of rehospitalization, but receipt of services increased community tenure for all three groups. The authors concluded that community mental health services are geared towards mental health

problems rather than substance abuse problems and until more services are tailored to meet the needs of PLDD, this group overall will continue to receive fewer services than people with solely mental health problems.

Solomon (1986-87) did not evaluate drug and psychiatric outcomes or informal services, but did shed light on the use of aftercare services. Important findings from this study include the evidence that PLDD do not receive as many formal services overall as people with solely psychiatric problems, yet people in the PLDD group were more likely to receive more of certain types of formal services. This finding could mean that these people have different needs, that the other services were unnecessary or inappropriate, or informal services (such as self help) were being used. This study failed to investigate the use of informal services or aspects of treatment that could have affected service use.

Finally, Jerrell and Ridgely (1995) compared service use and outcomes of 98 PLDD who were randomly assigned to one of three treatments: behavioral skills training, case management, or 12-step recovery. The PLDD involved in this study were also required to have at least 2 of the following problems beyond their dual disorder: poor work history, eligibility for and receipt of public assistance, poor basic living skills, poor maintenance of social support, or history of inappropriate social behavior that resulted in intervention by mental health or criminal justice authorities. Interviews were conducted at baseline and 6, 12, 18 and 24 months post entry into the study and assessed family/social adjustment, psychosocial functioning, satisfaction with

life, interviewer ratings of psychiatric symptoms, residential stability, self-report ratings of psychiatric and substance abuse symptoms, current alcohol use, and utilization of mental health treatment and support services (e.g., emergency services, skilled nursing, residential treatment, case management, housing services, and day services), personal income, work satisfaction, use of medical services, and contact with criminal justice system. Results in this study reported changes from the 18 month follow-up data.

The authors found that self-report rates of family/social adjustment, and satisfaction with work increased over time. Interviewer ratings of participant psychosocial functioning were also significant, with increased functioning from 6 to 18 months. Participants showed a significant overall decreases in both observable psychiatric symptoms and manic, bipolar symptoms, and emergency visits. Significant overall increases were noted in medication visits, and outpatient visits.

Jerrell and Ridgely (1995) did a good job of evaluating service use and outcomes, however, service use was treated as an outcome variable and not considered as a mediator for outcomes. This study also failed to consider treatment components that could influence service use. Yet, this research revealed that PLDD decreased their use of acute psychiatric services and shifted their use to outpatient and supportive services. These results indicate that severe PLDD can be treated in intensive and integrated treatments.

Summary. The studies in this section all investigated the outcomes of PLDD following some kind of treatment. In comparing these studies' findings to the proposed model, it is clear that there are some gaps in the literature. Two studies (Case, 1991; Munsey et al., 1992) did not consider aftercare service use, or both psychiatric and substance use outcomes. The other studies provided conflicting results about outcomes for PLDD. Case (1991) and Lyons and McGovern (1989) showed shorter lengths of stay for PLDD, whereas, another study (Bond, McDonel, Miller, & Pensec, 1991) reported that PLDD remained in treatment longer. Solomon (1986-87) suggested that PLDD do not receive as many formal aftercare services as PLMI, but Lyons and McGovern (1989) demonstrated that there were no differences between PLDD and PLMI in attendance of the first formal aftercare session. Jerrell and Ridgely (1995) demonstrated that severe PLDD were successful in using less intensive and integrated treatments.

There were very few articles that investigated outcomes of PLDD. The studies reviewed above are inadequate at determining how specialized treatment and formal aftercare service use impact outcomes for the following reasons. First, these articles only considered treatment of the PLDD in standard programs, rather than evaluating treatment of PLDD in specialized dual disorder programs. Second, only one of the above studies (Jerrell & Ridgely, 1995) evaluated the use of informal services (e.g., self-help). It is possible that participants in the other studies were using services outside of the realm of the formal service network, yet these services were not

considered. Third, outcome measures (except Jerrell & Ridgely, 1995) focused on psychiatric and substance abuse and did not consider other outcomes, such as employment, legal problems, alcohol use, and residential stability. Fourth, none of the articles considered specific treatment components in relation to aftercare service use or outcomes. The investigation of the treatment process was missing completely. These studies cannot even be considered "black box" research because they fail to consider the inputs (e.g., any treatment variables). Rather, they focus on the narrow timeframe from discharge to follow-up. The next section will review studies of dual disorder outcomes specifically in specialized dual disorder treatment settings.

Specialized Dual Disorder Treatment, Aftercare, and Outcome

In a non-experimental study of PLDD, Ries and Ellingson (1990) interviewed 20 people at discharge from a specialized dual disorder program to evaluate service use and psychiatric and drug outcomes. An interview measured diagnosis, motivation toward abstinence from substance use, involvement in substance abuse programming during hospitalization, and discharge plans.

At the 1 month follow-up, 17 participants were contacted and 12 reported abstinence from substance use. There was a significant difference between abstainers and non-abstainers in psychiatric diagnosis. Participants who were abstinent were more likely to be depressed, whereas, those who were non-abstinent were more likely to be manic. Participants rated their motivation toward abstinence at intake, at discharge, and at the 1 month follow-up. Persons who were abstainers at 1 month were

significantly more motivated toward abstinence at all time points. There was no difference between abstainers and users in psychiatric follow-up care plans, however, there was a significant difference between these groups for substance abuse follow-up care plans. Those who reported abstinence had concrete follow-up plans.

This study focused on motivation towards abstinence from substance use. The authors used the variables motivation towards abstinence and diagnosis during the hospitalization to predict abstinence in the community post hospitalization. However, the study revealed very little about any aftercare service use and nothing about post treatment outcomes. Although follow-up plans are useful mediators between treatment and outcome, they are not a realistic measure of outcome because it is not clear that the participants acted on the plans. Although this study attempted to measure involvement in treatment, difficulty in measuring this variable precluded the researchers from further investigation. This study is notable because it began to look at the process from treatment to outcome. It addressed substance use and psychiatric functioning outcomes, yet it failed to evaluate outcomes realistically. Furthermore, it evaluated aftercare plans only in relation to abstinence and not in relation to actual use of aftercare services.

Fals-Stewart and Schafer (1992) compared the effectiveness of three programs for treating drug abuse in an outcome study of 60 substance users with obsessive-compulsive disorders (OCDs). Participants were randomly assigned to either an integrated OCD substance abuse treatment, a standard substance abuse treatment, or a

progressive muscle relaxation control group. Measures included interviews and a rating scale measuring length of stay, substance use, OCD preoccupations, diagnosis, and demographic variables. Participants were evaluated at the beginning of treatment (N=60) and 1 year later (N=57).

Integrated treatment participants were in treatment significantly longer than the other groups, had significantly lower OCD severity scores at discharge and at the 1 year follow-up, and took significantly longer to relapse. Although the substance abuse treatment group and muscle relaxation treatment group had higher OCD severity scores, both groups benefitted from significantly reduced OCD severity from discharge to 1 year follow-up.

This study simply compares the three programs' relative effectiveness at treating drug abuse. Specific components of the treatment program were not considered in relation to outcome. Information gleaned from this study does show that participants in the integrated treatment stayed in treatment longer and took longer to relapse. Although length of stay was evaluated within the treatment, no aftercare service use was measured.

Hoffman, DiRito, and McGill (1993) compared chronic PLDD to less severely impaired (non-chronic) PLDD, all of whom were patients in a specialized psychiatric substance abuse program, to assess differences in relapse and formal aftercare service use. A 3 month follow-up randomized study of 28 PLDD was conducted and information was gathered from chart reviews, surveys, and phone interviews with

primary therapists or probation officers. Outcome measures included abstinence from substance use, employment, medication compliance, community treatment attendance, and major untoward events (e.g., divorce or arrest).

No differences in outcomes were found between the two groups at the 3 month follow-up. The authors noted that since the non-chronic PLDD were more likely to have been coerced into treatment by legal pressure, they may have been less motivated, thus producing similar abstinence rates to those of the chronic PLDD. Moreover, chronic PLDD may have verbalized their cravings or plans for relapse to primary therapists or probation officers more than non-chronic PLDD, therefore, explaining the similarities in outcomes.

This study is noteworthy in that it found no differences in relapse or formal aftercare service use between chronic and non-chronic PLDD. However, it did not consider the use of informal aftercare services in relation to outcomes, or prior treatment components in relation to aftercare service use or outcomes. It also contains some critical flaws. First, participants were not interviewed. All information was gained through therapists or probation officers who did not have continuous contact with these people. Second, a single brief follow-up period was used and no psychiatric outcome was measured. Third, formal aftercare service use was measured by only one item and the type of services attended were not specified. Fourth, the study evaluated the outcomes from discharge to 3 months post-discharge; the relational process from treatment to outcomes was not considered at all.

Alfs and McClellan (1992) used a non-randomized design to compare 98 persons attending an integrated day hospital program for PLDD with community mental health aftercare and 129 persons attending a dual disorder program and a weekly aftercare group. The programs were primarily group treatment with an open-ended format. The goals of the dual disorder program were to reduce the number of hospitalizations, improve medication compliance, and reduce substance use in the dual disorder program.

Program completion rates were lower in the dual disorder treatment (66%) than the standard treatment (77%). Only 97 participants, 34 in the weekly aftercare group and 63 in the community mental health aftercare treatment were followed. From a review of the case studies, the authors concluded that little difference in treatment outcome was found due to program type. The more important factor influencing outcome was ability to function in a group. This study is merely a comparison of the two program types. No information about treatment components was evaluated. It is hindered considerably by the lack of quantitative data (e.g., no quantitative information about aftercare service use was reported).

A non-randomized study of PLDD (Clopton, Weddige, Contreras, Fliszar, & Arredondo, 1993) evaluated an integrated chemical dependency inpatient treatment which discharged people to a 4 month formal aftercare program. The following three groups of PLDD were considered: (a) those with a personality disorder (n=18), (b) those with traits of a personality disorder (n=24), and (c) those with another

psychiatric disorder (n=49). Seven clients were discharged shortly after starting the aftercare program and 20 clients did not start the program. The remaining 64 clients completed the aftercare program, attending for five sessions or more. Outcome measures included whether the participants completed the aftercare program and whether they remained abstinent from drugs.

There were no significant differences between the three groups regarding abstinence. Overall, 59% remained abstinent. There were also no significant differences between the groups in the number of people who both completed the aftercare program and remained abstinent. However, those who abstained were significantly more likely to complete aftercare and those who relapsed were more likely to drop out.

This study also suffers from a lack of quantitative results. Aftercare service use was only briefly mentioned in relation to the clients' use of one formal aftercare program. The only data reported was that 64 clients attended for five or more sessions. No information on service use was provided by type of client (e.g., which group they were in). Furthermore, the use of other formal community services or informal services other than the aftercare program were not measured. Psychiatric outcome was also not considered. This article fails to address the effect of treatment components on service use or outcomes. However, it does show that substance use affects service use.

