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A Study of Long-term Outcomes of Adolescents Discharged from a Local Residential Treatment Center: Factors Responsible for Treatment Gain Maintenance

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A Study of Long-term Outcomes of Adolescents Discharged from a Local Residential Treatment Center: Factors Responsible for Treatment Gain Maintenance

Abstract
Long-term outcomes of adolescents discharged from residential treatment centers reveal mixed results. Whereas some studies show that adolescents are able to demonstrate long-term success, other studies highlight the difficulty that adolescents have in maintaining their treatment gains. Although previous research has emphasized broad factors that increase the likelihood of long-term success (e.g. importance of the post-discharge, family involvement in treatment), significant ambiguity remains regarding the specific risk and protective factors that are responsible for long-term adolescent adjustment after RTC discharge. Thus, this study investigated specific risk and protective factors related to adolescent success derived from both RTC literature and research related to antisocial and delinquent youth. In particular, it was hypothesized that adolescents who were successful upon 6 month and 6 to 12 month follow-up intervals would be more likely to have accessed mental health services, used community resources, used prescribed medications, avoided substance use, associated with positive peers and avoided negative peer influence than adolescents who recidivated. Fisher’s exact test revealed that adolescents who were successful at both follow-up intervals were significantly more likely to associate with positive peers, avoid negative peers, avoid substance use, and use at least one community resource. Suggestions for how to improve adolescent long-term outcomes following RTC discharge given more knowledge regarding specific risk and protective factors are discussed.

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ABSTRACT

Long-term outcomes of adolescents discharged from residential treatment centers reveal mixed results. Whereas some studies show that adolescents are able to demonstrate long-term success, other studies highlight the difficulty that adolescents have in maintaining their treatment gains. Although previous research has emphasized broad factors that increase the likelihood of long-term success (e.g. importance of the post-discharge, family involvement in treatment), significant ambiguity remains regarding the specific risk and protective factors that are responsible for long-term adolescent adjustment after RTC discharge. Thus, this study investigated specific risk and protective factors related to adolescent success derived from both RTC literature and research related to antisocial and delinquent youth. In particular, it was hypothesized that adolescents who were successful upon 6 month and 6 to 12 month follow-up intervals would be more likely to have accessed mental health services, used community resources, used prescribed medications, avoided substance use, associated with positive peers and avoided negative peer influence than adolescents who recidivated. Fisher’s exact test revealed that adolescents who were successful at both follow-up intervals were significantly more likely to associate with positive peers, avoid negative peers, avoid substance use, and use at least one community resource. Suggestions for how to improve adolescent long-term outcomes following RTC discharge given more knowledge regarding specific risk and protective factors are discussed.

Keywords: Residential treatment, recidivism, long-term outcome, adolescent, risk factor, protective factor, negative peer, substance use
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A STUDY OF LONG-TERM OUTCOMES OF ADOLESCENTS DISCHARGED FROM A LOCAL RESIDENTIAL TREATMENT CENTER:

FACTORS RESPONSIBLE FOR TREATMENT GAIN MAINTENANCE

Residential treatment centers (RTCs) are typically defined as out-of-home facilities that provide mental health treatment to children and adolescents. Although these facilities are utilized by only 8% of children and adolescents receiving mental health services, about one fourth of child and adolescent mental health funding is spent on these facilities (Burns, Hoagwood, & Mrazek, 1999). Furthermore, RTCs receive 1.05 billion of the 3.5 billion dollars spent on adolescent mental health services each year (Bates 1997). A significant amount of research has focused on adolescent treatment gains while in residential treatment. Moreover, due to the considerable amount of money spent on adolescent RTCs, it is important to critique and assess the impact of residential treatment on adolescents’ long-term functioning.

One of the reasons why RTCs continue to be publicly and privately funded and continue to be a viable option for families and social service agencies is due to the significant improvements made in adolescent emotional and behavioral problems while in residential treatment. Wells (1991) stated that the majority of children and adolescents in RTCs improve while in treatment. Burns (1999) and authors asserted that between 60-80% of children and adolescents make treatment gains between admission and discharge. Thus, it seems that residential treatment is effective in addressing adolescent emotional and behavioral problems. However, Curry (1991) noted that despite adolescents’
improvement during the course of residential treatment, gains are frequently lost after the adolescents return to the community. Leichtman and Leichtman (2001) conducted a literature review and found that despite improvement while in treatment, adolescent treatment gains are often not maintained in the post-discharge environment and improvement in treatment does not predict adjustment after discharge. Thus, although adolescents may have successfully completed a residential program, the ability for them to maintain gains and apply skills in the post-discharge environment is questionable. Furthermore, some adolescent RTC outcome studies have shown that adolescents have not been able to maintain their treatment gains while other outcome studies have demonstrated long-term adolescent success following discharge.

Because many adolescents are unable to maintain their treatment gains in the post-discharge environment and RTCs are a costly means of treatment, research should investigate factors that increase the likelihood adolescents will maintain post-discharge success. The current study is designed to address this need. Prior to introducing the details of the current study, a literature review is provided regarding long-term outcomes for adolescents receiving treatment in RTCs. In addition, literature-based environmental factors affecting the long-term success of at-risk adolescents are presented.

Literature Review

Many authors who have reviewed the extant literature have found that successful outcomes at RTC discharge are not predictive of success in the post-discharge environment (Wells, 1991; Curry, 1991, 2004; Bates, 1997). However, other authors have found that adolescents have been able to maintain their treatment gains by emphasizing specific treatment components that increase the likelihood of success after discharge
(Larzelere et al., 2001; Blackman et al., 1991; Leichtman et al., 2001; Hooper et al., 2000). The following paragraphs summarize the literature examining long-term outcomes for adolescents completing residential treatment. They are organized according to whether authors generally report positive or negative long-term outcomes for adolescents post-discharge from RTCs.

**Positive Long-term Outcomes**

Allerhand, Weber, and Haug (1966) conducted a follow-up study of children and adolescents following discharge from residential treatment. The authors found that 71% of boys were functioning adequately upon 15-month follow-up intervals. Interestingly, treatment success was not predictive of adjustment at follow-up interval and successful post-discharge adjustment was associated with the amount of stress level in the post-discharge environment. The authors stated that the implementation of aftercare plans by the staff contributed the residents’ ability to maintain their treatment gains.

Gamboa and Garrett (1974) conducted a 6-month follow-up study of 116 children discharged from a short-term RTC. The treatment model not only focused on the child’s behavior but also focused on improving the child’s school, community, and home following discharge. Assessment was made after consultation with parents and teachers on 3 categories at follow-up: self, school, and family adjustment. The authors reported significant behavioral improvement in all 3 areas of assessment upon 6-month follow-up. However, teachers perceived significant behavioral regression in school adjustment from discharge to 6-month follow-up. The authors attributed the difference in opinions to different types of expectations among parents and teachers. Parents may be more invested in noticing behavioral change whereas teachers may expect more from their students.
Larzelere et al. (2001) investigated the outcomes of 18 youth ages 6 to 17 that were discharged from the Girls and Boys Town, a psychoeducational RTC focused on individual, group, family psychotherapy, and special education. Follow-up data were gathered six months after discharge using both subjective measures and the objective measure of the Child Behavior Checklist (CBCL). Upon phone interviews with the children’s caregivers, treatment gains were generally maintained in the post-discharge environment. The youth maintained their significant in-treatment improvements on the CBCL, 96% of children either were going to school or graduated and were working, and 79% reported doing the same or better in school than before treatment. Upon follow-up, the children were also less likely to engage in property destruction, theft, assault or runaways than before treatment. However, the youth were involved in substance use, fire setting, and truancy at the same rate as when admitted. The authors attributed the maintenance of the treatment gains to the children’s utilization of aftercare services. Eighty-three percent of youth received outpatient psychological treatment post-discharge.

