

Predictors of Effectiveness in a Multifamily Therapy Program for Adolescents with Externalizing Behaviors

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Abstract

Severe externalizing behavior among adolescents is a significant societal problem, in terms of both emotional and financial costs. Much research has focused on factors that increase or decrease the risk of adolescents developing such behavior. In addition, various treatment methods have been developed to address this problem, with promising results under some circumstances. The present study examined archival data from one multifamily therapy program to examine potential predictors of the effectiveness of treatment. These predictors were communication style and relationship quality between parents and adolescents, as well as parents' readiness for change. Parent-adolescent relationship quality and communication style were both found to significantly predict treatment outcomes in some, but not all, problem areas examined. Parent readiness did not predict treatment outcomes. Results have implications for improving the clinical outcomes of family treatment programs.

Keywords

Children and Adolescents, Behavioral Health Services, Externalizing Behavior, Family Communication, Parental Attitude

1. Introduction

Externalizing behaviors, such as hyperactivity or refusal to follow rules, are common problems among youth. Such behaviors can cause significant disruptions in social and academic functioning, not only for youths exhibiting these behaviors but also for their families as well. More severe externalizing behaviors, such as vandalism

and physical aggression, are less common but impose a greater cost on the child's family and on society. Like the behaviors themselves, the consequences of externalizing behaviors cover a broad range, from academic under-achievement to increased physical health risks and future criminal behavior [1]-[4]. Much research has examined factors which promote the development of externalizing behavior problems, as well as interventions to reduce these problems. The present study examines the association between some of these contributing factors and treatment outcomes of a multifamily therapy program in order to maximize the effectiveness of psychological treatment and other services for adolescents with significant externalizing behaviors and their families.

2. Literature Review

2.1. Influencing Factors

Many factors have been found to influence the more severe externalizing behaviors in children and adolescents, including characteristics of the individual, family, and community. A thorough review of these factors is beyond the scope of this article; however, some family-specific factors are discussed here due to their relevance to the current study. One such factor which has received much attention in its relationship to child and adolescent behavior is family communication style. Research findings consistently demonstrate that more open and positive communication between parents and adolescents is associated with greater psychological health and lower incidence of externalizing behaviors [5]-[7]. This finding has held true not only for communication style as a wholly independent variable, but also as a mediator between adolescents' self-efficacy and aggressive or antisocial behavior [8]. Conversely, less open and more problematic communication between parents and adolescents has been found to correlate with higher self-reported frequency of delinquent behaviors such as truancy or theft [7]. Negative communication between the parents has also been found to correlate with children's behavior problems [9].

Based on these relationships, communication style has been incorporated into some studies of treatments for externalizing behaviors. One such study found that a predominantly positive communication style between parents and adolescents was associated with a greater decrease in adolescents' drug use over the course of treatment and at a 15-month follow-up [10]. Communication style has also been directly targeted as a component of treatment. One meta-analysis found that making parent-child communication a focus of treatment was associated with greater effectiveness of parent training in reducing externalizing behaviors [11].

Another characteristic of family relationships which likely influences children's and adolescents' behavior is parents' attitudes towards their children. To date, this construct has received relatively little study in relation to the development or maintenance of externalizing behaviors. However, researchers who have examined it have found that negative attitudes of parents toward their children are related to children's externalizing behavior [12], and that these attitudes are themselves amenable to treatment [13]. Further research may help to clarify the role of parental attitude in influencing children's behavior, as an independent construct or perhaps as a facet of other family characteristics which have received greater attention in the literature.

2.2. Types of Treatment for Externalizing Disorders among Youth

While some researchers have focused on factors influencing the development of externalizing behavior, others have focused on treatment to reduce such behavior. Because of the role that families typically play in influencing this behavior, treatment research frequently focuses on programs that incorporate families. Indeed, the treatment literature generally shows that family-based treatment is significantly more effective than individual treatment for youths with severe externalizing behaviors [14].

Much of the research in family-based treatments for externalizing behaviors has focused on parent management training (PMT). PMT programs teach parents principles and techniques of behavior modification that they can use with their children in place of less appropriate tactics such as excessive punishment. Researchers typically find PMT to be effective in reducing a broad range of problematic behaviors [15]. However, research on PMT has also uncovered some limitations. For example, greater pretreatment severity of children's behavioral problems, and of parents' inappropriately harsh disciplinary tactics, have both been found to predict a smaller improvement over the course of treatment [16] [17]. Other research has shown that PMT becomes less effective as the number of other problems in the family increases, with a suggestion that treatment should focus on other factors in addition to parent-child interactions, such as parents' perceptions of their children [18], which are not normally addressed through PMT. One additional limitation lies with the nature of the population that has

largely been represented in the research. Specifically, most treatment studies for PMT have focused on younger children, with far fewer examining its effectiveness in treating externalizing behaviors in adolescents [15] [19].

A more recent development, extending from PMT and other sources, is multifamily therapy (MFT), sometimes called multifamily group therapy. As the name suggests, MFT programs bring several families together in a treatment session, allowing them to receive feedback from each other as well as from therapists or social workers. This has several potential advantages, including the opportunity for families to expand their support networks, learn from each others' specific situations, and feel more comfortable in treatment rather than feeling they are being punished by being there [20]. One review discusses previous treatment studies that have found MFT to be effective with a variety of target populations, including "multi-problem" families, families referred by child protective services, and families with children at high risk of placement due to externalizing behaviors [21]. Such programs may produce improvements in children's behavior even when this is not the primary focus of treatment. For instance, the same article reports a significant decrease in children's aggressive behavior after an MFT program targeting parents' abusive or neglectful behavior, but not in a traditional family therapy comparison program.

2.3. Readiness to Change and Treatment Outcomes

The family variables described above have been studied with respect to their influence on the development and maintenance of problematic behaviors, and sometimes on treatment as well. Other variables, not directly related to family functioning, have also been researched as factors that influence the effectiveness of treatment. One that has been widely studied is readiness for change, as described in the Transtheoretical Model [22]. This model describes readiness for change as falling among six stages, each associated with a progressively greater level of motivation and behavioral change. In early stages, people show little or no desire to change the behavior in question and may not even think of it as a problem. In the more advanced stages they show a greater understanding of the potential reasons to change the target behavior and a greater personal investment in changing, eventually followed by a successful change and a focus on maintaining improvements and preventing relapse. As the authors state, the progression through these stages is frequently nonlinear, and it is quite common for people to move from more to less advanced stages in terms of both performing a target behavior and motivation to change it [22].