A non-experimental 4-year follow-up study was carried out by Drake, McHugo, and Noordsy (1993) to evaluate substance use outcomes of PLDD. Eighteen

persons labeled schizophrenic and alcoholic were treated in a specialized dual diagnosis program. Alcohol and drug use were assessed through interviews, clinicians' ratings, clinical records, and intensive case reviews. Remission was defined as no use for 6 months. Attrition at 4 years was not reported. All participants were engaged in ACT treatment, community mental health center services, and housing supports, and were on antipsychotic medication throughout the 4-year follow-up period. Furthermore, 13 participants attended community dual diagnosis groups, 1 attended self-help groups, and 1 completed an inpatient substance abuse program. Unfortunately, the persons completing the latter two treatments did not attain remission.

Results showed that 61% were in remission at the time of the 4 year follow-up. The authors noted that these findings are in marked contrast to poor short term outcomes of PLDD, and enhance rates of stable remission found in long-term studies of alcohol treatment. They also theorized that substance abuse treatment contributed to remission by offering consistent and longitudinal treatment.

Drake et al. (1993), although failing to measure psychiatric outcome, considered substance use outcome in relation to service use. Both formal and informal service use was evaluated. The authors noted that consistent, longitudinal aftercare treatment following specialized dual disorder treatment could have affected substance outcome, yet they failed to test this hypothesis or specify what kind of aftercare treatment might be most beneficial.

Summary. In contrast to the first section that reviewed dual diagnosis outcome studies following various kinds of treatment, this section presented studies that evaluated specialized dual diagnosis treatments and attempted to consider aftercare service use in relation to the dual treatments and outcomes.

The research in this section provides the following useful information: (a) two studies found no differences in rates of abstinence or completion of aftercare between different categories of PLDD, (Clopton et al., 1993; Hoffman et al., 1993), (b) one study found that PLDD stayed in treatment longer and took longer to relapse (Fals-Stewart & Schafer, 1992), (c) one study concluded that remission was stimulated by consistent and longitudinal aftercare (Drake et al. 1993), and (d) PLDD who abstained from drug use were more likely to complete aftercare and PLDD who relapsed were more likely to drop out of aftercare (Ries & Ellingson, 1990; Clopton et al., 1993). Yet, the research still suffered the following flaws in comparison to the current model presented above: lack of quantitative results or poor measures (Alfs & McClellan, 1992; Clopton et al., 1993; Drake et al., 1993; Hoffman et al., 1993), no information on psychiatric, legal, or residential stability outcomes (Ries & Ellingson, 1990; Fals-Stewart & Schafer, 1992; Drake et al., 1993), and no investigation into components of the treatment program and how they affect outcomes or service use (Alfs & McLellan, 1992; Drake et al., 1993; Fals-Stewart & Schafer, 1992; Hoffman et al., 1993; Ries & Ellingson, 1990).

None of the studies presented in the two sections above evaluated the entire process of treatment shown in Figure 2, rather they explained individual pieces of the model. Several studies (Clopton et al., 1993; Drake et al., 1993; Hoffman et al., Jerrell & Ridgely, 1995; 1993; Lyons & McGovern, 1989; Solomon, 1986-87) attempted to evaluate the pathway D → C indicated in Figure 2, however, three of these studies used severely limited measures of formal service use (Clopton et al., 1993; Hoffman et al., 1993; Lyons & McGovern, 1989) two measured only a single outcome variable (Drake et al., 1993; Solomon, 1986-87). Only one study (Drake et al., 1993) tried to investigate informal service use (e.g., self-help). Four studies merely evaluated pathway E, the link from treatment to outcomes (Alfs & McLellan, 1992; Case, 1991; Fals-Stewart & Schafer, 1992; Munsey et al., 1992; Ries & Ellingson, 1990). Finally, only one study (Bond et al., 1991) evaluated pathway C from service use to outcomes. The literature clearly does not consider any component of the treatment (e.g., intentions to use services) that may mediate the effect of service use on outcomes. This relationship (A → B → C in the current model) is theoretically important because it may reflect treatment involvement, treatment effectiveness or motivation to continue with treatment. Intention to use services may be a first step in getting participants to continue their recovery after hospitalization. Furthermore, outcomes in terms of psychiatric functioning, legal problems, and residential stability, and aftercare service use from multiple agencies (including formal and informal

agencies) was considered only once (Jerrell & Ridgely, 1995) and this study did not relate the service use and outcome dimensions.

Many of the studies cited above were not concerned with evaluating the process of treatment, because they do not consider the treatment itself or treatment and service use components that may mediate outcomes. Theoretical evaluations are needed to investigate these relationships. This information will help give purpose and meaning to the evaluation of outcomes, and further give an accurate description of the treatment process. As Bickman (1987) stated, theoretical evaluations are needed to provide more knowledge to the field of dual disorder treatment and to reveal what specific treatment components mediate particular outcomes. This information will begin to explain how the treatment process works for PLDD and under what conditions.

Aftercare service use, both formal and informal, is an important component of this model because these services extend treatment and become part of the treatment process. Inpatient treatment and aftercare services are not separate entities, but components of the overall treatment process. The whole process of inpatient treatment and formal and informal aftercare services needs to be evaluated in order to determine how the components interact to mediate/impact outcomes. This research cannot be done without a theoretical understanding of the treatment program and how aftercare service use relates to the program and to outcomes. Furthermore, this research should take into consideration the various types of services that can be used and the multiple outcomes that could be affected.

The current study was a theoretical evaluation of one specialized dual disorder treatment setting. The dual disorder treatment program's intensive and didactic treatment strategy solicited involvement from the participants by structuring 16 hours of the participant's weekday schedule. Participants could not leave the treatment until they had received the complete treatment regimen. It was believed that since dual disorder participants had been involved in this intensive treatment they would be more attuned to or motivate towards service use post discharge (e.g., they would have more intentions to use services upon discharge). Due to their exposure to intensive treatment while in the hospital and active involvement in that treatment, (as well as increased intentions at the time of discharge) it was hypothesized that they would be more likely to continue this treatment regimen in the community. Furthermore, increased exposure to treatment post discharge was thought to have positive effects on outcomes.

This study used a multidimensional model to evaluate the specialized treatment while considering intentions to use services post discharge, use of formal and informal aftercare services, and outcomes in six different domains. Specifically, the dual disorder hospital program was compared to the standard psychiatric hospital program to determine if addressing both mental health and substance use problems concurrently would impact intentions to use services; actual service use; and psychiatric, alcohol use, drug use, employment, legal, and residential stability outcomes. The following research questions are posed for this evaluation, and the theoretical model is presented in Figure 2.

Research Questions

I. Are PLDD who receive specialized dual disorder inpatient treatment more likely to indicate intentions to continue their treatment beyond discharge, than PLDD who receive standard psychiatric treatment?

II. Do PLDD who have intentions to continue treatment after discharge actually use more formal and/or AA/NA services than people who do not have intentions?

III. Do PLDD who receive formal and/or AA/NA services have better psychiatric, alcohol use, drug use, employment, legal, and residential stability outcomes than people who do not receive these services?

IV. Do PLDD who receive specialized dual disorder inpatient treatment use more formal and/or AA/NA services than PLDD who receive standard hospital treatment regardless of their intentions to use services?

V. Do PLDD who receive specialized dual disorder inpatient treatment have more positive psychiatric, alcohol use, drug use, employment, legal, and residential stability outcomes than PLDD who receive standard psychiatric treatment?

Chapter 2

Methods

The proposed study took place within the context of the Enhancing State Research Capacity grant funded by the National Institute of Mental Health. This project was a joint venture of the Michigan Department of Mental Health, Michigan State University, Wayne State University, the Detroit\Wayne Community Mental Health Board and the University of Michigan. The purpose of the overall grant was to evaluate the effectiveness of a dual disorder treatment program at a regional psychiatric hospital in Northville, Michigan.

Participants

Participants were men and women admitted to Northville Regional Psychiatric Hospital (NRPH) in Northville, Michigan, from June, 1991, to June, 1992. Eligibility required that participants screen positive for substance abuse problems. Furthermore, participants could not be acutely psychotic and needed to verbalize some motivation for treatment of their substance abuse problems. Participants were excluded from eligibility if they were severely cognitively impaired, were labeled developmentally disabled, or if they had shown violent tendencies or inappropriate sexual activities. Of approximately 2,806 clients admitted to NRPH during the 12-month period, 535 met the initial recruitment criteria and were willing to participate in the study. Participants

were further excluded from the study if they were unable to spend a minimum of five days in treatment before discharge. This standard was necessary to ensure that all participants could receive a minimum threshold of treatment. Other attrition occurred from participants' refusal (n= 92) and death (n= 8). A total of 391 participants met the initial recruitment criteria, received the minimum threshold of treatment, and had 70% complete information at the 6-month follow-up interview.

Participants are mostly Black/African American (76%), and male (74%), and nearly 2/3 are never married (63%). Most have a high school education and have been charged with a crime (73%). Approximately one third were unemployed at intake (33%). Substance abuse diagnoses included alcohol dependence (16%), cocaine dependence (9%), and poly drug dependence (29%). Mental health diagnoses included the following: schizophrenia (26%), organic mood disorder (17%), adjustment disorders (13%), mild affective disorders (13%), major depression (7%), bipolar depression (5%), and antisocial personality disorders (2%).

This sample differs from the typical samples reported in the literature review above in that it contained a large number of individuals who were screened to determine the presence of a dual disorder, and that these participants were randomly assigned to receive the dual disorder treatment versus the standard inpatient psychiatric treatment. This sample was exceptional in that it consisted of persons known to have had the dual disorder and received the dual disorder treatment. Other studies either did not assess the participant to determine the dual disorder (e.g., they used participants

with particular diagnoses), or used persons receiving a standard psychiatric treatment only.

Table 1 compares the experimental and control participants in this study using the variables under consideration. In this study experimental (dual disorder) participants tended to have on average longer length of stays; more intentions to use AA/NA services; more CMH, community hospital, and self-help services; and better employment, alcohol, legal, and psychiatric outcomes than the control (standard psychiatric treatment) participants.

Table 1
Comparison of Experimental and Control Participants on Study Variables

Study Variables	Experimental (Dual Disorder)	Control (Standard Psychiatric Treatment)
Length of Stay	$\bar{x}$=50	$\bar{x}$=30
Intent to Use AA/NA	$\bar{x}$=3.49	$\bar{x}$=3.30
Intent to Manage Mental Health Needs	$\bar{x}$=3.71	$\bar{x}$=3.71
CMH Services	$\bar{x}$=31	$\bar{x}$=22
State Hospital Services	$\bar{x}$=.09	$\bar{x}$=.13
Community Hospital Services	$\bar{x}$=.20	$\bar{x}$=.20
AA/NA Services	$\bar{x}$=3.48	$\bar{x}$=2.00
Employment	$\bar{x}$=.19	$\bar{x}$=.17
Alcohol Use	$\bar{x}$=.79	$\bar{x}$=.74
Drug Use	$\bar{x}$=.89	$\bar{x}$=.89
Legal Problems	$\bar{x}$=.84	$\bar{x}$=.81
Psychiatric Functioning	$\bar{x}$=.67	$\bar{x}$=.66
Residential Stability	$\bar{x}$=.07	$\bar{x}$=.07

At the time of recruitment, those persons agreeing to participate signed an informed consent form. The study assured participants that all of the information in the interview and all other data (e.g., tracking information) would be kept strictly confidential. Participants were paid for their cooperation with the study. Research staff randomly assigned the participants to either the dual disorder treatment or the standard hospital treatment. The ratio of participants assigned to the dual disorder ward versus the standard treatment was 3:2 respectively.