Blackman, Eustace, and Chowdhury (1991) investigated outcomes of 34 adolescents from an Alberta, Canada RTC. Follow-up data were gathered between one and three years on three objective measures that assessed psychological, social, school, and family functioning. The authors found that the adolescents had maintained their treatment gains on all measures of functioning. Furthermore, significant improvements were made after discharge, indicating that adolescents continued to succeed even after treatment. The authors commented on the importance family involvement in treatment and continuous care after treatment while also acknowledging the positive influence of peer relationships developed while in treatment.
Leichtman, Leichtman, Luisa, Cornsweet, and Neese (2001) conducted an analysis on 123 successfully discharged adolescents who continued to maintain treatment gains after a 1-year follow-up. These adolescents exhibited statistically significant and clinically substantial improvement in both internalizing and externalizing symptoms as well as psychosocial functioning throughout residential treatment and at follow-up intervals. As opposed to other, less successful RTCs, this model was based on short-term treatment that heavily emphasized family involvement and discharge planning. Treatment focused on fostering conditions that allowed adolescents and their families to manage and continue working on problematic symptoms and family issues once discharged. Parents were expected to make a commitment to becoming actively involved in their child’s treatment and to participate in intensive family work. Specifically, adolescent discharge planning included focusing on coping strategies surrounding family issues and reintegration into the community. Particular emphasis was placed on utilizing community resources such as public schools, religious organizations, vocational-training programs, self-help groups, and educational and recreational programs. Thus, the focus of community reintegration, family problem-solving skills, and discharge planning may have led to a supportive environment for healthy adolescent adjustment after discharge.

Similar results were presented in a study by Hooper, Murphy, Devaney, Aseneth, and Hultman (2000). They investigated post-discharge outcomes of 111 emotionally and behaviorally disturbed adolescents after a 2-year follow-up. This RTC was based on a psychoeducational model that conceptualized treatment from an ecological and systemic perspective. Hooper and colleagues were interested in three domains of the successfully discharged adolescents upon follow-up: illegal activity, academic achievement, and level
of care (i.e. a more restrictive level of treatment was not needed). Interviews with case managers determined that 58% of adolescents maintained treatment gains in all three domains, whereas 90% maintained treatment gains when any two of the three domains were assessed. The authors attributed the success rate to successful transition services, community-based collaboration, and ongoing relationships formed with case managers and therapists. Thus, this RTC was successful in providing adolescents with an environment similar to that provided in the study by Leichtman and colleagues (2001) in addition to providing a continual support system of therapists after discharge.

Kaminsky (1998) investigated the outcomes of 30 adolescents, ages 17-21 discharged from the Kaplan House, a residential treatment center heavily focused on community discharge planning. Treatment consisted of individual psychotherapy, independent living skills workshops, and referrals to educational and vocational programs. Follow-up data were gathered by phone calls and letters to residents that were discharged between five and nine years ago. The authors defined a successful outcome as living independently and found that 83% of the residents met this criteria. However, attempts were made to contact 104 of the residents and thus the authors noted the limited generalizability of these results because it is unknown how the other 74 residents were functioning after discharge.

The long-term outcome studies provided above demonstrate that adolescents discharged from these RTCs were able to successfully maintain their treatment gains. Adolescent success was often attributed to factors including family involvement in treatment, discharge planning, utilization of aftercare services and positive relationships formed with clinical staff. Despite the long-term success of these adolescents discharged
from these RTCs, other adolescents have had significant difficulty succeeding in the post-discharge environment. The following section provides long-term outcome research on adolescents who demonstrated poor long-term outcomes after RTC discharge.

**Negative Long-term Outcomes**

Kirby (1972) conducted a family follow-up questionnaire sent to the 103 parents of boys ages 6-12 upon completion of a research treatment program in the Eastern United States. The RTC was based on the philosophy of re-educating emotionally disturbed children who have had disruptive behavior in the classroom and at home and who are achieving poorly academically. Upon 6-month follow-up, two-thirds of the boys continued to have academic problems. Authors attributed the low success rate to the fact that many of the children were discharged to a problematic home environment. Furthermore, the authors suggested that the recently implemented aftercare program could help maintain the gains made in residential treatment.

Lewis, Lewis, Shanok, Klatskin, and Osborne (1980 in Curry, 1991) investigated follow-up outcomes of children and adolescents receiving intensive milieu therapy. The authors coded negative outcomes when at least one of three criteria was met: three or more out-of-home placements after discharge, severe psychiatric or legal problems, or psychiatric hospitalization. The authors found that only 33% of children had successful outcomes at follow-up and these children tended to exhibit less psychotic symptomatology, and less parental psychopathology. Most of the 43 children improved while in treatment, but this success was not predictive of post-discharge adjustment.

Burks (1995) investigated a 6 month follow-up of the outcomes of children who were discharged from the Edgewood’s Children’s Center. Phone interviews were
conducted with the children’s’ custodians to determine whether the child had a positive or negative outcome. In general, a positive outcome was defined as remaining in the placement that the child was discharged to and custodian report that the child did not have trouble with peers or authority figures. Negative outcome was defined as the child’s placement being insufficient to meet the child’s problems or if the child had significant interpersonal or social difficulty. Of the 36 phone interviews conducted, 18 children were judged to have positive outcomes, whereas 19 children were seen to have negative outcomes. Furthermore, the authors conducted analyses to determine the variables responsible for positive or negative outcome, and discovered that the type of placement after discharge was related to outcome. A child was significantly more likely to have a successful outcome if he or she was discharged to their family of origin or a foster family rather than a juvenile correctional facility or another RTC. Interestingly, parental involvement was not related to successful outcomes but authors hypothesized that more successful outcomes could have been achieved if some of the parents were more engaged in treatment.

Valliant (1993) conducted a follow-up study of 10 males between the ages of 11 and 16 from a cognitive-behavioral RTC in Ontario, Canada. While in treatment, the adolescents demonstrated significant increase in self-esteem and significant decrease in verbal hostility on standardized measures. However, one-year follow-up interviews with the adolescents’ social workers indicated that 80% of the adolescents had committed offenses and were subsequently placed in correctional centers. The author concluded that one of the reasons why the majority of the adolescents were unable to generalize their
treatment gains after discharge was due to the lack of community resources available to assist them in their transition.

Asarnow, Aoki, and Elson (1996) investigated the outcomes of 51 male youths discharged to their families after successful completion of a Los Angeles RTC. The program included individual, family, and group therapy, emphasizing self-control and social skills training. After follow-up interviews with primary caregivers, Asarnow and colleagues found that the risk of replacement into another RTC after the 1st, 2nd, and 3rd post-discharge years was 32%, 53%, and 59% respectively. The majority (86%) were re-placed in RTCs due to conduct problems, which included assaultive behavior, truancy, and property destruction. The authors suggested that an underutilization of aftercare services by families could have contributed to problematic home environments and consequently resulted in an increased need for a more structured setting. Furthermore, Asarnow and colleagues remarked that home placement monitoring was usually not provided after discharge, minimizing the opportunity to detect reoccurring problematic behaviors in the child or family structure. Thus, despite efforts to provide the family with aftercare services, many families failed to access these outlets. The underutilization of services in combination with the lack of social service support was unable to provide the post-discharge environment necessary for successful adolescent adjustment.

Comparable results were found by Greenbaum and Dedrick (1996) in their longitudinal study examining children and adolescents who were successfully discharged in 27 residential treatment facilities. The authors found that after a 7-year follow-up, 75% of 184 children assessed were either readmitted to residential treatment (45.1%) or incarcerated in a correctional setting (29.9%). Principal reasons for re-admittance were
internalizing disorders, poor academic achievement, and family difficulties. Similar to Asarnow and colleagues (1996), Greenbaum and Dedrick (1996) highlighted the need for residential treatment centers to become more comprehensive and integrated in providing adolescents and families with adequate services during residential treatment and after discharge. Furthermore, these RTCs failed to address the persistence and interrelatedness of child problems over extended periods of time (Greenbaum & Dedrick, 1996). Thus, despite successful RTC completion, adolescents were unable to successfully adapt in their home environment.

The outcome studies presented above illustrate that many adolescents discharged from these RTCs were unable to maintain their treatment gains in the post-discharge environment. These adolescents were successfully discharged and exhibited decreases in emotional and behavioral problems while in treatment, only to lose these gains upon follow-up assessment. Thus, gains made by youth at RTCs were not generalized to adolescents’ lives in the “real world” (Kirby, 1972; Burks, 1995; Valliant, 1993; Asarnow et al., 1996). These negative outcomes highlight the controversy of justifying residential treatment; if adolescents only make improvements while in treatment, only to lose their gains upon long-term follow-up, could other less expensive and potentially less intensive forms of treatment be a better option?

In summary, an examination of the long-term outcomes of adolescents following residential treatment reveal mixed results. While some studies demonstrated that adolescents were able to successfully adapt in their post-discharge environments, other studies demonstrated that adolescents were unable to maintain their treatment gains following discharge. Adolescents who were able to maintain their treatment gains often
had their families involved in treatment and utilized a variety of post-discharge resources that were available to them. In contrast, adolescents who were unable to maintain their treatment gains were often discharged to unstable home environments, were unable to utilize community resources, did not have their families involved in treatment, and did not engage post-discharge therapeutic supports. The considerable amount of variability in adolescent long-term outcomes highlights the need to gain more clarity on the factors that increase post-discharge success.