A great deal of research has demonstrated a significant association between readiness and treatment outcomes with a variety of target behaviors. A recent meta-analysis found readiness for change to have a moderate effect, on average, in predicting treatment outcome [23]. Most of the 39 studies included in this meta-analysis targeted alcohol or substance abuse, though other treatment targets included pain management, eating disorders, borderline personality disorder, and relationship problems. Additionally, these studies included both adult and adolescent participants, with no reported effect of age on the predictive ability of readiness.

Apart from drug and alcohol use, readiness for change has not been previously studied in the treatment of externalizing or antisocial behaviors among adolescents. Information on the role of parents' readiness to change their own behavior through family-based treatments is also lacking. One study that measured parents' and children's readiness for change as part of a family-based treatment for children with weight concerns found that mothers' stage of change was more closely associated with therapeutic outcomes than was children's stage of change [24]. This relationship is well worth further examination, especially in light of the presumed mechanism of change in such treatment methods as parent-management training (*i.e.*, that changes in parents' behavior toward their children cause changes in the children's behavior). Given the efficacy of MFT and PMT, it seems likely that a relationship does exist in these treatment modalities between parents' readiness to change and eventual change in children's behavior. However, this relationship has not been studied in treatments for externalizing behaviors. It is possible that the role of parents' readiness for change is different when the treatment target is adolescents' oppositional or aggressive behavior than when it is something less overtly harmful, such as weight management. An accurate understanding of the role of parents' readiness for change in MFT or PMT would help to enhance these treatments by directing an appropriate level of attention to parents' motivation to change their own behavior.

3. The Present Study

This study expands on existing literature regarding factors that influence treatment effectiveness by examining

an outpatient, community-based program in a suburban county in the eastern United States. The treatment program consists of a core 7-week multifamily psychoeducation and therapy (MFT) group intervention followed by three optional supplemental programs¹. This program seeks to reduce adolescents' externalizing behaviors by targeting specific family factors that have been shown to be associated with such behavior problems, including coercive communication styles and conflict in relationships between parents and adolescents. Families are referred by various agencies such as the family court system or the school district, or may be self-referred through the county's Department of Family Services website. The program is publicly funded, with families paying a one-time registration fee. The core MFT treatment is adapted from the *Parenting With Love and Limits* (PLL) program [25] [26]. PLL is listed by the US Substance Abuse and Mental Health Services Administration as an evidence-based treatment for children and adolescents with externalizing problems [27] and has been demonstrated in randomized controlled studies to reduce problematic behaviors associated with conduct disorder and oppositional defiant disorder [28]. This adaptation of the treatment consists of seven 2-hour sessions which include whole-family group meetings and separate parent and teen group meetings. The content covered in each session is summarized in **Table 1**.

The treatment program reviewed here has been active since 2001. To date, there has not been a formal examination of the effectiveness of this program or of relevant factors that may be associated with changes in adolescents' behavior. Examination of outcome data may be helpful to determine what family factors are associated with a greater or lesser probability of success. Although the present study is focused on one specific MFT program, results pertaining to predictors of treatment effectiveness are likely to be applicable to other family-based treatment programs as well. Such information may highlight areas for closer attention in future treatment development research.

One unique advantage of the treatment program on which this study focuses is the population treated. The county in which this program is based is listed by the US Census Bureau as having among the highest median incomes for any county or city in the United States with a population of at least 250,000 [29]. This is unusual for treatment studies for externalizing behaviors in youth; typically, when SES is reported at all it is most often to point out that the study is focused on lower-income families (e.g., [11]). The focus of the present study on a high-SES sample will expand the treatment literature to explicitly focus on a population that has previously received relatively little attention.

Three possible predictors of treatment effectiveness were examined. These are communication style between parents and adolescents, parents' attitudes toward their adolescent children, and parents' readiness to change their parenting behaviors. Based on previous research on these and related variables, they are hypothesized to be associated with change in treatment outcome in the following ways:

- 1) Adolescents whose parents report more positive communication and less negative communication with their children at intake will have better parent-reported treatment outcomes.
- 2) Adolescents whose parents report a less negative attitude toward their children at intake will have better parent-reported treatment outcomes.
- 3) Adolescents whose parents report a higher stage of readiness to change at intake will have better parent-reported treatment outcomes.

Note that change in communication style and attitude over the course of treatment is not examined in the present study; although some change in these areas may be expected, this study examines only the pre-treatment levels as potential predictors of treatment outcomes.

4. Methods

4.1. Participants

Data for the present study were drawn from an existing archive of families who completed the core MFT treatment between February 2001 and April 2010, the latest date for which full data were available. Families were only included in this study if at least one parent had completed all of the measures before and after treatment. This resulted in a total sample size of 201 families, including data from 130 mothers and 76 fathers (five families in this sample had complete data from both caregivers; data from these families were not found to differ

¹The supplemental interventions are an alumni group, individual family counseling (length of each determined by need), and a teen and parent training program to become volunteers to facilitate groups and assist in family therapy (length determined by age). These interventions were not part of the current study.

Table 1. Treatment summary by session.