Design

In the overall study, a randomized experimental design was employed to evaluate the impact of the specialized dual disorder treatment program. Table 2 presents the critical ingredients of both conditions. The dual disorder treatment included a more intensive and comprehensive treatment, that immersed participants in the treatment. Theoretically speaking, it is this immersion that sets the participants up for continued service use in the community. This immersion was in part due to a series of 40 educational lectures covering a wide variety of topics specifically of interest and concern to people with dual disorders. These lectures were intended to provide factual information, to assist in the changing patient's attitudes about substance use, and to increase motivation for program involvement and recovery. Other treatment components important to this treatment experience include on ward self-help group meetings and continuous aftercare planning beginning at admission. It was believed

that the dual disorder treatment had more effect on the participants making them more motivated or intent upon using services upon discharge from the hospital.

The dual disorder ward was compared to the standard psychiatric ward, in this study, to determine if addressing both mental health and substance use problems concurrently would impact intentions to use services; actual service use; and psychiatric, alcohol use, drug use, employment, legal, and residential stability outcomes.

Table 2
Comparison of Dual Disorder Treatment and Standard Psychiatric Treatment

Dual Disorder Treatment	Standard Psychiatric Treatment
> Enhanced staffing ratio, staff have substance abuse training	> Fewer staff, staff not specially trained in substance abuse
> Specialized substance abuse treatment	> Standard psychiatric care, substance abuse focus limited to optional AA/NA meetings
> More intensive treatment	> Less intensive treatment
> Patients not released until they have completed the entire treatment program	> Patients may leave any time during treatment program for numerous reasons
> Residents cannot leave the ward except for supervised activities	> Residents have ground privileges

Dual Disorder Treatment. The Mental Illness/Chemical Dependency Program provided specialized, co-educational treatment on two, 30-bed wards. The gender breakdown was three male beds for every two female beds. This treatment simultaneously addressed mental illness and chemical dependency problems. The ward

was oriented toward reduction of recidivism and establishment of the beginning of a lifelong recovery from chemical dependency. The program incorporated comprehensive treatment modalities addressing physical, psychiatric/psychological, family, social/ interpersonal and substance abuse problems.

The program was didactic and intensive -- structuring 16 hours of the patient's weekday with scheduled therapeutic activities. These activities involved psychiatric treatment, individual/group psychotherapy, educational lectures, group discussion and self-help groups, family education, activity therapy, medical services and aftercare planning. The self-help groups (specifically AA/NA) could be attended by persons outside of the treatment setting. The NA group was usually lead by an outside recovering NA member, but most of the time these leaders were also former patients of the dual disorder program. The AA groups were lead by a recovering hospital staff member who was also a member of AA. However, additional AA meetings could be held at any time lead by the dual disorder participants.

Discharge planning for people on the dual disorder ward was more directed and deliberate than for people on the standard treatment wards. Dual disorder treatment staff coordinated the treatment needs at discharge to ensure that the participant received the best care in the community and that they did not go from a highly structured program to a totally unstructured program in the community. Aftercare planning began at the time of admission to the unit and continued until discharge from the unit. Participants were referred to AA/NA groups in their community where they could

attend meetings. They were also instructed verbally and given information on how to find an AA/NA sponsor in the community, however, the responsibility was on them to actually follow through with these tasks. The dual disorder treatment also actively sought placements in mental health and substance abuse (MISA) homes developed in the community by the CMH board. If there was a position open in one of the houses the staff entered them in that treatment, if a position was not available they were referred to other CMH or community treatments for both their substance use and mental health problems.

Standard Treatment. The standard treatment wards (control wards) differed from the dual disorder treatment in the following ways: (1) staff did not have special training in substance abuse, (2) there was a lower staff to patient ratio, and (3) clients could have left the ward using ground passes. On these wards, participants received activity therapy, individual and group psychotherapy, and could have received AA and NA treatment offered by the dual diagnosis ward if the patients requested it. Discharge planning for these wards was less formal and not as well coordinated with the CMH services. Participants were given general referrals to follow-up mental health care and/or substance abuse care in the community, but they were not necessarily directed to dual disorder treatments.

Procedures

Data Collection. For the overall study, follow-up interviews were conducted at 2, 6, 10, 14, and 18 months post discharge. Interviewers were "blind" to the

experimental condition of the participants at the beginning of the interview process, although this secrecy was not preserved throughout the entire interview process. The current study used self report information from the 6 month follow-up. Aftercare service use data was collected from discharge to the 6 month follow-up. Self-help aftercare service data was collected by self report at the 2 and 6 month follow-up, but responses were based on the last 30 days. Therefore, this data reflected self-help treatment obtained one month prior to the 2 and 6 month interview time points. Data on intentions to use services were collected at discharge and data on prior psychiatric functioning were collected at hospital entry. The 6 month follow-up time period was chosen because it provides the participants enough time to use community services, yet was not so long as to miss any major psychiatric episodes possibly occurring after a recent discharge. In reality, the time period chosen for this or any study was somewhat arbitrary because it is a cross sectional period within the participants' entire treatment experience. Although, the time period between the baseline interview and the discharge interview differed between groups because standard treatment participants left the hospital earlier, the follow-up interviews were consistently spaced, with the follow-up beginning at discharge for all participants. This study did have a potential treatment confound in that the length and intensity of the treatment was confounded with the type of treatment the participants received. For example, participants receiving the standard treatment ward received a less intensive and usually shorter treatment period than those receiving the dual disorder treatment. Dual disorder participants were in inpatient

treatment an average of 50.8 (SD=32.1) days, and standard treatment participants an average of 30.8 (SD=25.4) days. In order to control for this treatment effect, length of stay was controlled for prior to the analyses. Follow-up dates were based on discharge date rather than admission date because of the different treatment lengths.

Since many longitudinal studies are marked by high attrition, methods in this study were enacted to assure follow-up interview completion. Tracking information and releases of information were collected after the baseline interview and confirmed or updated after the discharge interview. Two release forms were completed, one for friends and relatives and another for formal service agencies. For the first release form, respondents provided the names of friends and relatives who the project staff could contact in the event that the interviewer had difficulty finding them. The other release form was developed with the Detroit-Wayne County Community Mental Health Board (D/WCMHB) to allow access to clinical records to locate a lost participant. The D/WCMHB provided service use information for tracking and analysis of service use patterns. If an interviewer was having a difficult time locating a particular participant, the D-WCMHB representative would identify the most recent treatment services used. The representative would then contact the agency or agencies that provided the services to obtain more information about the location of their client. Interviewers asked participants where they may have had criminal justice system involvement, received previous medical and psychiatric services, attended church, and frequented shelters.

New releases and tracking forms were completed after each community follow-up interview.

Procedures used to limit attrition were highly successful with an 89% completion rate for the 6 month follow-up period. Procedures for locating participants in the community were similar to approaches employed by researchers in other longitudinal studies (Nurco, Bonito, Lerner, & Balter, 1975; Nurco, Robins, & O'Donnel, 1977; Ribisl, Walton, Mowbray, Davidson, Luke, & BootsMiller, In Press; Rumptz, Sullivan, Davidson, & Basta, 1991). The project's general tracking approaches included the following efforts: make contacting the project very easy and enjoyable for each participant, reward participants when they contact the project office by phone or mail, contact participants frequently, reward interviewers for locating participants and completing interviews in a timely fashion, and dedicate substantial resources to tracking. The population in this study was generally considered difficult to locate individuals. Some participants had sparse tracking information because they either had few friends and relatives, or no stable residence.

If the participant could not be found by the previous approaches, more formal procedures were employed. The participants' medical records from Northville Regional Psychiatric Hospital (NRPH) were examined to provide clues as to their discharge addresses or other helpful information. For example, these medical records often contained information about friends and relatives who served as correspondents. Information about previous incarcerations or the names of probation officers was

recorded for persons with previous criminal justice system involvement. The project also created a "Find List" of all participants who had not been located either after six weeks or after all tracking possibilities were exhausted. Letters addressed to each person on the Find List were distributed to a local homeless shelter and Salvation Army shelter. Agreements were made with these agencies that the letters would be distributed if the participants used the facilities. The Find List was also used with the county jail and if the participants entered the jail, the project was notified and the D-WCMHB Jail liaison facilitated the scheduling of an interview. The Find List was also distributed to the local morgue monthly to help locate deceased participants.

Measures

Psychometric data from the outcome measures of the present study are presented in Table 3. The proposed measurement model is presented in Figure 3. The dual disorder treatment was the experimental condition (coded as a two) and the standard hospital treatment was the control condition (coded as one). Intentions were scored one, the participant definitely would not use services to four, the participant definitely would use services. Service use was measured as the total number of services received by the participant. High score equalled more service use. The employment, alcohol use, drug use, legal, and psychiatric variables were all ASI composite scores in which a high score signified more severe or worse outcomes. However, in this study the direction of the scales were reversed so a higher score reflected better outcomes (e.g., less alcohol use, better psychiatric functioning, more employment, and residential

stability). The residential stability variable was a count of the total number of residence changes the participants reported from the address given at discharge to the address reported at the 6 month follow-up interview. Therefore, a high score reflects more residential instability indicating more changes in residences.