**Factors for At-Risk Youth Completing Residential Treatment**

Taken from the literature described previously, one of the most prominent factors associated with success for adolescents who have completed residential treatment, is whether adolescents have been able to access post-discharge resources. According to a study by Pfeifer and Strzelecki (1990), engagement in post-discharge services, as well as characteristics of the post-discharge environment, were predictive of positive treatment outcomes. The authors examined four studies over a fifteen year period and found that the availability of outpatient psychotherapy, availability of foster home placements, and low level of psychosocial stress in the post-discharge environment were strongly associated with maintenance of treatment gains.

Leichtman and Leichtman (2001) added that often RTC treatment philosophies primarily focus on problems within the facility and little attention is paid to helping adolescents transition back to their community. Furthermore, the authors stated that many adolescents who successfully complete treatment return to families who exhibit psychopathology or problematic home environments. Thus, the authors emphasize the importance of continuing to provide adolescents with treatment after discharge.
Leichtman and Leichtman (2001) stated that one of the greatest limitations of RTCs is that little emphasis has been placed on helping adolescents transition back into the community. The authors further concluded that RTCs as a whole are too focused on adolescents’ functioning during treatment and RTCs need to emphasize helping adolescents successfully return to the community after discharge.

These problems addressed by Leichtman and Leichtman (2001) are highlighted in RTC long-term outcome studies. Asarnow and colleagues (1996) attributed the poor maintenance of adolescent treatment gains to the fact that adolescents and their families were unable to utilize the aftercare treatment opportunities. The authors hypothesized that poor coordination of aftercare services contributed to families not accessing these outlets. Similarly, Valliant (1993) stated that one of the inherent difficulties when adolescents are discharged from RTCs is the lack of community resources that are available to them. Furthermore, in their analysis of outcomes of 27 RTCs, Greenbaum and Dedrick (1996) determined that RTCs need to become considerably more comprehensive and integrated in providing aftercare services to children and their families. Leichtman and Leichtman (2001) analyzed outcomes of adolescents whose treatment placed a heavy emphasis on discharge planning and reintegration into the community. The authors attributed the long-term success of these adolescents to the community resources that were utilized after treatment. These studies highlight the importance of not only providing adolescents and their families with therapeutic and community services that are accessible but also making considerable efforts to ensure that families are utilizing the services provided to them. Despite this research deeming aftercare service as vital to help adolescents succeed, further research is needed on the specific aspects and types of aftercare resources that are
helpful in order to best understand how adolescents in RTCs can maintain their treatment
gains (Pfeifer & Whittaker, 1994). The present study is an attempt to gain more clarity on
specific factors that increase the likelihood that adolescents will be successful in the post-
discharge environment. These specific factors include post-discharge influences as well
as general risk factors affecting adolescents as described below.

General Risk Factors Among At-Risk Adolescents

The previous literature review indicated that discharged adolescents who did not
utilize mental health or community resources often had difficulty with long-term
adjustment. In addition, at-risk youth’s involvement with negative peers and involvement
in substance use has a detrimental impact on successful adjustment and prosocial
behavior. An examination of the relationship between these risk factors (i.e. negative peer
association and substance use) and delinquent behavior will provide understanding
regarding the importance of these environmental factors in successful adolescent
adjustment.

Negative Peer Association

Granic and Patterson (2006) focused on the influence of negative peer association
on continual deviancy-related behavior. These authors stated that peers who often
experience multiple forms of rejection in their lives, such as peer rejection, family
rejection, and academic failure, are more likely to engage in deviant-related
conversations topics and consequently deviant behaviors with antisocial peers. The
authors hypothesized that peers who have experienced multiple forms of rejection can
easily relate to deviancy-laden conversation topics and develop common interests with
antisocial peers. At-risk adolescents such as those discharged from residential treatment,
may often seek out peers with whom they will feel accepted. Consequently, at-risk adolescents often associate with antisocial peers and engage in deviant behavior (e.g. theft, arson, abuse).

Blumstein, Cohen, Roth, and Visher (1986) stated that association with delinquent peers is a significant risk factor for concurrent and subsequent antisocial behavior (in Stoolmiller, 1994). More specifically, Dishion, Patterson, Stoolmiller, and Skinner (1991) examined the relationship between middle school boys’ antisocial behavior and their subsequent antisocial behavior. Results indicated that boys who were involved with antisocial peers at age 10 continued to have incidences of antisocial behavior and antisocial peer involvement at age 12. Similarly, Stoolmiller (1994) examined changes in antisocial behavior and delinquent peer association from Grade 4 to Grade 8 and found that delinquent peer association in Grade 4 was an important determinant for antisocial behavior in adolescence. Stoolmiller (1994), echoing Granic and Patterson (2006), highlighted the reinforcing effects of aggressive peer groups in the maintenance of deviancy behavior.

Alcohol and Drug Use

Stoolmiller and Blechman (2005) studied the effects of substance use on adolescent recidivism. The authors obtained records from 505 juvenile offenders and found that substance use robustly predicted future recidivism. Specifically, compared to youths who reportedly do not use substances, adolescents who “often” use drugs and alcohol are more than two times more likely to recidivate. Moreover, Hawkins, Catalano, and Miller (1992) examined the long-term consequences of adolescent alcohol and drug use and found that drug and alcohol abuse contributes to a high societal cost in
educational failure, mental health treatment, drug and alcohol treatment, and juvenile crime. More specifically, adolescent drug abuse is correlated with delinquency, teenage pregnancy, school failure, and violent crimes. For instance, Kingery, McCoy-Simandle, & Clayton (1997) examined the relationship between drug use and violent behavior (e.g. criminal activity, gang fights, physical aggression) among 2066 ninth-grade students from Kentucky public school districts. Kingery and colleagues found that “more violent youth” (i.e. those youth who committed more than 4 violent acts) were more than 10 times as likely to have used cocaine in their lifetime than “less violent youth” (i.e. those youth who committed less than 4 violent acts). Moreover, in 1994, approximately 24% of youth in state institutions reported that they committed violent offenses while under the influence of alcohol and other drugs (White, 1997). In addition, over two-thirds of the incidents of physically assaultive crime among incarcerated adolescents involved acute drug intoxication (Tinklenberg, J.R., Murphy, P. & Murphy, P.L. et al., 1981 in White, 1997). Therefore, adolescents who associate with negative peer groups and who engage in drug and alcohol use are at substantial risk for subsequent delinquent and antisocial behavior. Thus, the current study, described below, examines the specific factors (taken from RTC literature and literature on delinquent youth) that increase the likelihood adolescents will be successful in the post-discharge environment.

Current Study

The current study addresses the factors from the RTC literature associated with long-term adjustment as well as two prevalent risk factors associated with delinquent behavior among at-risk adolescents (i.e. negative peer association, alcohol and drug use). Although RTC research has pointed to broad factors (e.g. importance of post-discharge
environment, family involvement in treatment) that may increase the likelihood of success after RTC discharge, significant ambiguity still remains regarding the specific risk and protective factors that are responsible for long-term adolescent adjustment. For instance, many authors have underscored the importance of the post-discharge environment; however, few empirical studies have been conducted regarding specific post-discharge environmental resources associated with maintaining long-term change. Furthermore, research concerning at-risk youth has shown that association with negative peers and substance use are risk factors for delinquent behavior. More clarity is now needed regarding whether these risk factors are relevant to adolescent residential treatment populations. Finally, RTCs are among the most costly of treatment venues for at-risk youth. As such, it is critically important to ascertain what factors can maximize youth success after treatment in an RTC. Once specific factors are identified, knowledge regarding relevant risk and protective factors can begin to be disseminated.

The current study addresses these gaps in the literature by 1) examining long-term outcomes for adolescents discharged from a local RTC, 2) investigating specific factors related to success in the post-discharge environment, and 3) disseminating results locally and further as appropriate. Given these aims, the following section provides specific research questions and methodology used to carry them out.
METHODS

The following Methods sections provide information pertaining to 1) operational
definitions, 2) research questions, 3) study design and procedure, 4) participants, and 5)
statistical analyses.

Operational Definitions

The current research is the result of collaboration between a university and a
residential treatment center, both located in the Northwest United States. Data were made
available to the university researcher that match the type of data required to further
research about both long term outcomes for adolescents completing residential treatment
and environmental factors influencing those outcomes. Prior to stating the specific
research questions guiding this study, operational definitions for “long term outcome”
and “factors influencing long term outcome” are described.