	Whole families	Parent group	Teen group
Session 1	Introduction/ice-breakers; discussion of normal teen behavior and reasons for misbehavior.	Venting, building hope and strengthening commitment to treatment.	Venting, building hope, and brainstorming desired changes for own and parents' behavior.
Session 2	Identification of how buttons get pushed to escalate conflict and facilitation of nurturing interactions between parents and teens.	Development of a plan utilizing button busters to prevent and soften coercive interactions.	Development of a plan utilizing button busters to prevent and soften coercive interactions.
Session 3	Education to develop family agreements; reframe problems within a developmental framework; increase families' support for each other within the group.	Identification of a problem and operationalize it into a rule.	Identify acceptable rewards and consequences.
Session 4	Teens deliver "positive parent reports" designed to soften coercive interactions and increase nurturance. Educate about guilt and other barriers that interfere with delivery of consequences on a consistent basis.	Incorporate teens' rewards and consequences into family agreement and exchange of contact information between parents to increase informal support outside of group.	Create a positive parent report and discussion cards on developmentally appropriate topics.
Session 5	None.	Continue to work on family agreements and identify a plan "B" of consequences that can be used if the teen decides to not follow the family agreement.	Learn perspective taking skills to develop empathy and discuss readiness to make changes in their families to utilize button busters and the family agreement.
Session 6	Staff members (and lead parent volunteers) facilitate a discussion with each family to negotiate their family agreement while the volunteers and group members provide advice, brainstorming, and support.	Prepare for family agreement negotiations with role plays using button busters and listening skills. Write a positive teen report to be delivered in next session.	Discussion on forgiveness, identify individuals who have betrayed trust, and prepare for family agreement negotiations.
Session 7	Learn about developmentally appropriate nurturing strategies and soften parent teen interactions with positive teen reports.	None.	None.

significantly from other families, and both parents' data were used in this study since mothers' and fathers' reports were examined separately). Of the adolescent participants in this sample, 115 (57.2%) were boys, 163 (81.1%) were Caucasian, 25 (12.4%) were African-American, four (2.0%) were Asian, and nine (4.5%) identified as "unknown". Hispanic heritage was indicated separately; 24 (11.9%) of the adolescent participants identified themselves as Hispanic. These numbers suggest an overrepresentation of Caucasians and an underrepresentation of Asians in this study sample, compared with the total population of the county in which the program was located (68.7% Caucasian and 14.7% Asian, based on the 2010 United States census). The mean age of the adolescent participants was 15.15 years ($SD = 1.43$). Although socioeconomic status is not directly reported in the database, the average family income in this sample is estimated to be \$79,051, well above the national median of \$50,740 reported by [29]. This estimate was derived by recording the median family income for participants' ZIP codes, based on the most recent available census data [30], then calculating the mean of the recorded incomes. No correlation was found between estimated family income and ethnicity in this sample ($r = 0.07, p > 0.1$). This is another noteworthy difference between the present sample and the US population at large, in which the median income of White families is nearly twice that of Black families [29], and may further indicate the uniqueness of this sample compared with samples in other treatment studies in this area.

Results of a power analysis indicated that a sample size of 108 was needed to successfully test the hypotheses with 90% power and a medium effect size. This sample size was attained for mothers' reports but not fathers' reports.

4.2. Measures

Index of Parental Attitudes [31]: The IPA is a parent-report measure of parents' attitude toward their children. It consists of 25 items answered on a 5-point Likert scale, with responses ranging from "rarely or none of the time" (1) to "most or all of the time" (5). Sample items include "My child gets on my nerves" and "I wish my child was more like others I know." The sum of item scores is transformed to produce a final score between 0 and 100; according to the authors, a score of 30 or above represents a clinically significant level of conflict between parents and children based on negative attitude. Internal consistency is good, with an α score of 0.966 reported in the original validation article [31]. This article also reports satisfactory validity in discriminating between fami-

lies that were rated by a therapist as either having or not having significant parent-child conflicts.

Parent-Adolescent Communication Scale [32]: The PACS is a measure of communication styles between parents and adolescents, with separate forms to be completed by each. Each form contains 20 items answered on a 5-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5). The items are evenly distributed between two subscales, Open Communication (PACS-OC) and Problems in Communication (PACS-PC). Subscale scores are reported separately; each is calculated by taking the mean score for individual items within that subscale, resulting in a total score between 1 and 5. Higher scores on Open Communication indicate a greater amount of positive communication, while higher scores on Problems in Communication indicate a greater amount of negative communication. Sample items include “It is very easy for me to express all my true feelings to my child” and “There are topics I avoid discussing with my child.” Internal consistency was reported in the original development of the measure as $\alpha = 0.87$ for the Open Communication subscale and $\alpha = 0.78$ for the Problems in Communication subscale [32].

University of Rhode Island Change Assessment Questionnaire [33]: The URICA measures readiness to change, in terms of the Transtheoretical Model. This questionnaire is made up of 32 items answered on a 5-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5). The items are divided among four subscales, representing four of the six stages of change previously described: Precontemplation, Contemplation, Action, and Maintenance. Although the scale was originally written for use in addictions treatment, questions are commonly modified to reflect the specific subject of the current study or program. In the version used here, parents are asked about their level of motivation to change their parenting behavior toward their teenage children. Sample items include “As far as I’m concerned, I don’t have any problems that I personally need to change” and “I have a problem with my teenager and I really think I should work at it.” The scoring method used with this sample, modified from a method described by [34], produces a single “readiness” score between 30 and 160, with higher scores suggesting that the respondent is at a more advanced stage of change.

Child Behavior Checklist [35]: The CBCL is a widely-used instrument that measures a variety of emotional and behavioral problems. There are separate parent- and self-report forms that vary slightly in the questions they ask (a teacher-report form has also been developed, although it is not used in this treatment program). Specific statements regarding the child’s behavior are rated as “not true”, “somewhat or sometimes true”, or “very true or often true”. All forms provide T-scores on subscales based on syndromal descriptions of problem behavior and on *DSM* diagnostic criteria; raw scores are converted to T-scores using age-appropriate norms. Scores between 60 and 70 (84th to 98th percentile compared with age-based norms) are considered to be “borderline” or “at-risk”, and scores above 70 (>98th percentile) are considered to be clinically significant. Internal consistency α scores for individual subscales range between 0.72 and 0.96, and subscale scores correlate significantly with other measures of similar constructs [36].

4.3. Analyses

Preliminary analyses were conducted to test for relationships between individual variables which might influence the results and interpretation of later analyses. Bivariate correlations were calculated between adolescent participants’ age, sex, year of starting treatment, parents’ attitudes, communication style, and readiness to change, and parent-reported pre-treatment behaviors. Because it is a nominal, non-dichotomous variable, referral source was examined in relation to the parent-reported variables using analyses of variance.

