

## MULTIPLE-FAMILY GROUP INTERVENTION FOR INCARCERATED ADOLESCENTS AND THEIR FAMILIES: A PILOT PROJECT

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*The Multiple-Family Group Intervention (MFGI) was developed to address the need for an effective and yet affordable treatment for reducing recidivism for incarcerated adolescents and altering the families' coercive interactional patterns from an affect regulation and attachment perspective. The 8-week MFGI program was conducted in two Indiana juvenile correctional institutions. The research study utilized pre- and postintervention assessments and a 6-month follow-up assessment. Data from both male (n = 43) and female (n = 30) adolescents were combined, yielding a total sample of 140 respondents (73 adolescents, 67 caretakers). The 6-month follow-up assessment indicated a recidivism rate of only 44% compared to the national norm of 65–85%. Linear growth models were fit to determine the nature of the changes in adolescent behavior over the three assessments. Adolescents and caregivers reported that adolescents' externalizing behaviors significantly declined over time. Adolescent-reported internalizing symptoms as well as their alcohol and drug use significantly declined over the follow-up period, while caregiver reports of these behaviors showed no change over time. Adolescent-reported attachment to their parents, particularly mothers, increased significantly as did both adolescent and caregiver-reported functional affect regulation.*

At present, many adolescents after release from correctional facilities to which they have been remanded for criminal behavior return to these delinquent behaviors, alcohol and drug abuse, and sexual offending (Santos, Henggeler, Burns, Arana, & Meisler, 1995). The recidivism rate for incarcerated adolescents is extremely high, hovering in the range of 65–85%;<sup>1</sup> many re-offend and are re-incarcerated at great cost to communities, court systems, and mental health service agencies (Deschenes & Greenwood, 1998; Henggeler, 2003; Santos et al., 1995). Often, this cycle is repeated until adolescents reach the age of 18 and transition into the adult mental health and criminal justice systems (Borduin, 1994; Lipsey, 2000).

While incarcerated, the adolescents attend school and individual and/or group therapy, but their relationships with their families are often not targets for treatment. As a result, the coercive interactional patterns common in these families do not improve (Henggeler, Smith, & Schoenwald, 1994; Patterson, 1982, 1994, 2002). These conflictual cycles are associated with high levels of negative emotion that disrupt family members' attachment bonds (Ducharme, Doyle, & Markiewicz, 2002), impair cognitive functioning (Gottman, 1993), and foster chronic physiological arousal (El-Sheikh, 2001; Gottman & Katz, 2002). The result is that adolescents

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leave the institutions disconnected from their families, unable to cope well with conflict and negative affect/emotion, and therefore are less likely to integrate new information and develop alternative solutions to problems. Instead, they are more likely to revert to old, overlearned and often maladaptive behaviors, leaving them at risk for re-offending and relapse (Henggeler, 2003; Santos et al., 1995). Evidence-based and effective family treatments exist for delinquency and conduct disorder (see Keiley, 2002a, for a review), but many of them are expensive to implement, requiring extensive resources and additional personnel that state-funded juvenile correctional systems seldom can afford. The clinical and research project Multiple-Family Group Intervention (MFGI) was developed and conducted to address the need for effective, yet affordable, treatment for incarcerated adolescents and their families.

### *Development of Delinquent Behaviors*

Adolescents at risk for entry into the juvenile justice system often have already experienced behavior problems in early (Oppositional Defiant Disorder) or late (Conduct Disorder) childhood (American Psychiatric Association, 2000). As a result, they may have social information processing and other cognitive deficits such as hostile attributional bias and poor problem-solving abilities (Dodge, 1993). These processing biases support children's views of the world as unfriendly. Seeing only hostility, they limit the means that they use to obtain desired goals to behaviors that are coercive, if not aggressive (Dodge, Pettit, & Bates, 1996). Aggressive children with these cognitive deficits and biases, which interfere with the development of social competence, then may be rejected by typically developing peers, associate with deviant ones, and experience academic failure (Dishion & Andrews, 1995). As adolescents, they often feel alone, fearful of negative evaluation, and full of self-blame (Dodge, 1993). The resulting preponderance of negative affect, lack of useful affect regulation skills, and problems in relationships that the youth then experiences are frequently self-medicated by the use of substances (e.g., alcohol, drugs) or behaviors (e.g., sex, gang membership, violence), and they thus fall into the juvenile justice system (Henggeler & Santos, 1997; Henggeler et al., 1994).