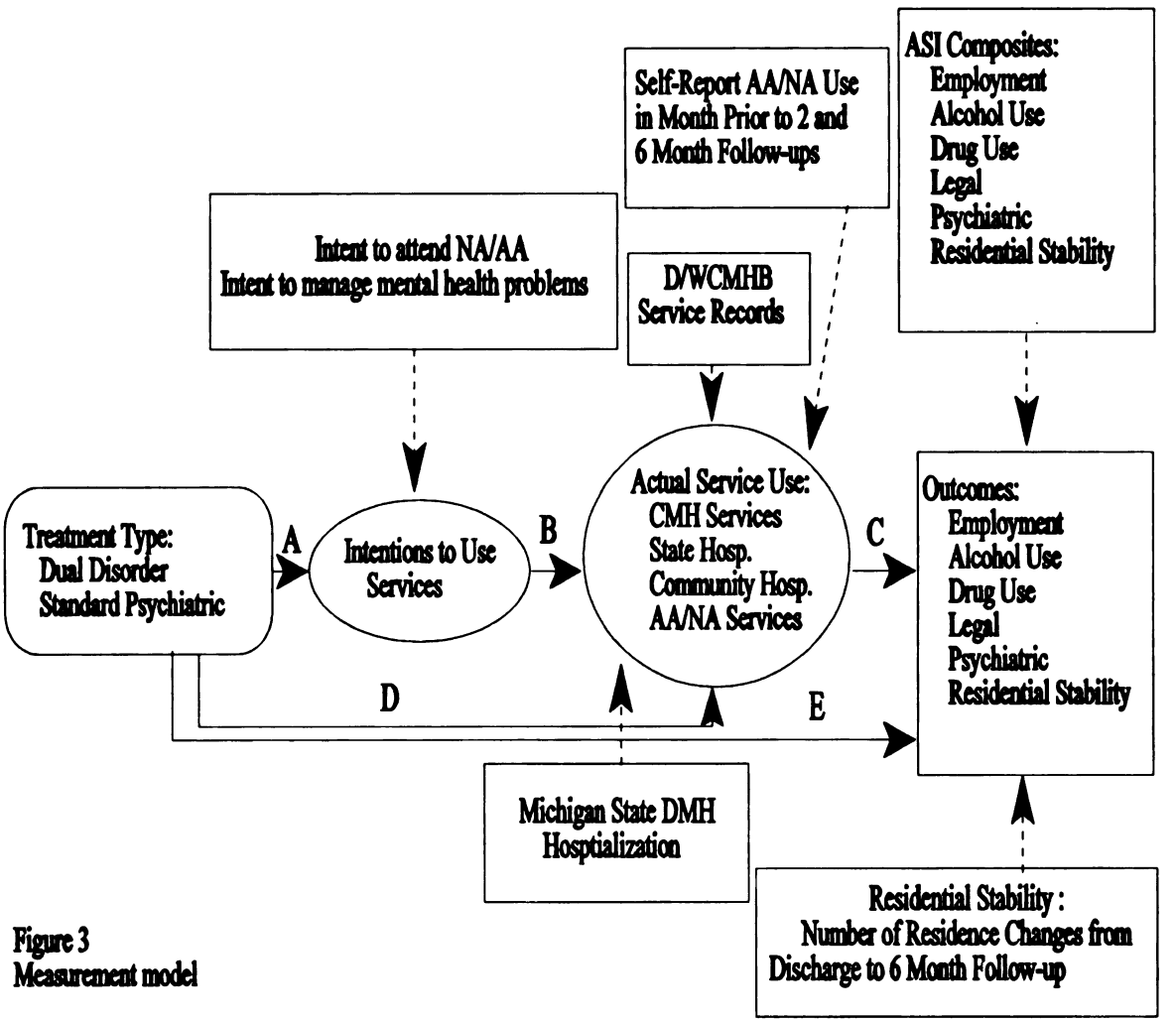

Figure 3
Measurement model

Table 3

Item-total correlations and coefficient alphas of outcome measures

Scale	Mean (SD)	No. of Items	n*	Item Total Correlation	Coefficient Alpha
ASI Employment Composite	.18(.23)	4	387	.30-.58	.64
ASI Alcohol Use Composite	.23(.19)	6	390	.47-.67	.81
ASI Drug Use Composite	.08(.06)	5	384	.18-.70	.70
ASI Legal Composite	.20(.18)	5	391	.11-.75	.70
ASI Psychiatric Composite	.33(.25)	11	391	.28-.79	.81

* Number of cases varied due to missing data.

Addiction Severity Index (ASI). The ASI (McLellan, Luborsky, Woody, & O'Brien, 1980) composite scores are used in this study to measure employment, alcohol use, drug use, legal problems, and psychiatric functioning, (see Figure 3) at the 6 month follow-up interview. This instrument (see Appendix A) is a clinical/research instrument that assesses the severity of seven unique problem areas commonly found in patients with alcohol and substance abuse. These six domains are Medical, Employment, Legal, Drug/Alcohol, Family/Social, and Psychiatric. For the first section of each area, participants are asked several objective and potentially verifiable questions about their problem symptoms. In the latter portion of the section, participants provide subjective information about the extent to which they have been bothered by these problems and the importance of treatment based. All composite scores were reversed so that high total scores reflect better outcomes.

The original ASI document showed that the ASI Alcohol and Drug Composite scores were significantly correlated with the number of overdoses, total years of regular use of alcohol/drugs, and the amount of money spent on alcohol/drugs per week. Evidence for concurrent validity has also been provided (Kosten, Rounsaville, & Kleber, 1983; LaPorte, McLellan, O'Brien, & Marshall, 1981). According to the authors, average concordance between trained interviewers is .89 and the interview has adequate test-retest reliability. Some caution is warranted when applying this measure to persons with dual diagnoses because this measure has not yet been validated with this population (Ridgely, Osher, & Talbott, 1987). Coefficent alphas from the current study are presented in Table 2.

Intentions to Use Services. Intentions to use services was measured at discharge and assessed by two items (see Appendix B) from the discharge interview that asked if the participants, (1) intended to use Alcoholics Anonymous (AA)/Narcotics Anonymous (NA), and (2) intended to manage their mental health needs. These items were scored 1 = definitely will not use services and 4 = definitely will use the services. High score reflects intentions to use services.

Aftercare Service Use. The mental health service utilization of participants from the D/WCMHB and the community hospitals as assessed through the computerized records of the D/WCMHB. In these records, information was recorded for every service event the participants received from agencies and community hospitals under the authority of the D/WCMHB. The types of services included in this data

included the following: screening, pre-intake, direct and indirect general outpatient, case management, partial hospitalization, day hospitalization, and residential treatment. The types of services that are lacking from this data include Verteran's Affairs services, emergency services, medical services, and services provided by friends, relatives, and clergy. This data was collected from the time of discharge to the time of the 6 month follow-up interview time point.

State hospital service utilization was obtained from the computerized records of the Michigan Department of Mental Health. Information was recorded for every state hospital admission that the participants received between discharge and the 6 month follow-up time point. Self-report AA/ NA service use was measured at 2 and 6 months using two questions from the 2 and 6 month follow-up interviews (see Appendix C) that asked the number of times the participants used AA or NA in the past month. In this study informal service use was AA/NA service use and formal service use included CMH community, state hospital, and community hospital services. For all service use variables a high score reflected more service use.

Chapter 3

Results

A series of hierarchical multiple regressions were conducted using several variations of the service use variables to attain meaningful path coefficients for the model as presented in Figure 2. First, this section provides a brief overview of the preliminary analyses completed. Second, the hierarchical multiple regressions that were used to obtain the standardized path coefficients for the final model are presented. Third, the significant direct and indirect pathways leading to the outcome variables at the 6 month follow-up time period are explained and discussed as well as other findings and the final path model is presented, trimmed of nonsignificant pathways. Since the original research hypothesis were one tailed, one tailed statistically significant coefficients are included in the model and discussion, however, Tables 4, 5, 6, and 7 include the beta weights and effects for all variables.

Overview of Preliminary Analyses

Hierarchical multiple regressions (see Cohen & Cohen, 1983) were conducted on several variations of the service use variables to attain meaningful path coefficients for the model. Since analyses from the larger study presented in Figure 1 had indicated a relationship between experimental condition and length of stay, length of stay was used as a covariate to guard against the confound between treatment type and length of

stay in all the following analyses. In the first analysis, dichotomous service variables for CMH outpatient services, state hospital admission, community hospital admission, and AA/NA services were used in the model to reflect the use and non-use of services. This analysis produced a few direct paths, but no indirect pathways that would explain the relationship between the different domains.

Second, a cluster analysis was conducted to distinguish the groups by both amount and type of services. This analysis produced fewer significant direct pathways than the first analysis and no indirect pathways. It was also noted that the clusters were similar to the original variables grouped by type of service use. A description of the clusters obtained in this analysis is described in Appendix D.

Third, continuous service variables (e.g. the total number of services received) were used to reflect the amount of services used. This analysis yielded the most conceptually meaningful and clear relationships between the variables.

Regressions of Intention to Use Service Variables

Research question one asked if PLDD who received specialized dual disorder inpatient treatment were more likely to indicate intentions to continue their treatment beyond discharge than PLDD who received standard psychiatric treatment. The two paths from assignment ($\beta = .18$, $p < .05$) and from length of stay (the covariate) ($\beta = .18$, $p < .05$) to intent to use AA/NA, were the only significant pathways addressing this question. This result showed that people who received the dual disorder treatment (experimental assignment) had more intentions to use AA/NA services than persons

receiving the standard psychiatric treatment. Table 5 shows the Beta weights for the intent to use AA/NA and intent to manage mental health needs by assignment and length of stay.

To investigate the possibility that the high intention group in the control group may serve as a proxy for some of the most important variables, the regression analysis were run with only the control group. However, this analysis did not contribute any pertinent information to the findings. There was no relationship between assignment and intentions. Intentions to use AA/NA in the control group was related to use of more community hospital services and intentions to manage mental health needs was related to more CMH service use. Furthermore, there was a negative relationship between CMH service use and residential stability.

Table 4
Path Coefficients of the Intentions to Use Services Variables

Predictor	Intent to Use AA/NA Services		Intent to Manage Mental Health Needs	
	b±SE	β	b±SE	β
Length of Stay (the covariate)	.0003±.0005	.18*	.009±.008	.05
Assignment	.29±.08	.18*	.02±.06	.01

* Indicates significance at P<.05.

Table 5
Path Coefficients of the Service Use Variables

Predictor	CMH Services		State Hospital Services		Community Hospital Services		AA/NA Services	
	b±SE	β	b±SE	β	b±SE	β	b±SE	β
Length of Stay (the covariate)	.47±.11	.22*	-.001±.001	-.01	-.002±.002	-.06	.01±.01	.02
Assignment	-3.85±7.30	-.03	-.08±.07	-.06	.01±.11	.01	1.03±.91	.06
Intent to Use AA/NA	1.07±4.42	.01	-.01±.04	-.01	-.11±.07	-.08	1.10±.55	.10*
Intent to Manage Mental Health Needs	-3.71±6.49	-.03	-.01±.06	-.00	-.02±.10	-.01	.98±.81	.06

* Indicates significance at P<.05.

Regressions of Service Use Variables

The second research question inquired if PLDD who have intentions to continue treatment after discharge actually use more formal and/or AA/NA services than people who do not have intentions. The significant pathway from intention to use AA/NA to actual AA/NA service use ($\beta = .10$, $p < .05$) answered this question. Persons who had intentions to use AA/NA services used more AA/NA services than persons who did not have such intentions.

The fourth research question, do PLDD who receive specialized dual disorder inpatient treatment use more formal and/or AA/NA services than PLDD who receive standard hospital treatment regardless of their intentions to use services, was not answered affirmatively. People who received the dual disorder treatment (experimental assignment) did not use significantly more services than the people who received the standard psychiatric treatment (control assignment). However, the pathway from length of stay (the covariate) to CMH services ($\beta = .22$, $p < .05$) was significant. Table 5 shows the Beta weights for all the service use variables predicted by intent to use AA/NA, intent to manage mental health needs, assignment, and length of stay.

Regressions of Outcome Variables

The third research question asked if PLDD who received formal and/or AA/NA services have better psychiatric, alcohol use, drug use, employment, legal, and residential stability outcomes than people who do not receive these services. A significant pathway was found from AA/NA service use to psychiatric functioning

($\beta = .19$, $p < .05$). Table 6 shows the Beta weights for the outcome variables predicted by CMH service use, state hospital service use, community hospital service use, AA/NA service use, assignment, and length of stay. No other significant positive relationships were found. However, other findings not stated apriori indicated that the reverse relationship may have occurred.