Long term outcomes in this study were defined as recidivism rates at two distinct
intervals following an adolescent’s discharge from the RTC: 0 to 6 months (i.e. Time
Interval 1) and 6 to 12 months (i.e. Time Interval 2). Recidivism rates between discharge
and 12-month follow-up were also examined, and will be referred to in this study as the
“entire 12 month follow-up period.” Factors influencing long term outcome in this study
were: 1) whether mental health services were accessed by the adolescent, 2) whether the
adolescent participated in community resources 3) whether the adolescent associated with
positive peer groups, 4) whether the adolescent avoided negative peer groups, 5) whether
the adolescent avoided substance use, and 6) whether the adolescent was regularly taking
prescribed medications related to mood, thinking, and behavior after release from the RTC. Use of prescribed medications, although not described previously in the literature review, was examined in this study because it was an important variable of interest for the specific RTC. In addition, positive peer group association was analyzed in this study in order to examine whether associating with positive peers would be a protective factor against recidivism.

Research Questions

Given these operational definitions, the following research questions guided the current study:

1) What are the recidivism rates of these adolescents for Time Interval 1 and Time Interval 2 at this local RTC?

2) What changes are noted in recidivism between Time Interval 1 and Time Interval 2 for these adolescents?

3) Does accessing mental health services, involvement in community resources, associating with positive peers, avoiding negative peers, avoiding substance use, and/or use of prescribed psychotropic medications influence recidivism rates of adolescents discharged from a local residential treatment center?

4) Does a difference exist between adolescents who recidivated and those who did not on the following factors: 1) use of mental health services, 2) use of community resources, 3) avoidance of negative peers, 4) association with positive peers, 4) absence of substance use, and 5) use of prescribed psychotropic medications?
Study Design and Procedure

This study is quantitative with a comparative design (i.e. case control design). Two groups of discharged adolescents from a residential treatment facility in the Northwest region of the United States ("successful" and "unsuccessful") were compared on variables of use of mental health services, use of substances, peer group association, involvement in community activities, and use of psychiatric medications at follow-up intervals of 6 months and 6-12 months post discharge. In addition, this study examined the proportion of adolescents who are "successful" in the post-discharge environment upon follow-up intervals of 0-6 months, and 6-12 months.

Adolescents discharged from the local RTC of interest in this study were interviewed by RTC personnel as part of the RTC’s regular post-discharge follow up. Permission was granted by the local RTC’s program director and the collaborating researcher’s University Institutional Review Board to carry out this archival research. Data were de-identified and participants were anonymous to the researchers.

Measure

The “Treatment Effectiveness Interview Form” (TEIF) was the measure used to collect original post-discharge information for adolescents after leaving the local RTC. This measure was created by the local RTC to capture post-discharge information. The TEIF was administered to adolescents at 3, 6 and 12-months post-discharge from the RTC. Only 6 and 12-month follow-up data were used for this study, as the research on RTC long-term outcomes typically begins 6-months post-discharge. For the purposes of this study, only particular items on the TEIF (i.e. recidivism status, use of mental health
services, peer group association, use of prescribed medications, use of community resources) were coded to facilitate answering the primary research questions. The items from the TEIF used for this study are included in Table 1.

Table 1

*Questions Regarding Recidivism on the TEIF*

**Successful Living Environment**
1. Is the client refusing placement and/or on runaway status?
2. Is the consumer living in a more restrictive setting?

**Absence of Legal Problems**
3. Has the consumer been incarcerated?
4. Has the consumer’s illegal behaviors, including substance related, resulted in police involvement?
5. Has the consumer been arrested and/or charged with illegal activity including substance related?
6. Is the consumer on probation for new charges OR in mandated custody of SCF?

**Coding of Data**

Two types of broad categories of data were coded: 1) data regarding adolescent recidivism and 2) data regarding the hypothesized environmental variables associated with recidivism.

*Coding of recidivism data.* Recidivism was coded conservatively in this study, as it was decided that this coding method would provide the most informative data regarding adolescent risk and protective factors that contribute to long-term adolescent
adjustment. In this study, the term recidivism was conceptualized as an adolescent not being “successful” in the post-discharge environment. “Successful” post-discharge adjustment was defined by the following criteria: 1) the adolescent met criteria for “Successful Living Environment” according to the TEIF and 2) the adolescent met criteria for “Absence of Legal Problems” according to the TEIF. Thus, “success” was defined in this study as the absence of recidivism in these “Living” and “Legal” domains.

Two questions from the “Successful Living Environment” domain of the TEIF were used for analysis (See Table 1). Answers to these questions were coded “1” for success and “0” for failure. In order for the adolescent to be considered successful in this domain, the response must have been “no” on both these items. When this was the case, the data for this adolescent were coded “1” for success on a new variable called “Overall Successful Living Environment.” If the adolescent was determined by the original interviewer (as recorded on the TEIF) to have refused placement, been on runaway status, or placed in a more restrictive living environment, his data on this new variable would be coded “0” indicating failure or recidivism.

Four questions from the “Absence of Legal Problems” domain of the TEIF were used for analysis (See Table 1). Answers to these questions were coded “1” for success and “0” for failure. In order for an adolescent to be considered successful in this domain, the response must have been “no” on all four items. When this was the case, the data for this adolescent were coded “1” for success on a new variable called “Overall Absence of Legal Problems.” If an answer of “yes” to any of the “Absence of Legal Problems” was coded by the original interviewer (as recorded on the TEIF), his data on this new variable was “0” indicating failure or recidivism.
Finally, a new variable called “Overall Success” was created to describe whether adolescents had met criteria for “successful” post-discharge adjustment. If an adolescent showed evidence of success in both the “Overall Successful Living Environment” and “Overall Absence of Legal Problems,” the data for this adolescent were coded “1” for success on the “Overall Success” variable. If an adolescent demonstrated recidivism on the “Overall Successful Living Environment” and/or “Overall Absence of Legal Problems,” his data were coded as “0” indicating failure of recidivism. On Tables 3 and 4 (see Results section), “yes” is synonymous with success and “no” is synonymous with recidivism on the “Overall Success” variable.

**Coding of environmental variables.** Six environmental variables (i.e. absence of substance use, use of mental health services, use of community resources, association with positive peers, avoidance of negative peers, use of prescribed psychotropic medications) were hypothesized to be significantly associated with the post-discharge variable “Overall Success.” For each environmental variable, an answer of “yes” indicated the expected outcome (i.e. supporting the hypothesis). For instance, an answer of “yes” to the substance use question: “No illicit use of alcohol or prescription/non-prescription drugs, including tobacco” indicated that the adolescent successfully avoided substances. In addition, an answer of “yes” to the positive peer association question: “Is the consumer associating with positive peers,” indicated that the adolescent demonstrated positive peer relationships. Furthermore, if an adolescent used at least one community resource, he was placed in the “using community resources category.” For a complete list of the environmental variable questions from the TEIF, see Table 2.
Table 2

*Items Regarding Post-discharge Environmental Variables from the TEIF*

<table>
<thead>
<tr>
<th>Absence of Substance Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>No illicit use of alcohol or prescription/non-prescription drugs, including tobacco</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use of Mental Health Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Where indicated by need, is the consumer actively involved in Mental Health or other counseling services?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use of Prescribed Psychotropic Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. <em>Is the consumer regularly taking, if and as prescribed, medications related to mood, emotions, thinking or behaviors?</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Association with Positive Peers</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. <em>Is the consumer associating with positive peers?</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Avoidance of Negative Peers</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. <em>Is the consumer successfully avoiding negative peers?</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use of Community Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. <em>Is the consumer involved in community recreation activity? (mark all that known and reported, otherwise mark no):</em></td>
</tr>
<tr>
<td>a) sports, b) regular exercise activity, c) church, d) music/dance, e) extracurricular school activity clubs or groups, f) community activity groups or clubs, g) positive hobbies or crafts, h) regular use of library/OMSI, i) volunteer activity, j) competitive game activities, k) art or other vocational interest class, l) scouting activities, m) mentor-supported activity, n) Other.</td>
</tr>
</tbody>
</table>

---

**Participants**

This study examined long-term archival data of 148 adolescent boys between the ages of 14 and 19 who had been discharged from a local residential treatment center within the last 5 years. This archival data will be categorized into two clinical groups
(“successful” and “unsuccessful”) groups. Items from the local RTC’s “Treatment Effectiveness Interview Form” were used to examine the two research questions: 1) the percentage of adolescents who were “successful” in the post-discharge environment at follow-up intervals of 6-months (i.e. Time Interval 1), and 6 to 12-months (i.e. Time Interval 2) and 2) the specific factors (i.e. use of mental health services, absence of substance use, avoidance of negative peers, association with positive peers, use of prescribed psychotropic medications, use of community resources) that increase the likelihood that adolescents will be “successful” in the post-discharge environment at time intervals 1 and 2. This interview form was chosen to match what is needed given previous research.