Often some parents and caregivers of incarcerated adolescents struggle with their own psychopathology (e.g., drug and/or alcohol abuse, criminal behavior), as well as marital discord and divorce, which are all related to adolescent delinquent and addictive behaviors (Gottman & Katz, 1989). Parental psychopathology is hypothesized to affect the development of child and adolescent problem behaviors through its influence on parenting practices (Frick, 1994). Parenting practices such as harsh, lax, erratic, or inconsistent discipline, monitoring, and supervision are, in themselves, a negative influence on parent/child interactions (Kazdin, 1993). This influence most likely begins early in childhood and is bidirectional; that is, parenting behavior has an effect on the child's behavior which, in turn, has an effect on further parenting behavior (Patterson, 2002; Patterson, Reid, & Dishion, 1992). Patterson has called the resulting coercive cycle a form of escape and avoidance conditioning (Patterson, 2002). In response to parents' aversive intrusions into relatively trivial noncompliant behavior, the child counterattacks in a less trivial manner, the parents respond with further escalations of demanding behavior, and a coercive cycle ensues (Dishion & Andrews, 1995; Patterson, 2002). Seventy percent of the time, children outlast their parents and get what they want, which reinforces their deviant behavior (Patterson, 1982, 1995, 2002). These cycles of coercion and abdication of control by parents leave the child in a powerful position, but with little experience of effective problem solving. Rueter and Conger (1995) found that when problem-solving interactions such as these were ineffective, adolescents were more at risk for poor adjustment, addiction, and criminal offending. These behaviors used by children to gain control over disruptive, chaotic, and aversive circumstances at home carry over to their relationships with peers and teachers, often resulting in school failure and associations with deviant peers (Dishion, Duncan, Eddy, Fagot, & Fetrow, 1994), exacerbating their delinquent behaviors and leaving them at risk for entry into the juvenile justice system.

Many causal-modeling studies have shown that the etiology and maintenance of delinquent behaviors is multidimensional; that is, individual and family characteristics as well as the larger context of peers, schools, and neighborhoods all contribute to the development of adolescent delinquent behavior (Conger, Ge, Elder, Lorenz, & Simons, 1994; Elliott, Huizinga, & Ageton, 1985; Patterson, Dishion, & Bank, 1984). These larger contextual factors often have a profound effect on the access to resources that are available for individuals and families of color or of lower socioeconomic status (Vega & Gil, 1998; Volkow, 2005).

#### *Affect Regulation and Attachment in These Coercive Interactional Cycles*

Researchers have suggested that affect regulation and the attachment relationship in which it is constructed are the major mechanisms through which parent psychopathology, ineffective parenting practices, and marital discord influence children in the development of problem behaviors (Robinson, Emde, & Korfmacher, 1997). For example, Dodge (1993) has suggested that parental psychopathology, poor parenting, marital conflict, early abuse, and exposure to aggression result in insecure attachment to the caregivers and the development of ineffective strategies to manage intense affect as well as the development of internal working models (IWMs: schemas of the past, expectations of the future, emotionally charged vulnerabilities; Bowlby, 1969/1982) that produce cognitive biases and ensure the development of early coercive behavior patterns and later even more problematic delinquent behaviors (Dodge et al., 1996).

The regulation of emotional or affective arousal is the key factor in determining the nature and form of close relationships (Porges, 2001). Emotional arousal gets our attention (Frijda, 1986; Tomkins, 1963). Infants and children who experience arousal that they cannot regulate by themselves (e.g., thumb sucking, rocking) learn other affect regulation strategies (e.g., crying, reaching out) to maintain caregiver proximity, which is important especially in stressful situations (Bowlby, 1969/1982, 1973). In stressful situations, the attachment behavior system is activated with the goal of reducing negative arousal and instilling a sense of security (Lyons-Ruth, 1996). How caregivers respond to infant distress is a determinant of the type of attachment style that infants develop. The infant develops a secure attachment if the caregiver is warm, sensitive, available, and responsive during the stressful situations; the result is the infant learns to regulate distress with strategies that involve seeking comfort and support. An infant develops an avoidant/insecure attachment if the caregiver is emotionally unavailable or rejecting during times of distress; thus, the infant learns to regulate distress by restricting the communication of anger (Allen, Moore, & Kuperminc, 1997). An ambivalent/insecure attachment develops when the caregiver is inconsistent in his or her responses to the infant in stressful situations; these infants often become hypervigilant to attachment experiences and use affect regulation strategies that heighten distress with displays of fear and anger toward the caregiver (Kobak & Sceery, 1988; Magai, 1999). Children who display an insecure/disorganized attachment view their caregivers as frightening, and, therefore, they become unable to develop a consistent strategy for obtaining comfort and security from caregivers when under stress (Lyons-Ruth, 1996). In general, the three insecure attachment styles will decrease children's ability to regulate affect and their ability to explore and be self-confident in new situations, leaving them at risk for later externalizing and internalizing disorders (Keiley, 2002b; Magai, 1999).