A preliminary series of paired-sample t-tests was conducted to measure overall treatment effects. The outcome variables tested were four of the subscales from the CBCL that relate to externalizing behavior: 1) Rule-Breaking Behavior, 2) Aggressive Behavior, 3) Oppositional/Defiant, and 4) Conduct Problems. The specific comparisons were between the pre-treatment and post-treatment scores for each of these subscales, with mothers’, fathers’, and adolescents’ reports examined separately.

To determine the predictive value of the variables of interest, hierarchical multiple regressions were then conducted. Mothers’ and fathers’ data were analyzed separately, resulting in a total of eight regressions. The outcome variables for these analyses were the post-treatment CBCL scores for the subscales listed above (Rule-Breaking Behavior, Aggressive Behavior, Oppositional/Defiant, and Conduct Problems). The pre-treatment score of the respective CBCL subscale was entered into the first step of each regression to control for initial severity of symptoms. The pre-treatment scores for the other predictors of interest were entered simultaneously into the second step. Age, sex, and referral source were also controlled by entering them into the first step of the

regressions. Lastly, because the data being studied were collected over a span of ten years, the year in which each participant began treatment was entered into the first step to control for a possible cohort effect. This hierarchical method allowed an examination of each individual hypothesized predictor, and of the overall predictive value of these variables in aggregate, compared with the predictive value of pre-treatment behaviors and demographic variables.

5. Results

5.1. Preliminary Analyses

An examination of demographic variables revealed significant correlations between age and some pre-treatment behaviors, with mothers rating older adolescents as having more rule-breaking behavior ($r = 0.18, p < 0.05$) and less aggressive behavior ($r = -0.18, p < 0.05$) than younger adolescents; fathers reported no significant relationships based on age. Fathers also reported no sex differences for pre-treatment behavior, whereas mothers' reports showed a trend for greater rule-breaking behavior in girls than in boys ($r = 0.17, p < 0.1$). Fathers' reports, but not mothers' reports, did show a potential cohort effect, with greater rule-breaking and conduct disorder behavior reported for adolescents who entered treatment in earlier years than in more recent years ($r = -0.31, p < 0.01$ for Rule-Breaking, $r = -0.36, p = 0.001$ for Conduct Disorder). Referral source was not significantly associated with any problem behaviors. Correlation coefficients for continuous variables are summarized in **Table 2**; *F*-scores for referral source are not presented because none were significant.

Means and standard deviations of mothers' and fathers' pre-treatment scores on the IPA, PACS, and URICA are also presented in **Table 2**, as well as intercorrelations between these variables, demographic characteristics, and pre-treatment behavior. Both mothers' and fathers' mean scores on the IPA are above the cutoff for clinically significant family problems prior to treatment (recall that scores above 30 indicate a strongly negative attitude of parents toward the adolescent). Mean scores on the PACS suggest a moderate level of both positive and negative behaviors in communication between parents and adolescents. Mean scores on the URICA suggest that most parents participating in treatment felt highly motivated to change their own parenting behavior. IPA scores were positively correlated with all CBCL subscales for both parents. The Open Communication subscale of the

Table 2. Two-tailed correlation coefficients between demographic variables, hypothesized predictors, and pre-treatment child behavior checklist subscale scores.

	Sex	Age	Start Year	IPA	PACS-OC	PACS-PC	URICA	Rule-Breaking	Aggression	Oppositional	Conduct	<i>M</i>	<i>SD</i>
Sex	-	0.25**	0.03	-0.06	-0.02	0.02	0.01	0.17*	-0.09	-0.03	0.04	N/A	N/A
Age	0.06	-	-0.14	0.03	0.05	0.11	-0.11	0.18*	-0.18*	-0.09	-0.003	15.20	1.45
Start Year	0.11	0.003	-	-0.08	-0.05	-0.23**	-0.07	-0.22*	0.02	0.04	-0.13	N/A	N/A
IPA	-0.02	0.04	-0.05	-	-0.35***	0.34***	0.08	0.48***	0.62***	0.56***	0.55***	37.05	13.9
PACSOC	-0.07	-0.001	-0.21*	-0.45***	-	-0.37***	-0.05	0.002	-0.16*	-0.14	-0.03	2.89	0.70
PACSPC	-0.15	-0.17	-0.15	0.10	0.18	-	0.12	0.20*	0.13	0.11	0.17*	3.21	0.67
URICA	0.09	0.03	0.04	0.06	0.11	0.20*	-	0.04	0.23**	0.16*	0.10	122.2	13.8
Rule-Breaking	0.09	0.15	-0.31**	0.66***	-0.25*	-0.03	-0.02	-	0.49***	0.47***	0.81***	70.58	7.63
Aggression	-0.14	-0.18	-0.16	0.58***	-0.24*	0.14	0.07	0.57***	-	0.81***	0.74***	71.91	10.5
Oppositional	-0.11	-0.10	-0.10	0.58***	-0.29*	0.09	0.01	0.56***	0.90***	-	0.59***	69.50	7.73
Conduct	0.004	0.002	-0.36***	0.63***	-0.18	-0.18	0.02	0.90***	0.73***	0.64***	-	71.25	7.76
<i>M</i>	N/A	15.08	N/A	34.21	2.83	3.02	115.49	68.07	66.97	67.25	68.63		
<i>SD</i>	N/A	1.40	N/A	15.30	0.73	0.72	16.14	8.91	10.14	8.65	8.60		

Note: Intercorrelations for mothers' reports ($n = 130$) are presented above the diagonal, and intercorrelations for fathers' reports ($n = 76$) are presented below the diagonal. Means and standard deviations for mothers' reports are presented on the right side, and for fathers' reports are presented on the bottom. URICA = University of Rhode Island Change Assessment; IPA = Index of Parental Attitude; PACS-OC = Parent-Adolescent Communication Scale, Open Communication subscale; PACS-PC = Parent-Adolescent Communication Scale, Problems in Communication subscale. * $p < 0.1$, ** $p < 0.01$, *** $p < 0.001$.