**Statistical Analyses**

In order to facilitate answering the research questions, correlational data were analyzed. In particular, Fisher’s exact test will be used to determine whether there is a difference between the “successful” and “unsuccessful” groups in the number of adolescents who have accessed mental health services, are avoiding negative peers, are associating with positive peers, are using prescribed psychotropic medications, are refraining from using substances, and are accessing community resources. A one-sided significance test was chosen based on the prediction that adolescents who are “unsuccessful” in the post-discharge environment were less likely to access mental health and community resources, associate with positive peers, avoid negative peer influence, and avoid substance use. Second, an odds ratio effect size computation (Rosenthal, Rosnow, & Rubin, 2000) was used to describe the dichotomous independent and dependent variables. The odds ratio calculations will describe the likelihood that
adolescents will be successful in the post-discharge environment (dependent variable) upon receiving mental health services, accessing community resources, associating with positive peers, avoiding negative peer influence, taking prescribed medications, and avoiding substances (independent variables).

The original interviewers were given instructions on the TEIF to ask questions about recidivism and environmental post-discharge variables (See Tables 1 and 2) that were applicable to specific time periods (i.e. 0-6 months post-discharge, 6-12 months post-discharge). Thus, these analyses were conducted for data at the following time intervals post discharge: 1) 0-6 months (i.e. Time Interval 1) and 2) 6-12 months (i.e. recidivism between 6 months and 12 months, Time Interval 2). In addition, the follow-up interval from discharge to 12 months will be used to provide additional qualitative data regarding the significant environmental variables. In this case, this time interval will be referred to as “the entire 12-month follow-up period.”
RESULTS

Descriptive Statistics

Data from 148 adolescent males (mean age=17.00; sd= 1.47) who had been discharged from a local RTC were used for this study. Recidivism rates and factors that were hypothesized to increase the likelihood of adolescent post-discharge success were analyzed at two distinct post-discharge time intervals: 0-6 months (i.e. Time Interval 1) and 6-12 months (i.e. Time Interval 2). Of the total sample of 148 adolescent males, 132 cases (89.2%) had data at Time Interval 1, and 95 cases (64.2%) had data at Time Interval 2. Seventeen of the 95 adolescents (17.9%) who had data at Time Interval 2, did not have data at Time Interval 1. Of the 132 cases that had data at Time Interval 1, 78 cases (59.1%) also had data at Time Interval 2, whereas 53 cases (40.2%) had data only at Time Interval 1. Lastly, 78 of the 148 total adolescents (52.7%) had both Time Interval 1 and Time Interval 2 data (referred to as the sub-sample in the Results section).

Follow-up Data from Time Interval 1

As stated in the Methods section, in order for an adolescent to be considered “successful” in the post-discharge environment, he had to, 1) be living in a less restrictive setting than the RTC from which he was discharged, 2) not be on runaway status, and 3) show evidence of an absence of legal problems. Of the 132 cases that had follow-up data at Time Interval 1 (mean age=16.81; sd=1.38), 75 adolescents were successful in the post-discharge environment, whereas 57 adolescents were unsuccessful. Thus, 42.86
percent of adolescents recidivated at 6 months, exhibiting evidence of legal problems, unstable living environment or living in a more restrictive setting (e.g. jail).

*Follow-up Data from Time Interval 2*

Of the 95 adolescents that had data at Time Interval 2 (mean age=17.27; sd=1.55), 43 were successful in the post-discharge environment, whereas 52 were unsuccessful. Thus, 54.74 percent of adolescents recidivated between 6 and 12 months, a recidivism increase of 11.88 percent from Time Interval 1.

*Analysis of Contingency Tables*

Fisher’s exact test was used to determine whether there was a difference between the two groups of discharged adolescents (“successful” and “unsuccessful”) in accessing mental health services, involvement in community activities, avoiding negative peers, associating with positive peers, avoiding substances, and use of prescribed medications. The comparative analysis was conducted at two distinct time intervals: 6-month follow-up (i.e. Time Interval 1) and 6 to 12 month follow-up (i.e. Time Interval 2). In addition, odds ratio (OR) computations will be used to describe the effect sizes of the significant results (p values) from Time Intervals 1 and 2.

*Follow-up Data from Time Interval 1*

The following section provides the results regarding the post-discharge environmental variables associated with “Overall Success” upon 6-month follow-up (i.e. Time Interval 1). As stated in the Methods section, “Overall Success” was defined as the absence of recidivism in “living” and “legal” domains (refer to Methods section for more detail).
Absence of substance use. Results indicated that adolescents who were successful in the post-discharge environment at Time Interval 1 had a significantly greater likelihood of avoiding substance use in comparison to adolescents who recidivated (p=.008; see Table 3). In particular, adolescents who were successful after 6 months were more than twice as likely (OR=2.77; see Table 4) to avoid substance use than adolescents who were unsuccessful.
Table 3

*The Association Between Overall Success and Post-discharge Factors at Time Interval 1 (i.e. 0 to 6 months post-discharge)*

<table>
<thead>
<tr>
<th>Overall Success</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absence of Substance Use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>47</td>
<td>21</td>
<td>68</td>
<td>.008</td>
</tr>
<tr>
<td>No</td>
<td>21</td>
<td>26</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>47</td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>Avoided Negative Peers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>43</td>
<td>5</td>
<td>48</td>
<td>&lt;.0009</td>
</tr>
<tr>
<td>No</td>
<td>24</td>
<td>43</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>67</td>
<td>48</td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>Positive Peer Association</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>60</td>
<td>16</td>
<td>76</td>
<td>&lt;.0009</td>
</tr>
<tr>
<td>No</td>
<td>11</td>
<td>32</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>71</td>
<td>48</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>Use of Community Resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>68</td>
<td>31</td>
<td>99</td>
<td>&lt;.0009</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>23</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>54</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>Use of Mental Health Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>41</td>
<td>38</td>
<td>79</td>
<td>.121</td>
</tr>
<tr>
<td>No</td>
<td>29</td>
<td>16</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>54</td>
<td>124</td>
<td></td>
</tr>
<tr>
<td>Use of Prescribed Psychotropic Medications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>17</td>
<td>12</td>
<td>29</td>
<td>.567</td>
</tr>
<tr>
<td>No</td>
<td>54</td>
<td>39</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>71</td>
<td>48</td>
<td>122</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* “Overall Success” indicates the absence of legal problems and evidence of a stable and less restrictive living environment.
Table 4

*Odds Ratio Calculations at Time Intervals 1 and 2*

<table>
<thead>
<tr>
<th></th>
<th>Time Interval 1</th>
<th>Time Interval 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absence of Substance Abuse*</td>
<td>2.77</td>
<td>3.22</td>
</tr>
<tr>
<td>Avoidance of Negative Peers*</td>
<td>15.41</td>
<td>7.29</td>
</tr>
<tr>
<td>Positive Peer Association*</td>
<td>10.91</td>
<td>11.91</td>
</tr>
<tr>
<td>Use of at Least One Community Resource*</td>
<td>10.09</td>
<td>7.08</td>
</tr>
<tr>
<td>Use of Mental Health Services</td>
<td>0.60</td>
<td>0.83</td>
</tr>
<tr>
<td>Use of Prescribed Psychotropic Medications</td>
<td>1.02</td>
<td>1.37</td>
</tr>
</tbody>
</table>

*Note.* Odds ratios indicate the increase in likelihood that an adolescent demonstrated “Overall Success” given an answer of “Yes” to the post-discharge environmental questions.

*p<.05

**Avoidance of negative peers.** Adolescents who were successful 6 months after discharge had a significantly greater likelihood of avoiding negative peers in comparison to adolescents who recidivated (p<.0009; see Table 3). Specifically, adolescents who were able to avoid negative peers were more than 15 times as likely (OR=15.40; see Table 4) to be successful after 6 months than adolescents who were unable to avoid negative peers.

**Positive peer association.** In addition, adolescents who were successful 6 months after discharge had a significantly greater likelihood of associating with positive peers...
compared to adolescents who recidivated after 6 months (p<.0009; see Table 3). More specifically, adolescents who were successful after 6 months post-discharge were about 11 times more likely (OR=10.91; see Table 4) to associate with positive peers than adolescents who recidivated.