While not in the predicted direction, some results were seen from community hospital services to employment ($\beta = -.12$, $p < .05$), from state hospital services to psychiatric functioning ($\beta = -.12$, $p < .05$), and from CMH services to residential stability ($\beta = -.12$, $p < .05$). People who received AA/NA services had less severe psychiatric problems. Yet, those who received community hospital services and state hospital services may have had more employment and psychiatric problems, respectively. Participants who used CMH services may have had greater residential instability.

The fifth research question was to determine if PLDD who received specialized dual disorder treatment have more positive psychiatric, alcohol use, drug use, employment, legal, and residential stability outcomes than PLDD who received standard psychiatric treatment. Direct effects showed that people who received the dual disorder treatment (experimental assignment) did not have significantly different outcomes from those who received the standard treatment (control assignment). However, there was a significant pathway from length of stay to alcohol use ($\beta = .13$. $p < .05$). This result was independent of the treatment group because length of stay was

used as a covariate. The model with all the significant one tailed pathways and beta weights is presented in Figure 4.

Table 6
Path Coefficients of the Outcome Variables

Predictor	Employment		Alcohol Use		Drug Use		Legal		Psychiatric		Residential Stability	
	b±SE	β	b±SE	β	b±SE	β	b±SE	β	b±SE	β	b±SE	β
Length of Stay (the covariate)	-.003±.004	-.04	.008±.003	.13*	.007±.001	.03	.002±.003	.004	-.001±.004	-.16	-.01±.01	-.06
Assignment	.01±.03	.03	.03±.02	.08	-.004±.01	-.03	.03±.02	.09	.03±.03	.05	-.84±.50	-.08
CMH Services	-.003±.002	-.08	.001±.001	.04	-.004±.006	-.04	.001±.001	.06	.002±.002	.04	-.01±.003	-.12
State Hospital Services	-.01±.02	-.03	-.02±.01	-.07	-.01±.01	-.07	-.004±.01	-.02	.04±.02	-.12	.08±.38	.01
Community Hospital Services	-.02±.01	-.12	-.01±.01	-.04	.005±.004	.01	-.009±.01	-.01	-.01±.01	-.05	-.33±.24	-.06
AA/NA Services	.001±.001	.05	.008±.001	.04	.004±.005	.04	.001±.009	.07	.01±.001	.19*	-.05±.03	-.09

* Indicates Significance at $p < .05$.

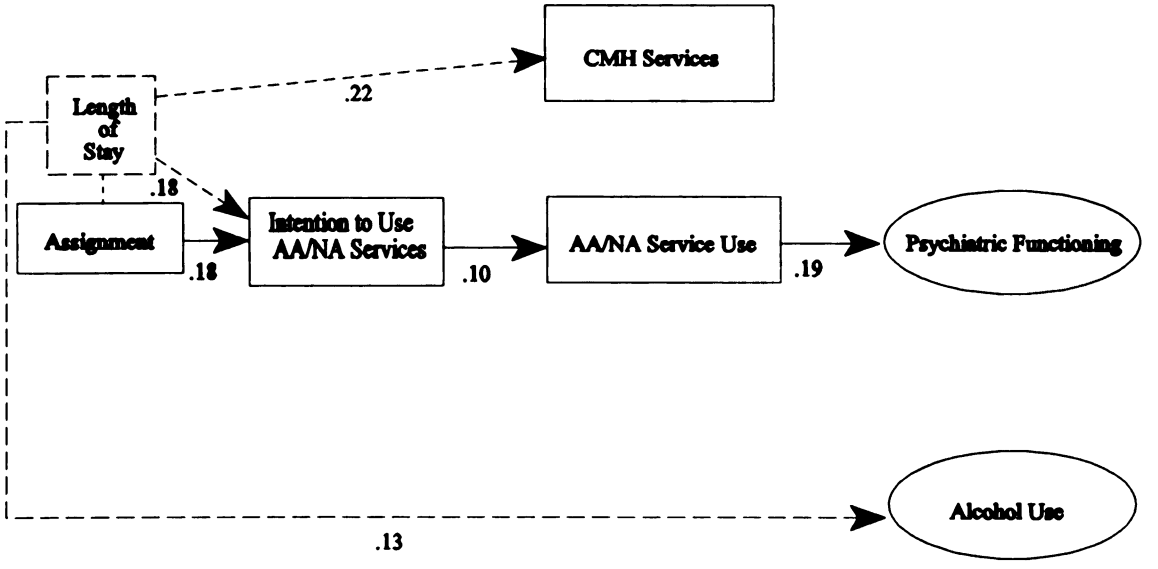

Figure 4
Significant Pathways
Key: Assignment is coded 1= control 2 = experimental. Intentions is coded: 1 = definitely won't use services, 4 = definitely will use services. All services are coded higher number reflects more services used. All outcomes are coded as higher number reflects better outcomes (e.g. , more employment , less alcohol use, better psychiatric functioning, and residential stability).

Indirect Paths and Total Effects

Indirect effects are calculated by multiplying the beta weights that fall along the indirect pathway. Table 7 summarizes all the indirect and total effects on the outcome variables. One indirect path was from assignment, to intention to use AA/NA ($\beta = .18$) to AA/NA service use ($\beta = .10$), to psychiatric functioning ($\beta = .19$). The indirect path resulted in a beta weight of .003. A similar path from length of stay, to intention to use AA/NA ($\beta = .18$) to AA/NA service use ($\beta = .10$), to psychiatric functioning ($\beta = .19$) produced the same beta weight .003. Only one other indirect effect was found from length of stay to CMH service use ($\beta = .22$), and to residential stability ($\beta = .12$), which produced a nonsignificant indirect effect of $\beta = .03$.

To determine the total effect, the direct effect is added to the sum of all the indirect effects. In this study the total effects were not as strong as the direct effects. The total effects for length of stay were -.13 for alcohol use, .16 for psychiatric functioning, and .03 for residential stability. There was a total effect of .003 for assignment via intentions to use AA/NA service use by actual AA/NA service use and a total effect of .02 for psychiatric functioning by the same route. Other total effects merely reflect the direct effects with no other additions. All total effects for the two tailed pathways are presented in Table 6.

Summary

In sum, results of this study showed that receiving dual disorder treatment was related to having more intentions to use AA/NA services and also related to AA/NA

services in the community. As a result these the use of AA/NA services was related to better psychiatric functioning. Other types of service use not only were not related to positive outcomes, but may have been associated with worse employment, residential stability, and psychiatric functioning outcomes for participants.

Table 7
Direct, Indirect, and Total Effects on Outcome Variables

Independent Variables	Outcome Variables			
	Employment	Alcohol Use	Psychiatric Functioning	Residential Stability
Length of Stay				
Direct Effect	--	.13	-.16	--
Indirect Effect	--			
Via CMH Services	--	--	--	-.03
Via Intention to Use AA/NA Services and AA/NA Service Use	--	--	.003	--
Total Effect	--	.13	-.16	-.03
Assignment				
Direct Effect	--	--	--	--
Indirect Effect	--	--		
Via Intention to Use AA/NA Services and AA/NA Service Use	--	--	.003	--
Total Effect	--	--	.003	--
Intention to Use AA/NA Services				
Direct Effect	--	--	--	--
Indirect Effect				
Via AA/NA Service Use	--	--	.02	--
Total Effect	--	--	.02	--

Independent Variables	Outcome Variables			
	Employment	Alcohol Use	Psychiatric Functioning	Residential Stability
CMH Service Use				
Direct Effect	--	--	--	-.12
Indirect Effect	--	--	--	--
Total Effect	--	--	--	-.12
State Hospital Service Use				
Direct Effect	--	--	-.12	--
Indirect Effect	--	--	--	--
Total Effect	--	--	-.12	--
Community Hospital Service Use				
Direct Effect	-.12	--	--	--
Indirect Effect	--	--	--	--
Total Effect	-.12	--	--	--
AA/NA Service Use				
Direct Effect	--	--	.19	--
Indirect Effect	--	--	--	--
Total Effect	--	--	.19	--

Note: -- Indicates that the path was either not tested or not significant using a two tailed test of significance.

Chapter 4

Discussion

The results of this study demonstrated that a theoretically based, multidimensional evaluation was useful in assessing outcomes of PLDD who were admitted to a specialized dual disorder program. This study was ground breaking in that it was able to assess the use of several different types of services upon discharge from a state psychiatric facility and relate this use to prior treatment and multiple outcomes. Although the start and end points of this research were somewhat arbitrary when compared to the entire treatment lifetime of the individuals, it was noteworthy that this study depicts a larger picture than previous studies, of service use and the impact on multiple outcomes.

This study did not conclude that receipt of the specialized dual disorder treatment directly related to more aftercare service use. However, this study did reveal that the use of a theoretical evaluation was important in identifying variables that mediated outcomes. If a theoretical evaluation had not been used, these variables may not have been considered in relation to outcomes, rather they may have been related only to the treatment program and aftercare services. Never-the-less, the variables of intention to use services and aftercare service use acted as mediators of 6 month outcomes for PLDD.

Evaluation of the Research Questions

The first research question asked if PLDD who received specialized dual disorder inpatient treatment were more likely to indicate intentions to continue their treatment beyond discharge than PLDD who received standard psychiatric treatment. The second question inquired if PLDD who had intentions to continue treatment after discharge actually used more formal and/or AA/NA services than people who did not have intentions. The results indicated that people in the specialized program did have intentions to use AA/NA services, but they did not have intentions to manage their mental health needs. Further, the current model supported the notion that intentions to use AA/NA was related to use of AA/NA services post discharge.

These results could reflect a sense of membership in AA/NA instilled in the participants by the formal treatment program. Since the participants attended AA/NA as part of the formal treatment program, this no doubt contributed to their intentions to continue this type of service and motivated them to continue this treatment once they were discharged from the hospital. Some literature suggests that intensity of involvement in AA is related to the degree of comfort participant felt in the group (Kurtz, Garvin, Hill, Pollio, 1995). Machell (1992) also found that the AA concept of "fellowship" or "client perceived belongingness" was a significant factor in successful psychological treatment outcome and good mental health. If dual disorder participants were comfortable in the AA group they attended in the hospital and or felt that they

belonged, this could have made attending meetings in the community easier. The transition from inpatient to outpatient AA treatment could have been facilitated by the sense of membership and comfort already established with the group.

Another explanation could be that the people on the dual disorder ward were more likely to be linked to AA/NA services in the community via discharge planning, since participants on the dual disorder ward were made aware of AA/NA services and instructed how to connect with a sponsor in their community. Therefore, seeking treatment was not as complicated or difficult for them.