PACS correlated with lower pre-treatment scores on the Rule-Breaking, Aggression, and Oppositional-Defiant subscales for fathers but not mothers. Mothers' readiness to change was associated with greater pre-treatment aggression, and also showed a trend toward significant association with pre-treatment oppositional behavior.

Comparison of pre- and post-treatment CBCL scores indicated a statistically significant decrease on all subscales examined as reported by mothers and fathers (see **Table 3**). Mean pre-treatment scores as reported by mothers were at the beginning of the clinically significant range (70 and above) except for the Oppositional subscale, which was just below the cutoff between clinically significant and at-risk (60 - 69). Mean scores reported by fathers were in the upper end of the at-risk range. Post-treatment CBCL scores for all subscales were in the at-risk range as reported by both mothers and fathers, which suggests that while the changes were statistically significant, fathers in particular may not have perceived them as being as significant as did mothers.

Although adolescents' self-report scores were not the focus of the present study, they were also included here for exploratory comparison. Of the 201 adolescents in the sample, self-report scores were only available for 167 of them. Adolescents' mean pre-treatment CBCL scores were all in the at-risk range, and their post-treatment scores showed no change in any of the subscales (see **Table 3**). Analyses of variance comparing pre-treatment CBCL scores between mothers, fathers, and adolescents found that self-report scores were significantly lower than parent-report scores on all four of these subscales (Rule-Breaking $F(2, 388) = 16.91$, Aggression $F = 26.81$, Oppositional-Defiant $F = 17.62$, Conduct Disorder $F = 12.68$, $p < 0.001$ for all subscales). This suggests that adolescents 1) perceived themselves as having significantly less concerning behavioral problems compared to parents' reports at baseline, 2) did not perceive their externalizing behaviors to be especially problematic prior to starting treatment, and 3) (perhaps consequently) did not report significant changes in their externalizing behaviors. Similar analyses comparing post-treatment scores found no significant differences between parents and adolescents for any subscales. In other words, at post-treatment, parents and adolescents reported similar levels of externalizing behaviors. This suggests that the lack of significant decrease in self-report scores may be an artifact of these scores having already been lower to begin with, such that a real change in behavior would not have been detected by this measure.

5.2. Hypothesis 1: Parent Communication and Adolescent Behavior

Results of the hierarchical multiple regressions, including standardized and unstandardized regression coefficients for the hypothesized predictors, as well as demographic variables and pre-treatment behavior scores, are presented in **Table 4** (mothers' reports) and **Table 5** (fathers' reports). The overall regression models were significant in both steps for all of the outcome variables. However, the change in the model's strength from the first to the second step was only significant for mothers' reports, not fathers' reports, and only for the CBCL subscales of Aggression, Oppositional-Defiant, and Conduct Disorder.

Table 3. Change in select child behavior checklist scores before and after treatment.

		Pre-treatment <i>M</i> (<i>SD</i>)	Post-treatment <i>M</i> (<i>SD</i>)	<i>t</i> (<i>df</i>)	Effect Size <i>d</i>
Teen self-report	Rule-Breaking	64.98 (9.26)	64.97 (9.52)	0.01 (166)	0.00
	Aggression	63.38 (9.56)	62.87 (9.84)	0.77 (166)	0.05
	Oppositional	63.79 (8.44)	62.82 (8.84)	1.60 (166)	0.11
	Conduct	66.17 (9.55)	65.59 (9.97)	0.93 (166)	0.06
Mothers' report	Rule-Breaking	70.58 (7.63)	66.62 (8.69)	6.86 (129) ^{***}	0.48
	Aggression	71.91 (10.48)	65.36 (10.15)	8.09 (129) ^{***}	0.63
	Oppositional	69.50 (7.73)	64.29 (7.93)	7.60 (129) ^{***}	0.67
	Conduct	71.25 (7.76)	67.12 (8.48)	6.35 (129) ^{***}	0.51
Fathers' report	Rule-Breaking	68.07 (8.91)	63.84 (8.28)	7.06 (75) ^{***}	0.49
	Aggression	66.97 (10.14)	62.11 (8.81)	7.11 (75) ^{***}	0.51
	Oppositional	67.25 (8.65)	62.92 (8.49)	6.82 (75) ^{***}	0.51
	Conduct	68.63 (8.60)	64.08 (7.45)	7.77 (75) ^{***}	0.57

Note: scores are presented in the format *mean (standard deviation)*. * $p < 0.1$, ** $p < 0.01$, *** $p < 0.001$.

Table 4. Regression analyses for hypothesized predictors of mother-reported post-treatment child behavior checklist subscales.

IVs	Rule-Breaking			Aggression			Oppositional-Defiant			Conduct Disorder		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Step 1												
Age	0.06	0.42	0.01	0.53	0.54	0.08	0.20	0.45	0.04	-0.03	0.45	-0.01
Sex	-1.32	1.20	-0.08	-1.07	1.52	-0.05	0.39	1.28	0.02	-1.12	1.29	-0.07
Start Year	0.02	0.29	0.004	-0.17	0.36	-0.04	-0.27	0.30	-0.07	-0.18	0.31	-0.04
Ref. Source	-0.09	0.21	-0.03	-0.20	0.26	-0.06	-0.15	0.23	-0.05	-0.003	0.23	-0.001
Pre-Treatment	0.79	0.08	0.69***	0.59	0.07	0.61***	0.52	0.08	0.51***	0.64	0.08	0.58***
R^2	0.47***			0.37***			0.26***			0.35***		
Step 2												
Age	0.04	0.43	0.01	0.22	0.53	0.03	0.14	0.44	0.03	-0.03	0.45	-0.01
Sex	-1.29	1.23	-0.07	-0.91	1.46	-0.04	0.66	1.23	0.04	-0.83	1.27	-0.05
Start Year	0.11	0.30	0.03	0.10	0.35	0.02	-0.04	0.30	-0.01	-0.06	0.31	-0.02
Ref. Source	-0.14	0.21	-0.05	-0.35	0.26	-0.10	-0.30	0.22	-0.11	-0.12	0.22	-0.04
Pre-Treatment	0.78	0.09	0.68***	0.39	0.09	0.41***	0.32	0.09	0.31***	0.51	0.10	0.46***
URICA	0.003	0.04	0.004	0.04	0.05	0.06	0.07	0.04	0.11	0.05	0.04	0.09
IPA	-0.003	0.05	-0.01	0.19	0.07	0.27***	0.15	0.06	0.27***	0.11	0.06	0.18*
PACS-OC	-0.25	0.95	-0.02	0.20	1.13	0.01	-0.29	0.96	-0.03	-0.56	0.99	-0.05
PACS-PC	1.40	1.00	0.11	2.11	1.22	0.14*	1.18	1.03	0.10	1.27	1.05	0.10
ΔR^2	0.012			0.073***			0.090***			0.059**		
N	130			130			130			130		