Use of community resources. Adolescents who accessed at least one community resource (e.g. sports, clubs, church) had a significantly greater likelihood of being successful at Time Interval 1 than adolescents who did not access any community resources (p<.0009; see Table 3). In particular, adolescents who accessed at least one community resource were about 10 times more likely to be successful after 6 months than adolescents who did not access any community resources (OR=10.09; see Table 4).

Use of mental health services. At Time Interval 1, use of mental health services did not significantly differentiate successful adolescents from those who recidivated (p=.121; see Table 3).

Use of prescribed psychotropic medications. Lastly, upon 6-month follow-up, use of prescribed medications did not significantly differentiate successful from unsuccessful adolescents (p=.567; see Table 3).

Follow-up Data from Time Interval 2

The following section provides the results regarding the post-discharge environmental variables associated with “Overall Success” upon 6 to 12-month follow-up (i.e. Time Interval 2). As stated in the Methods section, “Overall Success” was defined as the absence of recidivism in “living” and “legal” domains (refer to Methods section for more detail) Upon examining data from Time Interval 2, results were very similar to Time Interval 1.
Absence of substance use. Results indicated that adolescents who were successful in the post-discharge environment at Time Interval 2 were significantly more likely to avoid substance use in comparison to adolescents who recidivated (p=.007; See Table 5). In particular, adolescents who were successful at Time Interval 2 were more than three times more likely to avoid substance use (OR=3.22; see Table 4) than adolescents who recidivated.
Table 5

*The Association Between Overall Success and Post-discharge Factors at Time Interval 2 (i.e. 6 to 12 months post-discharge)*

<table>
<thead>
<tr>
<th>Overall Success</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Absence of Substance Use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>29</td>
<td>18</td>
<td>47</td>
<td>.007</td>
</tr>
<tr>
<td>No</td>
<td>14</td>
<td>28</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>46</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td><strong>Avoided Negative Peers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>26</td>
<td>12</td>
<td>38</td>
<td>&lt;.0009</td>
</tr>
<tr>
<td>No</td>
<td>11</td>
<td>37</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
<td>49</td>
<td>86</td>
<td></td>
</tr>
<tr>
<td><strong>Positive Peer Association</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>39</td>
<td>24</td>
<td>63</td>
<td>&lt;.0009</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>22</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>46</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td><strong>Use of Community Resources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>40</td>
<td>32</td>
<td>72</td>
<td>.001</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>17</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>49</td>
<td>92</td>
<td></td>
</tr>
<tr>
<td><strong>Use of Mental Health Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>23</td>
<td>31</td>
<td>54</td>
<td>.424</td>
</tr>
<tr>
<td>No</td>
<td>16</td>
<td>18</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>54</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td><strong>Use of Prescribed Psychotropic Medications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>11</td>
<td>10</td>
<td>21</td>
<td>.356</td>
</tr>
<tr>
<td>No</td>
<td>29</td>
<td>36</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>71</td>
<td>48</td>
<td>86</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* “Overall Success” indicates the absence of legal problems and evidence of a stable and less restrictive living environment.
**Negative peer association.** Adolescents who were successful at Time Interval 2 had a significantly greater likelihood of avoiding negative peers in comparison to adolescents who recidivated (p<.0009; see Table 5). Specifically, adolescents who avoided negative peers were more than seven times more likely (OR=7.28; see Table 4) to be successful at Time Interval 2 than adolescents who did not avoid negative peers.

**Positive peer association.** Similarly, adolescents who were successful at Time Interval 2 had a significantly greater likelihood of associating with positive peers compared to adolescents who recidivated during this time period. (p=<0009; see Table 5) In particular, adolescents who associated with positive peers were about 12 times more likely (OR=11.92; see Table 4) than adolescents who did not associate with positive peers to be successful at Time Interval 2.

**Use of community resources.** Adolescents who accessed at least one community resource had a significantly greater likelihood of being successful at Time Interval 2 than adolescents who did not access any community resources (p=.001; see Table 5) Specifically, adolescents who accessed at least one community resource were about 7 times more likely to be successful at Time Interval 2 (OR=7.08; see Table 4) than adolescents who did not access any community resources.

**Use of mental health services.** Similar to the results analyzed at Time Interval 1, use of mental health services did not significantly differentiate successful from unsuccessful adolescents at Time Interval 2. (p=.424; see Table 5).

**Use of prescribed medications.** Similarly, use of prescribed medications did not significantly differentiate successful from unsuccessful adolescents at Time Interval 2 (p=.356; see Table 5).
Exploratory Analysis of Significant Findings

In order to obtain more in-depth information regarding changes in recidivism between Time Interval 1 and Time Interval 2, the significant results were analyzed from the adolescents who had both Time Interval 1 and Time Interval 2 follow-up data (referred to as the sub-sample). Seventy-eight adolescents had both 6-month and 12-month data. The following section provides descriptive statistics about these 78 adolescents.

*Time Interval 1 Descriptives from the Sub-Sample*

As stated earlier, 78 adolescents (mean age=16.84; sd=1.59) of the total sample of 148 (52.70%) also had follow-up data at Time Interval 2. Of these 78 cases, 50 adolescents were successful in the post-discharge environment at 6 months, whereas 28 adolescents recidivated. Thus, 35.90 percent of this sub-sample of adolescents recidivated at 6 months.

*Time Interval 2 Descriptives from the Sub-Sample.*

Of these 78 cases, (mean age=17.36; sd=1.59) 38 were successful at Time Interval 2, whereas 40 adolescents recidivated. Thus, 51.28 percent of adolescents recidivated during this interval, a recidivism increase of 15.38 percent from Time Interval 1. The following section provides statistical findings regarding the specific variables that significantly distinguished “successful” from “unsuccessful” adolescents among the sub-sample. Moreover, this section will highlight changes in recidivism between Time Interval 1 and Time Interval 2. In addition, noteworthy data regarding the entire 12-month follow-up period will be provided.
Negative Peer Influence

As shown in Table 5, a large odds ratio change existed between Time Interval 1 and Time Interval 2 (i.e. odds ratio change of 15 to 7; see Table 4). Thus, adolescents who were successful had a much greater likelihood of avoiding negative peer influence at 6 months than from the interval of 6 to 12 months. In order to compare results from the total sample of adolescents with the sub-sample of adolescents, additional statistical analyses were conducted. Among the sub-sample at Time Interval 1, results indicated that those who were successful in the post-discharge environment were significantly more likely to avoid negative peers in comparison to adolescents who recidivated (p=.000). In particular, only 1 adolescent out of 30 who avoided negative peer influence (3.3 %) at 6 months was unsuccessful, illustrating the effect of associating with negative peers on post-discharge success. Similarly, upon examining Time Interval 2, adolescents who were successful in the post-discharge environment were significantly more likely to avoid negative peers in comparison to adolescents who recidivated (p=.000).

Results from this sub-sample of adolescents closely resemble the results from the total sample, indicating that avoidance of negative peers is a significant protective factor in determining overall success. When examining this sub-sample even more closely, 29 out of 71 adolescents were able to avoid negative peers and be successful in the post-discharge environment upon 6-month follow-up. Furthermore, eleven of these 29 adolescents were still successful and avoided negative peers for the entire 12-month period. Thus, only 11 out of the 71 adolescents who had data at both Time Interval 1 and Time Interval 2 (15.49%) were able to avoid negative peers and be successful for the entire 12-month follow-up period.
Positive Peer Influence

Odds ratios were relatively consistent from Time Interval 1 and Time Interval 2 (see Table 4). To examine any significant changes in recidivism in adolescents who had both Time Interval 1 and Time Interval 2 data points, additional statistical analyses were conducted. Among this sub-sample, adolescents who were successful 6 months after discharge had a significantly greater likelihood of associating with positive peers compared to adolescents who recidivated after 6 months (p=.002). Similarly, upon 6-12 month follow-up (i.e. Time Interval 2), adolescents who were successful had a significantly greater likelihood of associating with positive peers compared to adolescents who recidivated. (p=.000).

Results from this sub-sample of adolescents are consistent with the results from the total sample of adolescents, providing support for the importance of associating with positive peers in post-discharge success. Furthermore, 24 of the 39 adolescents who associated with positive peers and were successful upon 6-month follow-up were able to continue associating with positive peers and maintain their post-discharge success at 12-month follow-up. Furthermore, 24 out of the 73 adolescents who had both Time Interval 1 and Time Interval 2 data (32.88%) were able to maintain their post-discharge success while associating with positive peers for the entire 12-month follow-up period.