In addition, direct contact with outside NA members while in inpatient treatment may have also facilitated this link with outside NA services, establishing contact with community NA members prior to discharge from the dual disorder ward. This information contrasts the literature which states that PLDD are noncompliant with treatment (Wolpe, Gorton, Serota, & Sanford, 1993) and resist available services (Howland, 1990), yet it supports work stating that PLDD need more flexible types of care (Amann & Harris, 1992). Perhaps the barriers to formal treatment (Howland, 1990; Ridgely, Goldman, Willenbring, 1990; Stefl & Properi, 1983) are too difficult for these people to overcome and self-help services, although not a perfect treatment match, are more easily accessed and assimilated by the participants than the formal services.

The third research question asked if PLDD who received formal and/or AA/NA services had better psychiatric, alcohol use, drug use, employment, legal, and

residential stability outcomes than people who did not receive these services. This study revealed that receiving AA/NA services was related to better psychiatric functioning. However, some findings seemed to indicate the following: receiving more CMH services was not related to residential stability, receiving more state hospital services was associated with worse psychiatric functioning, and receiving more community hospitalizations tended to produce more employment problems. These findings seem to contradict some of the AA literature that suggests people attending AA after treatment are more likely to be sober (Hoffman & Miller; 1992), but agree with literature stating that self-help attendance after more formal treatment (e.g. day hospital) predicted better outcomes (McKay, Alterman, Mc Lellan, Snider; 1994).

One possible explanation could suggest that the relationships in the current model are actually the reverse of what is stated (causality is in the opposite direction). Perhaps the individuals outcomes were the impetus for them to receive particular services. It could be that people suffering with worse psychiatric functioning sought out treatment at the state psychiatric hospitals because of their reduced functioning and that people with residential instability sought out CMH services for help with this problem. These alternative explanations need to be investigated further to determine if persons are receiving service only when they are forced to by their psychiatric, physical, or social conditions.

Several studies in the literature investigated service use (Drake et al. 1993; Solomon, 1986; Jerrell and Ridgely, 1995; Hoffman, et al., 1993; Clopton et al.,

1993), but literature investigating this link between service use and outcomes is lacking (Bond et al., 1991). This is unfortunate because service use is an important component of the overall treatment process. Service use can effectually extend treatment and become part of the overall treatment process. The current study suggests that it is important to evaluate the type of services participants' received post discharge and the related outcomes. As evidenced by this research, all services may not be related to the same type of outcomes and all types of outcomes may not be effected by service use.

The fourth and fifth research questions asked if PLDD who receive specialized treatment used more formal and/or AA/NA services than PLDD who received standard treatment regardless of their intentions to use services, and if PLDD attending the specialized treatment had more positive outcome regardless of intentions or service use. None of these relationships were confirmed when length of stay was controlled.

Support for the Theoretical Model

In this study the theoretical model suggested that PLDD who participated in a specialized dual disorder treatment would have more intentions to use services post discharge, would actually use more services, and therefore, would have better related outcomes than PLDD who received standard psychiatric treatment. This model was confirmed with regard to intention to use AA/NA services and actual use of AA/NA services and psychiatric outcome. Persons who received the dual disorder treatment had fewer intentions to use AA/NA services, used more AA/NA services, and showed better psychiatric functioning at 6 months. The length of stay, entered as a covariate,

showed a second related path which demonstrated that people who were in treatment for a shorter period had intentions to use AA/NA services. Prior studies instead of considering the entire treatment process, only considered one piece of the process (e.g., type of treatment, service use, or outcomes).

When length of stay was controlled another relationship was evident from length of stay to CMH services. This finding appeared to indicate that people who remained in the hospital longer used more CMH services after discharge. Although Case (1991) and Lyons and McGovern (1989) noted that PLDD leave treatment earlier than PLMI and PLDD have more hospitalizations post discharge, the current study suggests that retaining PLDD in treatment assisted them in connecting with community services. This finding is in agreement with some AA literature (Farris-Kurtz, 1981) which states that there is a relationship between time in treatment (residential community program) and participation in AA. Yet, unlike Fals-Stewart and Schafer (1992) this research did not find that length of stay had any impact on substance use.

Extension of Early Work

This project was one of the few and more recent studies (Blankertz & Cnaan, 1992; Drake, McLaughlin, Pepper, & Minkoff, 1991; Weiss & Collins, 1992; Weiss & Mirin, 1989) that evaluated the effectiveness of a specialized dual disorder treatment for PLDD. Furthermore, it used a theoretical model which helped to structure the evaluation around expected treatment effects and determine the mediating effects of intentions and service use on outcomes. Multiple measures of service use and

outcomes were used which was an improvement over earlier research (Bond et al., 1991; Case, 1991; Drake et al., 1993; Fal-Stewart & Shafer, 1992; Lyons & McGovern, 1989; Munsey et al., 1992; Reis & Ellingson, 1990; Solomon, 1986-87). A large sample was also an improvement over other studies and a great asset.

As a result of these improved methods and strategies, this study found that dual disorder treatment cultivates intentions to use services. Persons in the dual disorder treatment had more intentions to use AA/NA services and actually used more of these services than people receiving the standard psychiatric treatment. As stated above these findings contrast the literature which states that PLDD are noncompliant with treatment (Wolpe, Gorton, Serota, & Sanford, 1993) and resist available services (Howland, 1990), yet it supports work stating that PLDD need more flexible types of care (Amann & Harris, 1992). In general, if treatment can stimulate the participants and involve them, they may begin to think of their lives and treatment issues after discharge. Inpatient treatment could contribute to the AA sense of "fellowship" or "belongingness" (Machell, 1992), thus stimulating people to maintain this group involvement upon discharge.

Nonetheless, the measurement of multiple community services revealed that persons discharged from the hospital were not necessarily following-up with psychiatric treatment in the community. It is possible that these people received other services, but it is disconcerting that participants had not received some type of CMH services after a psychiatric hospitalization. Barriers to formal treatment (Ridgely, Goldman,

Willenbring, 1990; Howland, 1990; Stefl & Properi, 1983) could be keeping PLDD from accessing services. Perhaps services are too difficult for these people to locate and access, or perhaps these services do not meet the needs of PLDD so they do not feel comfortable in the psychiatric service network. Self-help services may be less intimidating and more easily accessed.

It was somewhat surprising that use of AA/NA services was related to psychiatric outcomes and yet not related to improved alcohol use or drug use outcomes. Although, some AA/NA studies have shown positive psychological effects most of the positive outcomes are seen in drug/alcohol use (Hoffman; 1983 and Thurstin, Alfano, & Nerviano; 1987). These results were also disheartening in that other findings seemed to suggest negative outcomes as a result of service use. If this is the case, it could be that after receiving the initial hospital service these people were still in a state of crisis and therefore, did not show positive outcomes. Perhaps assessing outcomes after a specified time lag would show more positive outcomes. More work is needed to evaluate the relationships between services and outcomes for this population.

It should be noted that the larger research project investigated this same path model controlling for prior psychiatric functioning as well as length of stay. These analyses, however, did not produce any results contrary to the ones reported and discussed in this study.

Policy Implications

One goal of this study was to use a theoretical evaluation to assess the service use and outcomes of PLDD. The model revealed that dual disorder treatment aided in linking people to aftercare services by inspiring intentions to use aftercare services. Since the intentions to use AA/NA services led to actual use of these services, PLDD in the dual disorder treatment seemed to have an advantage over other PLDD. In some way the dual disorder treatment encouraged continuity of services post discharge. This is important from a policy standpoint. If the goal of mental health policy is to encourage the continuity and consistency of care, this study has identified a component that could be important to maintaining that relationship. More research should investigate what components of the dual treatment helped to forge these intentions, so these components can be added to other treatment settings. Furthermore, research needs to look more at motivation and its connection to service use. Since intentions is a specific form of motivation, and since people need to be motivated in order to use self-help (Ditman et al., 1967) this connection is very important.

Since this study found only one positive outcome as a result of the services under investigation, other services such as medical and dual disorder aftercare services should be investigated and/or implemented to determine if these services would produce more positive outcomes. Dual disorder programs in the community are a logical next step in investigating this treatment process. Since PLDD come from integrated treatment and are discharged mainly to psychiatric or substance abuse treatment, this

practice may cut short possible treatment effects that were started in the inpatient treatment. By separating the treatments post-discharge, pressure is put back on the PLDD to manage their dual problems is separate treatment systems. Since it has already been noted that the combination of day hospital treatments and self-help has produced superior outcomes (McKay, et al., 1994), the investigation/implementation of post-discharge dual disorder treatments could reveal that the combination of inpatient stabilization and dual disorder treatment, with specialized dual disorder aftercare treatment is superior in creating more positive outcomes for PLDD. Policy makers should consider the entire treatment process and where treatment break-down occurs before cancelling specialized dual disorder programs due to lack of positive outcomes.

Limitations of the Current Study

Although this study improved upon the previous literature by including intentions to use services and actual service use in relation to several outcome measures, other limitations are apparent. The Addiction Severity Index outcome measure used in this study to measure psychiatric, employment, drug, alcohol and legal outcomes, asks participants about their activities for the prior 30 days. Outcomes in this study were assessed at 6 months post discharge (inquiring about the last 30 days). Since service use was measured from discharge to 6 months post discharge there is potentially a 30 day overlap of service use and outcome measurement. This measurement could have contributed to negative outcomes noted in relation to service use. Furthermore, the Addiction Severity Index measure is self report and may have

suffered from some form of self-report bias. For example, biochemical verification techniques (e.g. urine screens) were not used to double check the accuracy of self report drug/alcohol use. Although these other measures were not used, the Addiction Severity Index is well validated and has been shown to be related to independent indicators of the problem areas.

It should be made clear that the measurement method used could be a strong alternative explanation for the results of this study, since effects were found on self-report measures but not on any of the archival data utilized from the CMH, state, or community data sets.

Results of this study are only generalizable to an urban, predominantly lower socioeconomic status population. This study had more African American participants and fewer schizophrenics when compared to other dual diagnosis research (Kay, Kalathara, & Meiner, 1989; Lyons & McGovern, 1989).

Future Research

Future research needs to consider other types of aftercare services that could possibly impact outcomes. As stated above, other types of community services not specifically identified in this study such as aftercare dual disorder treatment, medical services, other support groups, and religious groups need consideration. It could be that dual disorder inpatient treatment is a positive treatment experience if it is followed by dual disorder treatment in the community. Since there is such a demand in the literature for specialized dual disorder inpatient programs (Brower, Blow, & Beresford,

1989; Drake et al., 1991; Minkoff, 1989; Mueser, Bellack & Blanchard, 1992; Osher & Kofoed, 1989; Ridgely, 1991; Sciacca, 1991; Weiss & Mirin, 1989), it seems a logical next step to continue these services in the community as follow-up treatment.

This study does not suggest that inpatient dual disorder treatment should be cancelled and dual disorder treatment entirely moved to the community. Rather a combination of impatient and outpatient treatment would seem to be the best combination. This continuum of treatment may be most beneficial because PLDD would have the structure and support of the impatient setting while they move out of their crisis state, and then maintain the necessary support and structure as needed on an outpatient basis to prevent further relapses. If inpatient dual disorder treatment is followed by dual disorder outpatient treatment in this respect participants would not be discharged into a setting where they bear more of the burden for managing and combining their treatment. Medical services, other support groups, and religious groups could also have some impact on outcomes and this impact needs to be clearly delineated in relation to the services and outcomes investigated in this study.