Note: "Pre-Treatment" refers to the mother-reported pre-treatment CBCL score for the same subscale; URICA = University of Rhode Island Change Assessment; IPA = Index of Parental Attitude; PACS-OC = Parent-Adolescent Communication Scale, Open Communication subscale; PACS-PC = Parent-Adolescent Communication Scale, Problems in Communication subscale. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

It was hypothesized that there would be a relationship between parents' communication style and adolescents' post-treatment behavior; specifically, that higher scores on the Problems in Communication subscale of the Parent-Adolescent Communication Scale would predict higher CBCL scores, while higher scores on the Open Communication subscale would predict lower CBCL scores at the end of treatment. Results of the regression analyses showed two trends toward such relationships. Mothers' scores on the Problems in Communication subscale predicted mothers' reports of adolescents' post-treatment aggressive behaviors, and fathers' scores on the Open Communication subscale predicted fathers' reports of adolescents' post-treatment conduct disordered behavior. Both of these relationships had a small effect size [37]. Parents' communication style did not predict any other externalizing behaviors.

5.3. Hypothesis 2: Parent Attitude and Adolescent Behavior

It was hypothesized that parent attitudes toward their teens would be related to post-treatment behavior, with lower IPA scores (*i.e.*, less negative attitudes) predicting lower post-treatment CBCL scores. The results of the regression analyses were congruent with this hypothesis, with higher IPA scores (*i.e.*, more negative attitude) predicting more problematic post-treatment behavior. Specifically, mothers' IPA scores showed a significant relation to adolescents' CBCL scores for the Aggression and Oppositional subscales, as well as a trend toward significance for the Conduct Disorder subscale. Fathers' IPA scores showed a similar trend with adolescents' Oppositional scores but not with other scores. As with communication, all effect sizes were small.

It was hypothesized that greater parental readiness for change, indicated by higher scores on the University of Rhode Island Change Assessment Questionnaire, would be associated with lower post-treatment CBCL scores. Results did not support this hypothesis. Results of the regressions revealed that neither mothers' nor fathers' URICA scores significantly predicted adolescents' post-treatment behavior on any of the CBCL subscales.

Table 5. Regression analyses for hypothesized predictors of father-reported post-treatment child behavior checklist subscales.

IVs	Rule-Breaking			Aggression			Oppositional-Defiant			Conduct Disorder		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Step 1												
Age	-0.34	0.41	-0.06	-0.89	0.43	-0.14**	-1.08	0.43	-0.18**	-0.61	0.37	-0.11
Sex	-0.52	1.15	-0.03	1.37	1.21	0.08	0.68	1.22	0.04	-0.85	1.04	-0.06
Start Year	0.41	0.30	0.10	-0.01	0.30	-0.001	-0.01	0.30	-0.003	0.20	0.28	0.05
Ref. Source	0.05	0.18	0.02	0.16	0.19	0.05	0.05	0.20	0.02	0.11	0.17	0.05
Pre-Treatment	0.80	0.07	0.86***	0.69	0.06	0.80***	0.76	0.07	0.78***	0.72	0.06	0.83***
<i>R</i> ²	0.68***			0.69***			0.66***			0.67***		
Step 2												
Age	-0.26	0.42	-0.05	-0.90	0.44	-0.14	-1.11	0.43	-0.18**	-0.56	0.37	-0.11
Sex	-0.32	1.20	-0.02	1.67	1.24	0.10	0.98	1.23	0.06	-0.62	1.05	-0.04
Start Year	0.34	0.32	0.008	0.02	0.31	0.004	0.08	0.31	0.02	0.04	0.30	0.01
Ref. Source	0.02	0.19	0.01	0.08	0.20	0.03	-0.04	0.20	-0.01	0.06	0.17	0.02
Pre-Treatment	0.77	0.10	0.83***	0.64	0.08	0.74***	0.68	0.09	0.69***	0.65	0.08	0.75
URICA	-0.02	0.04	-0.05	-0.06	0.04	-0.11	-0.05	0.04	-0.09	-0.04	0.03	-0.08
IPA	0.01	0.06	0.02	0.05	0.05	0.09	0.10	0.05	0.18*	0.02	0.05	0.05
PACS-OC	-0.75	0.93	-0.07	-0.22	0.97	-0.02	0.59	0.96	0.05	-1.42	0.82	-0.14*
PACS-PC	0.51	0.88	0.05	0.92	0.90	0.08	0.82	0.89	0.07	0.62	0.77	0.06
ΔR^2	0.007			0.020			0.027			0.031		
<i>N</i>	76			76			76			76		

Note: "Pre-Treatment" refers to the father-reported pre-treatment CBCL score for the same subscale; URICA = University of Rhode Island Change Assessment; IPA = Index of Parental Attitude; PACS-OC = Parent-Adolescent Communication Scale, Open Communication subscale; PACS-PC = Parent-Adolescent Communication Scale, Problems in Communication subscale. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

6. Discussion

This study aimed to examine potential predictors of therapeutic outcomes in a parent-adolescent group therapy program. Only one of these potential predictors, parents' attitudes toward their children, was found to be significantly related to treatment outcomes. Parents' communication style showed trends toward significance for some outcome variables.