Use of Community Resources

Among the sub-sample, adolescents who accessed at least one community resource had a significantly greater likelihood of being successful at Time Interval 1 than adolescents who did not access any community resources (p=.020). Similarly, adolescents who accessed at least one community resource upon Time Interval 2 had a
significantly greater likelihood of being successful than adolescents who did not access any community resources (p=.010). Moreover, 26 of the 46 adolescents from the sub-sample who used at least one community resource at 6 months were able to maintain their post-discharge success for the entire 12-month follow-up period. When examining the total sub-sample of adolescents who had data regarding use of community resources (n=76), 26 adolescents (34.21%) who used at least one community resource were able to maintain their post-discharge success for the entire 12-month period.

Absence of Substance Use

In contrast to the total sample of adolescents who had data regarding substance use at 6-month follow-up (N=115), avoiding substance use did not significantly differentiate successful from unsuccessful adolescents among the sub-sample (p=.096). However, upon examining Time Interval 2 among the sub-sample, adolescents who were successful had a significantly greater likelihood of avoiding substance use than adolescents who recidivated (p=.018). At Time Interval 1, about an equal percentage of the sub-sample of adolescents who used substances were successful as those who were unsuccessful. However, at Time Interval 2, 62.9% of the sub-sample of adolescents who used substances recidivated. This likely accounts for the discrepancy in significance between Time Interval 1 and 2 among the sub-sample. Moreover, only 16 out of 74 adolescents from the sub-sample who avoided substance use (21.62%) were able to maintain their post-discharge success for the entire 12-month follow-up period. Nevertheless, avoiding substance use was a significant factor in determining whether adolescents would recidivate.
DISCUSSION

The following discussion sections address overall recidivism rates and changes in recidivism between Time Interval 1 (TI 1) and Time Interval 2 (TI 2) among adolescents discharged from the local RTC. In addition, the significant factors associated with long-term adolescent adjustment as well as the factors that did not influence recidivism rates are discussed in more detail. Last, limitations, future directions, and conclusions regarding the study are presented.

Addressing Research Questions 1 and 2: Examining Recidivism at TI 1 and TI 2

Results indicate that approximately 43% of adolescents discharged from a local RTC recidivated upon 6-month follow up. In other words, 57% of adolescents were able to avoid legal problems and be living in a stable and less restrictive environment than the RTC. Upon examination of the recidivism rates between 6 months and 12 months, approximately 55% of adolescents had either evidence of legal problems, unstable living environment or were residing in a more restrictive environment than a RTC (i.e. recidivated). Furthermore, about 63% of adolescents recidivated upon examining the entire 12-month follow-up period. These results are consistent with the RTC long-term outcome research and point to the difficulty that many adolescents have in generalizing their residential treatment in the post-discharge environment.

Whereas 57 out of 132 adolescents recidivated from discharge to 6-month follow-up, 52 out of 95 adolescents recidivated between 6 months to 12 months. Thus, approximately a 12% increase in recidivism existed between Time Interval 1 and Time
Interval 2. Furthermore, by analyzing the specific variables that distinguished adolescents who recidivated from those who were successful, we were able to gain more clarity regarding factors associated with success in the post-discharge environment.

Addressing Research Questions 3 and 4: Significant Factors Influencing Recidivism

In this study, adolescents who were successful at time interval 1 and time interval 2 were more likely to avoid substance use, associate with positive peers, avoid negative peers, and access at least one community resource than adolescents who recidivated (i.e. showed evidence of problems in “living” and “legal” domains). Thus, these factors had a significant influence on recidivism rates of these adolescents. Neither accessing mental health resources nor taking prescribed medications differentiated successful from unsuccessful adolescents at either 6 month or 6-12 follow-up intervals. Although support exists for four out of the six hypothesized variables, it is surprising that being involved in mental health services or taking prescribed medications did not increase the likelihood of success post-discharge for these adolescents. In regards to accessing mental health services, one explanation is that adolescents who recidivated by returning to more restrictive living (e.g. were placed at RTCs or a juvenile correction facility) are required to attend mental health services. Thus, adolescents who recidivate into correctional facilities or into more restrictive residential settings could have greater access to therapeutic services. Second, adolescents may not seek out mental health services without requests from authority figures. Thus, simply because adolescents are accessing mental health services (e.g. attending therapy sessions) does not mean they are actively engaging in these services, which can mitigate this protective factor.
With regard to the use of prescribed medications, the question from the interview form (i.e. “Is the consumer regularly taking, if and as prescribed, medications related to mood, emotions, thinking or behaviors?”) seems poorly worded. This question does not differentiate whether an adolescent is not taking medication because it is not prescribed from an adolescent not taking his prescribed medications. Separating these two questions from each other would provide better information regarding whether taking prescribed medications is a protective factor against recidivism.

Exploration of the Significant Variables from Statistical Analyses

An in-depth examination of the significant factors that increased the likelihood of adolescent long-term success will provide greater information regarding adolescent long-term adjustment.

**Negative Peer Influence**

Results regarding the impact of associating with negative peers on recidivism are consistent with previous research (e.g. Granic & Patterson, 2006; Blumstein, Cohen, Roth, & Visher, 1986; Dishion, Patterson, Stoolmiller, & Skinner, 1991; Stoolmiller, 1994). As shown in Table 4, adolescents who avoided negative peers upon 6-month follow up had the highest odds of being successful compared to association with positive peers, avoidance of substance use, and use of community resources. In addition, at 6-month follow-up, results seem to be more meaningful when an adolescent was able to avoid negative peers than when he was not. Only five out of 48 adolescents (and one out of 30 from the sub-sample) who avoided negative peers were unsuccessful, demonstrating the importance of avoiding negative peer influence in the first six months post-discharge. However, upon 6-12 month follow-up, 12 out of 38 adolescents who
avoided negative peers were unsuccessful, showing evidence that about one-third of adolescents who avoided negative peers were still unsuccessful. In addition, only about 17% of adolescents avoided negative peers and were successful for the entire 12-months, compared to 37% at 6-month follow-up. These data illustrate the significant difficulty at-risk youth have in avoiding negative peer group influence and the importance of avoiding negative peers in determining long-term success.

Positive Peer Influence

In contrast to the large odds ratio change seen in negative peer influence from 6 months to 6-12 month follow-up, odds ratios regarding positive peer influence remained relatively consistent at 6 months and 6-12 months follow up (see Table 4). Thus, adolescents who associated with positive peers consistently had a greater likelihood of being successful in the post-discharge environment after 12 months than adolescents who did not associate with positive peers. In addition, 92.9% of adolescents who were successful at Time Interval 2 associated with positive peers. Thus, positive peer influence seems to be a significant protective factor against recidivism. Moreover, when examining the entire 12-month follow-up interval, adolescents had a much greater probability of associating with positive peers than avoiding negative peer influence.

Absence of Substance Use

Although adolescents who avoided substance abuse were significantly more likely to be successful upon follow up intervals than adolescents who abused substances, odds ratios were not as large as other significant findings (See Table 4). Moreover, analysis of the 6-month follow-up interval among the sub-population (i.e. adolescents who had both 6 month and 12 month follow-up data) revealed no significant results. This
may be due to the fact that among the sub-population, approximately the same percentage of substance using adolescents were successful and unsuccessful. In addition, although a majority of adolescents upon 6-12 month follow-up interval were able to avoid substance abuse (See Table 5), only about 50% were able to avoid substance abuse during the entire 12-month follow-up period. In addition, only about 22% of adolescents avoided substance abuse and were successful for the entire 12-month follow-up period, compared to 41% at Time Interval 1. This illustrates the difficulty that these adolescents had in avoiding substance abuse over a 12-month period.

Use of Community Resources

The likelihood that adolescents would be successful upon accessing at least one community resource remained relatively consistent between Time Intervals 1 and 2 (See Table 4). More specifically, at Time Intervals 1 and 2, only 15% and 17.9%, respectively, of adolescents who did not access at least one community resource were successful. At both follow-up intervals, about 93% of adolescents who were successful in the post-discharge environment accessed at least one community resource (See Tables 3 and 5). One difference noted between the two follow-up intervals (i.e. 6-month and 6-12-month) was that adolescents had a harder time maintaining their success at Time Interval 2 through use of community resources. Nevertheless, adolescents had great difficulty being successful when they did not engage in some type of community activity. Thus, participation in prosocial activities is a significant protective factor against recidivism.