Outcomes should also be assessed at a specified time post service receipt in order to test for the delayed effects of services. For example, outcomes would be measured three months after a particular service was received. The current study did not identify exactly when the services were received in relation to the outcome measurement. If services were received directly prior to the outcome measurement,

poor outcomes would be expected. A more clearly defined time-line of service receipt and outcome measurement is needed.

The components of treatment that may impact service use need more clarification. This study found that intentions to use services related to actual service use, yet numerous other treatment components may have an impact on service use such as, attitudes toward substance use or drinking (Faulkner, Sandage, Maguire, 1988; Lind, 1988) or motivation (Miller, 1985). Also necessary, is an investigation into how the dual disorder treatment inspired intentions to use services. Finally, future research needs to examine more closely the relationship between service use and outcomes. This is a complex relationship that may be influenced by factors other than service use.

Conclusions

The results of the current study suggest that theoretical evaluations are helpful in identifying the process of treatment that occurs after an inpatient psychiatric treatment. PLDD receiving a specialized dual disorder treatment exhibited more intentions to use AA/NA services and used more of these services post-discharge than PLDD receiving standard psychiatric treatment. The effects of multiple types of services (both formal and informal) on outcomes are also important to consider. This study noted that intentions to use AA/NA services and actual use of AA/NA aftercare services contributed to positive outcomes. However, the relationships between formal service use and outcomes did not produce positive outcomes.

In conclusion, these findings may be useful in describing the treatment process and outcomes of PLDD. Future research should consider other treatment components besides intentions to use services, and other types of service use (e.g. medical and dual disorder) that could influence outcomes.

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APPENDIX A

APPENDIX A

Addiction Severity Index Measure

ASI

REMEMBER THAT AN "N" MEANS "NOT APPLICABLE TO THE PARTICIPANT" AND "X" MEANS THAT THE PARTICIPANT CANNOT UNDERSTAND OR WILL NOT ANSWER THE QUESTION. WHEN ASKING "CUMULATIVE" QUESTIONS, THE TIME FRAME OF THE LAST INTERVIEW WILL BE EITHER 2 MOS. FOR THE 1ST FOLLOW-UP OR 4 MOS. FOR ALL OTHER FOLLOW-UPS. TO HELP THE PARTICIPANT, PLEASE MENTION THIS TIME FRAME.

CE01) *Have you been in a controlled environment in the past 30 days?*

No (WRITE "N" FOR NEXT QUESTION)	1
Jail	2
Alcohol or Drug Treatment	3
Medical Treatment	4
Psychiatric Treatment	5
Other (SPECIFY _____)	6

CE02) *How many days?* _____ Days

Medical Status

First, we would like to start off asking you some questions about your health.

MS01) *Since your last interview, how many times have you been hospitalized for medical problems?* (INCLUDE OVERDOSES, DELIRIUM TREMENS (DT'S), NOT DETOXIFICATION) . . . . . ____ TIMES

MS04) *Are you taking any prescribed medication on a regular basis for a physical problem?*

Yes 1
No 0

MS06) *How many days have you experienced medical problems in the past 30 days?* . . . . . ____DAYS

For these questions I will ask you to use a scale to let me know how bothered you have been by Medical problems. I will ask you how bothered you have been by particular problems in several of the other sections of the interview. Also, I will ask you how important you feel treatment is for each area being discussed. The scale that we will be using for both types questions looks like this:

HAND PARTICIPANT CARD #1 - PATIENT RATING SCALE

I want you to know that although I ask how important treatment is to you, I cannot or will not refer you for any services, since the information that you tell me is confidential. We ask these questions because we want to know the types of services people are interested in and how important these services are to them.

FOR THESE NEXT TWO QUESTIONS USE CARD #1 - PATIENT RATING SCALE

MS07) *How troubled or bothered have you been by these medical problems in the past 30 days?*

Not at all (MS08, "Can I assume tx isn't needed"?) 1
Slightly 2
Moderately 3
Considerably 4
Extremely 5

MS08) *How important to you now is treatment for these medical problems?*

Not at all 1
Slightly 2
Moderately 3
Considerably 4
Extremely 5

Confidence Ratings: IS THE ABOVE INFORMATION SIGNIFICANTLY DISTORTED BY:

MS10) Patients's misrepresentation?
Yes (EXPLAIN) 1
No 0

MS11) Patient's inability to understand?
Yes (EXPLAIN) 1
No 0

Employment/Support Status

ES04) *(Have you ever driven a car?) Do you have a valid driver's license?*

Yes 1
No (MARK "NO" FOR NEXT QUESTION) 0

ES05) *Do you have an automobile available for use?*

Yes 1
No 0

What is your usual (or last 3 years) occupation?
(SPECIFY IN DETAIL_____) {"Homemaker" = 7 and "Unemployed" = 7}

ES07) (HOLLINGSHEAD CATEGORY - 1 TO 7 OR "N" FOR NEVER EMPLOYED) . . . ____
RATING

ES08) *Does someone contribute to your support in any way?*

Yes 1
No (MARK "N" FOR NEXT QUESTION) 0

ES09) *Does this constitute the majority of your support?*

Yes 1
No 0

ES11) *How many days were you paid for working in the past 30 days?*
(INCLUDE "UNDER THE TABLE WORK") . . . . . _____ DAYS

ES12) Do you work in exchange for other services, for instance your room and board?
No (IF NO THEN ES13 IS N) 0
Yes (ASK ES13) 1

ES13) *What is the value of these services?* . . . . . $____

How much money did you receive from the following sources in the past 30 days? (ROUND OFF TO NEAREST DOLLAR)

ES14) *Employment (Net Income)* . . . . . $____

ES15) *Unemployment Compensation* . . . . . $____

ES16) *Welfare* (e.g. GA, ADC or AFDC) . . . . . $____

ES17) *Social Security (SSI or SSDI), Pension, benefits* . . . . . $____

ES18) *Mate, family or friends* (Money for personal expenses) . . . . . $____

ES19) *Illegal* (Drug dealing, stealing, "fencing" stolen goods, or illicit "gambling") . . . . . $____

Adequacy of Financial Support

In the past two months, have you had enough money each month to pay for the following things? Please answer "Yes" or "No" for each one.

Have you had enough money for…?

Category	Yes	No	Not App.	
Food	1	0	N	X
Clothing	1	0	N	X
Rent and Utilities	1	0	N	X
Current medical needs - Medical Care and Medications	1	0	N	X
Getting to places that you have to go, such as work, appointments, or grocery shopping? (e.g. having money for bus fare or having gas money)	1	0	N	X
Traveling to visit friends and family	1	0	N	X
Social activities, that is the things you do for fun, such as eating in restaurants or seeing a movie	1	0	N	X
Being able to pay other people for the money that you owe them - (Financial obligations to others - personal debts)	1	0	N	X

ES23) *How many days have you experienced employment problems in the past 30 days?* . . . . . ___ Days

ES24) *How troubled or bothered have you been by these employment problems in the past 30 days?*

Not at all (ES25 "Can I assume counseling isn't needed"?)	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

ES25) *How important to you now is counseling for these employment problems?*

Not at all	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

Confidence Ratings: IS THE ABOVE INFORMATION SIGNIFICANTLY DISTORTED BY:

ES27) Patients's misrepresentation?

Yes (EXPLAIN)	1
No	0

ES28) Patient's inability to understand?

Yes (EXPLAIN)	1
No	0

Drug and Alcohol Use

These next questions ask you about your use of drugs and alcohol. Once again I would like to remind you that your answers will be held strictly confidential.

Substance	Street Name	# DR	# Days in past 30
Alcohol - Any use at all	Beer, Wine, Liquor, grain (Read These Categories)	01	
Alcohol - To Intoxication	" " (To feel the effects of alcohol)	02	
Heroin		03	
Methadone	Methadone, Dolophine, LAAM	04	
Other opiates/ analgesics	Pain Killers: Morphine, Dilaudid, Demerol, Percocet, Percodan, Dia-Quel, Darvon, Darvocet, Talwin, Codeine (Tylenol 2-4), Syrups (Robitussin, Actifed-C),	05	
Barbituates	Nembutal, Seconal, Tuinol, Amytal, Pentobarbital, Secobarbital, Phenobarbital, Fiorinol, Doriden, Placidyl	06	
Other sedative/ hypnotics/ tranquilizers	Benzodiazepines: Valium, Librium, Ativan, Serax, Tranxene, Dalmane, Halcyon, Xanax. Phenothiazines: (Antipsychotics): Thorazine, Stelazine, Haldol, Navane, Serentil, Melaril, Prolixin, Compazine. Other: Chloral Hydrate (Noctec), Tofranil, Quaaludes.	07	
Cocaine	Cocaine crystal, free-base cocaine or "crack," "rock cocaine"	08	
Amphet-amines (Uppers)	Monster, Crank, Benzedrine, Dexedrine, Ritalin, Preludin, Methamphetamine, Speed, Ice ("Crystal")	09	
Cannabis	Marijuana, Weed, Pot, Doobie, Hashish	10	
Hallucinogens	LSD (Acid), Mescaline, Mushrooms or "Shrooms" (Psilocybin), Peyote, Green, PCP (Phencyclidine), Angel Dust	11	
Inhalants	Nitrous Oxide, Amyl Nitrate (Whippets, Poppers), glue, solvents	12	
More than one substance/day (Incl. alcohol)		13	

Note: Dilantin (an anticonvulsant), Antabuse, Trexan, (for High Blood Pressure) Catapres & Hydracholorathizide, Ventolin Inhaler & Theodur (for Asthma), Desipramine, Prozac & Sinequan (Antidepressants), Tagamet & Zantac (Ulcer Meds), Lithium {bicarbonate} (Bipolar disorder)-- THESE DRUGS DO NOT GO IN TABLE, BUT PRESCRIPTIONS DO.

DR14) Which substance is the major problem?
(WHEN NOT CLEAR, ASK RESPONDENT - CIRCLE ONE NUMBER IN TABLE BELOW)

1.	Alcohol	6.	Barbituates	10.	Cannibis	16.	Polydrug (2 or more drugs)
3.	Heroin	7.	Other Sed/Hyp/Tranq	11.	Hallucinogens	00.	No Drug Problem
4.	Methadone	8.	Cocaine	12.	Inhalents	NOTES:	
5.	Other opiates/analgesics	9.	Amphetamines	15.	Alcohol/Drug		

DR17) *Which substance is your drug of choice, that is the drug that is your favorite?*
(#) . . . . . _____

DR18) *Would you consider yourself to be an alcoholic, a heavy or problem drinker, or having no problems with drinking alcohol?*
Alcoholic 3
Heavy/Problem Drinker 2
No problems w/alcohol 1

DR19) *Would you consider yourself to be an addict, someone with a drug problem (but not an addict), or someone with no problems with drugs?*
Addict 3
Drug problem 2
No problems w/drugs 1

DR19a) *Did you attend AA in the past 30 days*?
No (CODE DR19B,C AS "N";GO TO DR19D) 0
Yes 1
DR19b) If Yes, *How many times in last month*? . . . . . __ Times
DR19c) If Yes, *Do you consider yourself a member of AA*?
Yes 1
No 0
DR19d) *Did you attend NA in the past 30 days*?
No (CODE DR19E,F AS "N"; GO TO DR20) 0
Yes 1
DR19e) If Yes, *How many times in the last month* . . . . . __ Times
DR19f) If Yes, *Do you consider yourself a member of NA*?
Yes 1
No 0

Since your last interview, how many times have you...
DR20) *Had alcohol d.t.'s* (NOT SHAKES) . . . . . ____

DR21) *Overdosed on drugs* . . . . . ____

Since your last interview, how many times have you been treated for...