The results of our analyses with regard to parents' attitudes toward their children were consistent with the study hypotheses. As predicted, adolescents whose parents reported holding a more negative attitude toward them at the beginning of treatment made less improvement by the end of treatment when compared to adolescents whose parents reported a more positive attitude. This potentially supports the notion that parents' attitudes toward their children affect children's behaviors, and that negative parental attitudes may be an important target of family-based treatments. It is likely that this effect operates both directly (e.g., parents with a negative attitude are more hostile or critical toward their children) and indirectly (e.g., parents with a negative attitude are less likely to provide support when their children are dealing with other problems). In terms of the effect on treatment outcome, it may be that parents' negative attitudes impact the way parents involve themselves in therapy and related services. It is noteworthy that this effect was much stronger for mothers than for fathers. Though this study adds significantly to our limited knowledge base regarding the relationship between fathers' attitudes toward their children and treatment outcomes, this finding should be interpreted with caution given the relatively low numbers of fathers in the current study. It may be possible, though, that parents holding a more negative attitude toward their adolescent children may be more likely to exaggerate their reports of adolescents' problematic behaviors and may be less perceptive of incremental improvements, resulting in inflated scores which do not accurately reflect improvements made over the course of treatment.

The results of the regression analyses described above suggest that cautious conclusions should be drawn

about communication style as a predictor of treatment outcomes. The trend-level findings do suggest the possibility of two separate, small relationships, with mothers' negative communication behaviors predicting poorer treatment outcomes and fathers' positive communication behaviors predicting better treatment outcomes. These results suggest that communication style is potentially an aspect of parent-adolescent relationships that deserves further attention in treatment research, consistent with similar recommendations made by [11] with regard to treatment programs for younger children and their parents. Practically speaking, greater emphasis may be placed in treatment on developing positive communication skills when a family presents with significant problems in communication.

The specific pattern of results, with mothers' negative communication and fathers' positive communication relating to outcomes, but not vice versa, merits further exploration. One possible explanation for these results is the match, or lack thereof, between communication style and gender norms. Families may consider it more acceptable for fathers to communicate in a closed-off or somewhat hostile manner, whereas mothers may be expected to maintain an open, positive communication style. Deviations from these expectations (e.g., mothers communicating in a hostile manner or fathers communicating in an open manner) could modulate the level of influence parents have on adolescents' behavior because the communication style appears to be unusual. Further research may shed more light on this finding, which could hold implications for in-home communication and treatment targets.

The final hypothesis in this study stated that parents' readiness to change their parenting behaviors would be associated with the treatment outcome. The regression analyses did not show a significant relationship between mothers' or fathers' readiness and treatment effects on any of the outcome variables. This last result is surprising in light of the vast body of research supporting readiness for change as a predictor of treatment effectiveness. As noted previously, however, this earlier research has primarily been done with adults, and has always examined the readiness of the identified client to change his or her own problematic behavior (defined in the context of the given study). The present study instead examined the readiness of parents to change their parenting behavior as a possible predictor of changes in adolescents' behavior. There are several possible explanations for the lack of significant findings here with respect to this variable. On average, parents indicated a relatively high level of readiness to change prior to treatment, albeit with considerable variance. However, it is possible that parents who wanted to change their parenting behavior encountered obstacles to doing so. It is also possible that adolescents' behavior change was more dependent on their own readiness to change than on their parents' readiness, and that these two variables are unrelated. Further examination of the reason(s) for the lack of significance seen here may be a promising area for future research. Additionally, follow-up assessments done several months (or longer) after completing treatment may produce different findings, such as the appearance of a stronger relationship between parent readiness and adolescent behavior over time (*i.e.*, when parents must maintain changes that they may not have wanted to make to begin with).

Three of the four hypothesized predictors did produce significant or trend-level results. However, these results were less consistent than expected, in contrast to the consistent and substantial decreases in externalizing behavior reported between the beginning and end of treatment. Though this does not diminish the potential value of parents' attitudes and communication style as predictors of treatment effects, it does indicate that other factors are likely to be involved as well. Even if the decrease in externalizing behavior could be attributed entirely to effects of treatment, the data would indicate that these effects are to some extent independent of the variables used as predictors in this study. This is most apparent for the CBCL subscale of Rule-Breaking, which showed nearly the same magnitude of decrease as the other subscales but for which neither mothers' nor fathers' characteristics significantly predicted post-treatment scores. One possible explanation for this difference lies in the specific behaviors measured by this subscale as compared with the others. Of the four subscales, Rule-Breaking includes the greatest proportion of items measuring covert behaviors (e.g., "thinks about sex too much") rather than overt behaviors (e.g., "drinks alcohol without parents' approval"). Decreases in covert behaviors may occur by a different mechanism than decreases in overt behaviors. If this different mechanism has little or no connection with parents' attitudes or communication style, this would result in these variables having little ability to predict a change in rule-breaking behavior, even though such a change clearly was reported.

Overall, the results of this study highlight the influence of the relationship between parents and adolescents on the effectiveness of a multifamily therapy program that targets adolescents' externalizing behavior. Two variables examined here, parent-adolescent communication and parents' attitude toward adolescents, represent facets of this relationship. While much has been written about communication within the family, parental attitude

has received relatively little attention to date in the treatment literature. Given the results of the present study, it may be worthwhile to increase the explicit emphasis on parental attitude in family treatment programs. It may also be helpful to further examine its relation to other constructs of parental behavior and beliefs which have already received more research attention, such as warmth.

A noteworthy characteristic of this study in evaluating its contribution to the body of research is the inclusion of data on fathers. Fathers are rarely included in research on the treatment of emotional or behavioral problems in children and adolescents [38]. The inclusion of fathers in the present study helps to correct this discrepancy and to shed light on ways that mothers and fathers may contribute differently to the success of family-based treatments. Although the number of fathers providing data for this study was somewhat low, trends toward statistical significance were still found, drawing attention to areas deserving more extensive research. A successful replication with greater power and statistical significance would indicate a potentially important difference in the way mothers' and fathers' communication style influences adolescents' behavior, which would be valuable information for tailoring treatment depending on whether one or both parents are involved. Even with the limited findings presented here, the inclusion of fathers in this study serves as a stepping stone for much-needed future research.