Integration of Findings

When examining all four significant variables that distinguished successful from unsuccessful adolescents upon follow-up intervals, some interesting patterns emerged.
First, successful adolescents who avoided negative peers, avoided substance abuse, associated with positive peers, or utilized community resources at Time Interval 1 had much more difficulty maintaining their success at Time Interval 2. This trend was even more apparent upon comparing Time Interval 1 data to the entire 12-month follow-up period. The fact that these recidivism rates increased after longer follow-up intervals is consistent with previous research on long-term outcomes of discharged adolescents from RTCs (e.g. Asarnow, Aoki, & Elson, 1996). Second, adolescents had greater difficulty avoiding risky behaviors (e.g. substance abuse, negative peer influence) than engaging in positive prosocial behavior (e.g. positive peer association, accessing community resources) throughout all follow-up periods. More specifically, adolescents had the most difficulty avoiding negative peer influence and the least amount of difficulty accessing community resources. This highlights the pervasive problems for at-risk youth in refraining from delinquent behaviors and demonstrates the powerful impact that interacting with negative peers and abusing substances has on recidivism.

Despite the fact that adolescents had the most difficulty refraining from negative peer influence, adolescents who were able to avoid negative peers had the highest percentage of being successful compared to any other significant variable (i.e. substance abuse, positive peer association, use of community resources). Specifically, adolescents who were able to avoid negative peer influence for the entire 12-month follow-up period had a 65.2% probability of being successful. In contrast, adolescents who accessed at least one community resource for the entire 12-month follow-up had less than a 50% probability of being successful (48.4%), the lowest probability of all significant variables. This pattern was consistent throughout various follow-up time periods and demonstrates
the tremendous impact that refraining from negative peers can have. Furthermore, although adolescents had the easiest time accessing community resources in the post-discharge environment, participation in community resources did not differentiate successful from unsuccessful adolescents nearly as well as avoiding negative peers, associating with positive peers, or avoiding substance use.

Limitations

One of the major limitations of this study was the small sample used for analysis. One hundred and thirty three adolescents had data upon 6-month follow-up, and 95 adolescents had data upon 12-month follow-up. Thus, this study needs to be replicated at other RTCs and with larger samples to increase the reliability of the findings. Furthermore, with a larger sample, a logistic regression could be used to determine whether association with negative or positive peers, avoidance of substance use, and use of community resources would predict adolescent success in the post-discharge environment.

Another limitation of the study concerns the way in which adolescents were classified as “successful” or “unsuccessful.” In this study, stringent criteria for success were used; an adolescent had to have a stable living environment, be living in a less restrictive setting than his RTC from which he was discharged, and demonstrate an absence of legal problems. One of the existing problems in the RTC literature is the absence of a clear definition of “success.” Some authors have used objective measures (Larzelere et al., 2001; Blackman et al., 1991) whereas other authors have relied on follow-up interviews with teachers, caregivers, and adolescents (Gamboa & Garrett, 1974; Burks, 1995; Kaminsky; 1998). In this study, “success” was defined using similar
criteria as Hooper et al. (2000) and Lewis et al. (1980), in which illegal activity and restrictive living environments indicated recidivism. In addition, stringent criteria for success seemed to provide the most informative data regarding adolescent risk and protective factors associated with long-term adolescent adjustment. However, if less stringent criteria for success were used, recidivism rates may have been lower and significant results could have been different. Moreover, through classification of adolescents as simply “successful” or “unsuccessful,” valuable data were not analyzed. For instance, no information is known yet regarding the significant risk and protective factors that are correlated with legal problems versus the significant factors that are correlated with unstable living environment. In addition, whenever categorical data are analyzed, a loss of information is inevitable. In the “real world,” adolescent outcomes are more complex than represented here by “successful” or “unsuccessful” dichotomous categories. Thus, placing adolescents into successful or unsuccessful categories is an only an approximation of their post-discharge adjustment based on the RTC recidivism research.

Another significant limitation of this study is that the archival data provided no information about adolescents’ discharge status or response to treatment. It is possible that some adolescents could have been discharged to a more restrictive environment or did not successfully complete treatment before being discharged. At the beginning of this project, we wanted to analyze data from adolescents who had successfully been discharged from the local RTC. However, as the project continued, we were unable to determine whether the archival database existed of only adolescents who had been successfully discharged. In future analyses, examining data from adolescents who were
successfully discharged would provide valuable information regarding the factors that contribute to at-risk youths’ ability to maintain their treatment gains in the post-discharge environment.

This study examined data from a local RTC that treated adolescent males. Hence, little is known about the specific risk and protective factors that differentiate successful from unsuccessful adolescent females in the post-discharge environment. In light of the research that argues that adolescent girls are more prone to negative or positive peer influence (Reynolds & Repetti, 2006) it would be interesting to examine the effects of gender and peer association on the likelihood of post-discharge success. Moreover, in this study, no information was given regarding race or ethnicity of the discharged adolescents and thus there is limited demographic generalizability.

Future Directions

This study revealed the significant impact that negative and positive peer association, substance abuse, and community resources have on long-term adolescent post-discharge success. One of the ways in which these variables could be examined in more detail is through the use of qualitative interviews with discharged adolescents. Qualitative interviews would provide adolescents the opportunity to give their perspective on residential treatment and the identified risk and protective factors from the literature as well as this study. Questions to “successful” adolescents could address 1) the specific aspects of treatment that they found most helpful, 2) the difficulty in avoiding negative peers and strategies they used to surround themselves with positive peers, and 3) the post-discharge environmental factors they attributed to their long-term success.

Research from the RTC long-term outcome literature concluded that adolescents
who were able to use post-discharge resources (e.g. mental health services, community resources) had a significantly greater likelihood of maintaining treatment gains than adolescents who did not access these resources. Due to the fact that in this study use of mental health services did not differentiate successful from unsuccessful adolescents, more data regarding the type of services available to adolescents upon discharge is necessary. More specifically, it would be useful to conduct qualitative interviews regarding adolescents’ perception of the usefulness and availability of mental health services after discharge. Furthermore, it would also be beneficial to obtain more information about the type of discharge plans in place for these adolescents. Since providing a continuum of care to adolescents and their families is one of the major factors identified regarding adolescent long-term success (Greenbaum & Dedrick, 1996), more information regarding the availability and implementation of these services is pertinent.

RTC long-term outcome research also identified that adolescents’ ability to access community resources in the post-discharge environment was crucial to their long-term success (Leichtman & Leichtman, 2001). This study substantiated and expanded on this research through statistical analyses that found that adolescents’ use of at least one community resource significantly differentiated successful from unsuccessful adolescents. Further studies could examine the specific types of community resources that have the strongest correlation to adolescent long-term success. For instance, studies could examine the differences in adolescent recidivism upon utilizing sports/recreational activities versus mentor-based services (e.g. Boys & Girls Club). Lastly, one of the consistent themes identified in the RTC literature is the importance of attending to the post-discharge family environment in which the adolescent is being discharged (Pfeifer &
Strzelecki, 1990). Frequently, successfully discharged adolescents return to family environments exhibiting significant instability and psychopathology. Thus, future studies could examine the relationship between stability of discharged home environment and long-term success.

Conclusion

This study aimed to gain more clarity on the specific risk and protective factors responsible for adolescent long-term adjustment following RTC discharge. Prior to this study, broad factors were identified (i.e. importance of the post-discharge environment) yet ambiguity remained regarding specific variables that significantly differentiated successful adolescents from adolescents who recidivated. Results from this study indicated that adolescents who demonstrated long-term success were significantly more likely to associate with positive peers, avoid negative peers, avoid substance use, and access at least one community resource than adolescents who recidivated. Results provided statistical data to support RTC research regarding the importance of adolescents’ use of community resources. Moreover, this study extended the research regarding general risk factors for at-risk youth (i.e. negative peer influence, substance use) to residential treatment populations. Now, considerable more knowledge exists regarding the negative impacts of substance use and the importance of peer group association as discharged adolescents begin reintegrating into the community.

Most importantly, these results can now be disseminated to the local RTC that provided the archival data and to additional RTC researchers and clinicians. Conversations with the local RTC clinicians and discharge providers will focus on the importance of creating discharge and relapse prevention plans that emphasize these
pertinent risk and protective factors. More specifically, RTC clinicians can talk to adolescents and their families during the discharge process to improve the likelihood that adolescents will successfully return to their communities. For instance, based on this study, clinicians and RTC personnel could develop a discharge curriculum targeted at the importance of peer group influence. Secondly, RTC clinicians could work collaboratively with adolescents before their discharge to help them access local community resources of interest. Third, substance abuse treatment for adolescents identified as at-risk could be a requirement before discharge. With heightened awareness from researchers and clinicians alike, critical treatment components that place emphasis on these post-discharge factors can be implemented with greater success. Hopefully, with more studies such as this one, RTCs can be more effective at providing the treatment necessary to help at-risk youth become productive members of society.
REFERENCES