DR22) *Alcohol Abuse* (DO NOT INCLUDE AA) . . . . . ____

DR23) *Drug Abuse* (DO NOT INCLUDE NA) . . . . . ____

How many of these were for detox only? (IF RESPONSES ABOVE ARE "0", THEN PUT "N" HERE)

DR24) *Alcohol Abuse* . . . . . ____

DR25) *Drug Abuse* . . . . . ____

How much would you say you spent during the past 30 days on...
DR26) *Alcohol* . . . . . $___

DR27) *Drugs* (NOT PRESCRIPTIONS) . . . . . $___
DR28) *How many days have you been treated in an outpatient setting for alcohol or drugs in the past 30 days?* (INCLUDE NA, AA) . . . . . _____ DAYS

DR29) *How many days in the past 30 days have you experienced alcohol problems?* . . . . . _____ DAYS

DR30) *How many days in the past 30 days have you experienced drug problems?* _____ DAYS

HAND PARTICIPANT CARD #1 - PATIENT RATING SCALE

DR31) *How troubled or bothered have you been by these alcohol problems in the past 30 days?*

Not at all (DR33 "Can I assume alcol. tx isn't needed?")	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

DR32) *How troubled or bothered have you been by these drug problems in the past 30 days?*

Not at all (DR34 "Can I assume drug tx isn't needed?")	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

DR33) *How important to you now is treatment for these alcohol problems?*

Not at all	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

DR34) *How important to you now is treatment for these drug problems?*

Not at all	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

Confidence Ratings: IS THE ABOVE INFORMATION SIGNIFICANTLY DISTORTED BY:

DR37) Patients's misrepresentation?

Yes (EXPLAIN)	1
No	0

DR38) Patient's inability to understand?

Yes (EXPLAIN)	1
No	0

Legal Status

Since your last interview, have you ever been arrested and charged with any of the following:

#	Crime	Times	#	Crime	Times
LS03	*Shoplifting, vandalism*		*LS10*	*Arson*	
LS04	*Forgery*		*LS11*	*Robbery*	
LS05	*Contempt of court*		*LS12*	*Assault*	
LS06	*Prostitution*		LS13	*Weapons offense*	
LS07	*Parole/probation violations*		LS14	*Rape*	
LS08	*Burglary, larceny, B & E*		LS15	*Homicide, manslaughter*	
LS09	*Drug charges*		LS16	*Other*	

Have you been charged with the following since your last interview?

LS18) *Disorderly conduct, vagrancy, public intoxication* ___TIMES

LS19) *Driving while intoxicated* ___TIMES

LS20) *Major driving violations (reckless driving, speeding, no license)* ___TIMES

LS24) *Are you presently awaiting charges, trial or sentence?*

Yes 1
No (MARK "N" FOR NEXT QUESTION) 0

LS25) *What for?* (IF MULTIPLE CHARGES, USE MOST SEVERE) . . . . . _____

LS26) *How many days in the past 30 days were you detained or incarcerated?* . ___Days

LS27) *How many days in the past 30 days have you engaged in illegal activities for profit?* . . . . . ____Days

HAND PARTICIPANT CARD #1 - PATIENT RATING SCALE

LS28) *How serious do you feel your present legal problems are?* (EXCLUDE CIVIL PROBLEMS)

Not at all (LS29 "Can I assume counselling not needed?") 1
Slightly 2
Moderately 3
Considerably 4
Extremely 5

LS29) *How important to you now is counseling or referral for these legal problems?*

Not at all 1
Slightly 2
Moderately 3
Considerably 4
Extremely 5

Confidence Ratings: IS THE ABOVE INFORMATION SIGNIFICANTLY DISTORTED BY:

LS31) Patients's misrepresentation?

Yes (EXPLAIN)	1
No	0

LS32) Patient's inability to understand?

Yes (EXPLAIN)	1
No	0

Family/Social Relationships

FS01) *Are you now: married, widowed, divorced, separated, or have you never been married?*

Never married (including annulments)	1
Now married (including common-law marriages)	2
Separated	3
Divorced	4
Widowed	5

FS03) *Are you satisfied with this situation?*

Yes	2
Indifferent	1
No	0

Do you live with anyone who

FS08) *Has a current alcohol problem*

Yes	1
No	0

FS09) *Uses non-prescribed drugs?*

Yes	1
No	0

Have you had significant periods in which you have experienced serious problems getting along with?

Code: "1" for any relative "0" - no for all relatives "X" Uncertain "N" Never was relative		
NUMBER	RELATIVE	PAST 30 DAYS (PUT "N" IF DIDN'T HAVE CONTACT WITH PERSON)
FS19	Mother	
FS20	Father	
FS21	Brothers/Sisters	
FS22	Sexual partner/spouse	
FS23	Children	
FS24	Other significant family	
FS25	Close friends	
FS26	Neighbors	
FS27	Co-Workers (MUST BE EMPLOYED OR HAVE COWORKERS)	

How many days in the past 30 days have you had serious conflicts...

FS28) *With your family* ____

FS29) *With other people* (EXCLUDING FAMILY) ____

FS30) *How troubled or bothered have you been by these family problems in the past 30 days?*

Not at all (FS32 "Can I assume fam. counseling not needed?")	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

FS31) *How troubled or bothered have you been by these social problems in the past 30 days?*

Not at all (FS33 "Can I assume soc. prob couns. not needed?")	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

FS32) *How important to you now is treatment or counseling for these family problems?*

Not at all	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

FS33) *How important to you now is treatment or counseling for these social problems?*

Not at all	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

Confidence Ratings: IS THE ABOVE INFORMATION SIGNIFICANTLY DISTORTED BY:

FS35) Patients's misrepresentation?

Yes (EXPLAIN)	1
No	0

FS36) Patient's inability to understand?

Yes (EXPLAIN)	1
No	0

Psychiatric Status

PS01) *Since your last interview, how many times have you been treated for any psychological or emotional problems in a hospital?* (IF HOSPITALIZED, INCLUDE CURRENT STAY) _____TIMES

PS02) *Since your last interview, how many times have you been treated for any psychological or emotional problems as an outpatient or private patient?* . . . . . _____TIMES

Have you had a significant period, (that was not a direct result of drug/alcohol use), in which you have:

		1 = Yes 0 = No
NO	EMOTIONAL INCIDENT	IN THE PAST 30 DAYS
PS04	*Experienced serious depression*	
PS05	*Experienced serious anxiety or tension*	
PS06	*Experienced hallucinations*	
PS07	*Experienced trouble understanding, concentrating or remembering*	
PS08	*Experienced trouble controlling violent behavior (CAN BE DRUG-RELATED)*	
PS09	*Experienced serious thoughts of suicide (CAN BE DRUG-RELATED)* *If Yes, GIVE SAMI HELP CARD TO PARTICIPANT*	
PS10	*Attempted suicide (CAN BE DRUG-RELATED)*	
PS11	*Been prescribed medication for any psychological/emotional problem*	

PS12) *How many days in the past 30 days have you experienced these psychological or emotional problems?* . . . . . ____DAYS

HAND PARTICIPANT CARD #1 - PATIENT RATING SCALE

PS13) *How much have you been troubled or bothered by these psychological or emotional problems in the past 30?)*

Not at all (PS14 "Can I assume tx for psychol. not needed?")	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

PS14) *How important to you now is treatment for these psychological problems?*

Not at all	1
Slightly	2
Moderately	3
Considerably	4
Extremely	5

At the of the interview, is the patient: (JUDGE OVERT SYMPTOMS AND BEHAVIOR)

PS15) Obviously depressed/withdrawn
Yes 1
No 0

PS16) Obviously hostile
Yes 1
No 0

PS17) Obviously anxious/nervous
Yes 1
No 0

PS18) Having trouble with reality testing, thought disorders, paranoid thinking
Yes 1
No 0

PS19) Having trouble comprehending, concentrating, remembering
Yes 1
No 0

PS20) Having suicidal thoughts
Yes (GIVE CRISIS CARD) 1
No 0

Confidence Ratings: IS THE ABOVE INFORMATION SIGNIFICANTLY DISTORTED BY:

PS22) Patients's misrepresentation?
Yes (EXPLAIN) 1
No 0

PS23) Patient's inability to understand?
Yes (EXPLAIN) 1
No 0

APPENDIX B

APPENDIX B

Intentions to Use Services Measure

I would like you to think about what your life will be like after you leave the hospital. I am going to ask you about some different activities and I would like you to tell me if you think that you will be doing them after you leave this hospital.

2. *How likely do you think it is that you will be doing each of the following one year from now?*

#	Activity	Definitely Will	Probably Will	Probably Not	Definitely Not
*PL03	Going to NA/AA meetings	1	2	3	4
PL04	Staying sober	1	2	3	4
PL05	Staying off street drugs	1	2	3	4
PL06	Going to treatment (group/individual therapy)	1	2	3	4
PL07	Having a job	1	2	3	4
PL08	Having a nice place to live	1	2	3	4
PL09	Having enough money to live on	1	2	3	4
*PL10	Managing your mental health needs	1	2	3	4
PL11	Staying out of the hospital (psychiatric)	1	2	3	4
PL12	Getting along with your family	1	2	3	4
PL13	Having satisfying friendships	1	2	3	4
PL14	Getting a new group of friends	1	2	3	4
PL15	Going to school	1	2	3	4
PL16	Doing volunteer for your community or church	1	2	3	4

APPENDIX C

APPENDIX C

AA/NA Self Help Measure

DR19a) *Did you attend AA in the past 30 days*?

No.....0

Yes.....1

DR19b) If Yes, *How many times in last month*?__ Times

DR19d) *Did you attend NA in the past 30 days*?

No.....0

Yes.....1

DR19e) If Yes, *How many times in the last month*__ Times

APPENDIX D

APPENDIX D

Description of cluster solutions

Cluster 1:
Cluster one included persons who received a small amount of each service type.

Cluster 2:
Cluster two included persons who had some CMH services and some self-help services and the most state and community hospitalizations.

Cluster 3:
Cluster three included persons who received no state hospitalizations, some community hospitalizations, a good deal of CMH services, and the most self-help.

Cluster 4:
Cluster four included person who had no state hospitalizations, a small amount of community hospitalizations and self-help, and the most CMH services.