Although not the main focus, this study also demonstrates the dissemination of an evidence-based treatment program (*Parenting with Love and Limits*) to a wider clinical population in a naturalistic setting. To date, all published research on the PLL program that could be found was written by at least one of the program's original developers. The initial analyses described in this study support the effectiveness of PLL when adapted for a different clinical population and a different set of clinicians than those who participated in the original research on this program.

The unique characteristics of the treatment participants in this study deserve additional attention. Specifically, the majority of participants were White families with a high estimated socioeconomic status. This is important because most, though by no means all, research in treating externalizing behaviors in youth focuses on children or families of lower SES and with a larger proportion of ethnic minority participants. Participation in the treatment program examined here was associated with a decrease in target behaviors, congruent with behavioral improvements found in studies of MFT interventions in low- or unspecified SES samples (e.g., [11] [21] [39]). This provides some support for generalization between these various groups. At the same time, however, the use of a demographically unusual sample in the current study limits the ability to generalize findings which are new to this study, *i.e.*, the examination of specific predictors of treatment effects. These analyses must be replicated in other populations to allow appropriate generalization.

6.1. Social Implications

Although the central purpose of this article is to provide clinical researchers and practitioners with information to refine treatment methods, this information may be helpful for families as well. The results of the study suggested some links between parents' attitudes and communication style and changes in adolescents' behavior during the course of therapy. It is likely that changes in parents' attitudes and communication can also produce changes in adolescents' behavior outside of a treatment context. Many channels are available to encourage parents to make such changes, such as pediatricians or parenting classes. If parents are encouraged from an early stage to view their children in a non-critical manner, and to demonstrate warmth and openness when communicating with them, this may prevent or reduce the development of externalizing behaviors as the children grow older. It may also help children with such behaviors to change them over and above the changes that would be expected from any treatment those children are receiving.

One other implication of this research that is relevant outside of the mental health professions relates to the importance of providing access to appropriate mental health services. As discussed at the beginning of this article, externalizing behaviors can carry significant costs to the individual and to society. Adequate treatment mitigates these costs considerably. A detailed examination of this mitigating effect is outside the scope of this article. With regard to the treatment program examined here, previous analyses conducted by two of the authors (J.F. and J.P.W.) for internal review indicated that adolescents who successfully completed the core treatment program were less likely to be subsequently placed in juvenile detention or other out-of-home placements than were adolescents who dropped out of treatment or who were referred but did not attend treatment at all [40]. At a cost of US \$225 per person per day for juvenile detention placement, this results in substantial financial sav-

ings. Other such programs may be expected to have comparable results. The costs of externalizing behavior, in both human and financial terms, may thus be reduced by making treatment more readily available to adolescents exhibiting such behavior. Administrators of juvenile justice, health care, and other related systems are advised to bear this cost saving in mind when considering the cost of providing such treatment programs.

6.2. Limitations

Some factors limit the conclusions that may be drawn from this study. Though still noteworthy, there is the relatively small number of fathers who provided complete data. The number of fathers whose data could be used fell shortly below the number needed to detect a real effect, according to the initial power analysis. Thus, it is possible that the lack of significant findings for multiple regressions using fathers' scores results from insufficient data rather than from fathers' attitudes and behavior actually having little relation to adolescents' behavior. Some father-report scores did show a trend toward significance in the regressions but did not reach the threshold of $p < 0.05$. A larger sample may well have produced statistically significant results for these predictors, if not others.

Another notable limitation is that, although parent-reported CBCL scores did decrease over the course of treatment, there are multiple possible reasons for this decrease which cannot be ruled out at this time. The use of the CBCL as a treatment outcome measure carries an implicit assumption that parents accurately report their children's behavior, and that changes in reported behavior are a result of treatment. However, this method of measurement is susceptible to several biases. Parents may exaggerate the severity of adolescents' behavior prior to treatment, or may perceive greater change than has actually occurred by the end of treatment because they are primed to look for treatment effects. The possibility that these biases influenced the results seen in this study is increased by the lack of cross-informant comparison (e.g., comparison of parent-report and adolescent self-report scores) and by the lack of a control group not receiving the target MFT treatment. These potential sources of error may limit the interpretations that can be made regarding the relationship between family characteristics and treatment effectiveness based on the results of this study.

6.3. Future Directions

The results of the present study indicate the need for more research in certain areas, as well as opening up new avenues for future research. As stated above, a closer examination of the role of readiness to change in family therapy is necessary to better understand the results obtained here. Additional theoretical research into the relation between parental attitudes and other family-related constructs is also recommended in order to provide a better understanding of the role that attitudes and other family characteristics play in the development, maintenance, and treatment of externalizing behaviors in youth.

Future research should also expand on the findings presented here. This study was based only on reports of behavior immediately after completing treatment, predicted by family characteristics at the start of treatment. A follow-up examination of behavior months or years after treatment completion would not only indicate if changes in behavior (or, alternately, changes in parents' perception of adolescents' behavior) are maintained beyond the end of treatment, but could also demonstrate the longer-term effects of the predictor variables used in this study. It is also possible that the predictor variables used in this study are more significant at different times. For example, parental attitude may influence adolescents' behavior change more at the end of treatment than at the beginning, or the extent to which attitudes have changed may matter more than how positive or negative those attitudes were at the start. A comparison of pre-treatment, post-treatment, and change scores would likely answer this question.

One other expansion to the present research that may be helpful is an examination of relationships not only between adolescents and parents, but also between adolescents and other important people in their lives, such as peers and school staff. This is in keeping with the broader outlook of multisystemic therapy (MST; [41]). If parents are not the only influential people in adolescents' lives, then a more thorough examination of their relationships with other influential people may provide useful guidance for future treatment, especially in programs such as MST which actively incorporate these other people.

In sum, the present study provides information that may be valuable to future developments in the provision of mental health services to adolescents and families. Specifically, parental attitude is demonstrated here to be an important facet of the parent-adolescent relationship in terms of its effect on treatment outcomes. Our results

suggest that when providing mental health services to adolescents, explicitly targeting parental attitude in family-based treatment may well increase overall effectiveness.

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