These childhood attachment organizations and affect regulation strategies often continue into adolescence through the development of internal working models (IWMs). Bowlby's (1969/1982) concept of IWMs consists of beliefs and expectations about how attachment relationships operate and the possible gains and losses in these relationships. IWMs of the world include ideas of who the attachment figures are and how the attachment figures are likely to respond (Bowlby, 1973; Magai, 1999). IWMs of self include ideas about how acceptable or unacceptable an individual is in the eyes of the attachment figures. Taken together, these IWMs of the world and self include information about what emotions are appropriate or possible for the individual to acknowledge and express and how these emotions help to maintain or

deteriorate the attachment bond (Bowlby, 1973; Magai, 1999). For example, the IWM for an individual who is ambivalently attached often calls for an exaggerated display of distress in the face of high arousal; the IWM for an avoidantly attached individual calls for a minimization of distress in that situation. If the basic tasks of adolescence (e.g., identity formation, achieving autonomy) are coupled with insecure attachment styles and poor affect regulation skills in caregivers or adolescents, coercive interactional cycles, high levels of negative affect, and disruption in the family system are likely to develop or escalate to intensely punishing levels (Keiley, 2002b; Magai, 1999; Patterson, 1982).

The absorbing negative affective states that occur in these coercive interactional cycles negate whatever communication skills family members have, often leaving them with few effective affect regulation strategies (Keiley, 2002b; Porges, 2001). In a highly aroused panic mode that is not cognitively controlled, family members are unable to act or respond in a nondefensive manner, instead reverting to habitual and defensive modes of interaction (fighting, fleeing) that are the cause of the coercive interactional cycles. These defensive interactional patterns are linked to the attachment and affect regulation styles (IWMs) of the family members; fighting—a rage response to high arousal—is more likely to occur consistently for ambivalently attached individuals, and fleeing—a fear response to high arousal—for avoidantly attached individuals (Porges, 2001). Individuals who have disorganized attachment styles are more likely to exhibit both fighting and fleeing in succession. If, however, in the face of high arousal in a treatment setting, family members are able to risk behaving differently, over time, their IWMs may be altered to include more flexible affect regulation patterns (Greenberg & Johnson, 1990; Izard & Youngstrom, 1996). The interactional styles developed within a family context extend to adolescents' interactions with peers and authority figures in the larger context, again, often resulting in their introduction to the juvenile justice system as they fight (delinquency, violence) or flee (substance abuse, sexual offending; Henggeler & Santos, 1997; Henggeler et al., 1994; Patterson, 1994).

#### *Affect Regulation and Attachment Treatment for Incarcerated Adolescents and Families*

If adolescents' and family members' internal working models (IWMs) that influence their responses to conflict (Zimmerman, 1999) are altered in family treatment prior to the adolescents' release, perhaps the family's coercive interactional cycles could be reshaped and levels of negative affect decreased, thus allowing all of them to create closer bonds with each other (Moore, Moretti, & Holland, 1998). The development of this attachment security might curb a relapse to delinquent behavior, substance abuse, and sexual offending for the adolescents as well as decrease parental psychopathology (Cook, 2000). Lower levels of parental psychopathology along with changes in caregivers' and adolescents' IWMs and affect regulation strategies might provide adolescents with the emotional security needed to prevent recidivism and relapse to problem behaviors (Cummings & Davies, 1996; Kobak, Ferenz-Gillies, & Everhart, 1994). The MFGI was developed to address these problems. This family adaptation of Emotionally Focused Therapy (EFT; Greenberg & Johnson, 1990; Johnson, 1996) for use with incarcerated adolescents and their families is based on the principles, goals, and techniques of EFT, an evidence-based treatment for couples with attachment and affect regulation difficulties. Emotionally Focused Therapy includes managing emotional arousal in new ways to alter interactional cycles and reorganize attachment relationships. This MFGI treatment is the first of its kind to address explicitly prior to the adolescent's release from the institution (a) attachment and affect regulation problems that underlie the coercive interactional cycles at the root of adolescent problem behavior, and (b) the severe separation distress experienced by incarcerated adolescents. Another benefit of the MFGI treatment is that family members, by interacting with other families in the group who are struggling with similar problems, create extended therapeutic networks which are continued after treatment (Cunningham & Henggeler, 1999). These networks enable families to help each other solve some of the difficulties that they have when interacting with larger systems, such as schools, mental health facilities, probation departments, and other juvenile justice institutions.

Detailed information about the development, curriculum, and implementation of the MFGI can be found elsewhere (Keiley, 2002a, 2002b). In brief, for 8 weeks adolescents and their family members (usually one or more caregivers) meet with the facilitators of the intervention for an hour and a half every week to learn a six-step method for altering interactional patterns from an affect regulation and attachment perspective. The facilitators are usually master's level family therapists.

The first three steps focus on managing affect, that is, decreasing the cycles of escalating negative affect. The final three steps focus on altering internal working models by helping adolescents and caregivers to risk expressing their own, and understanding the other person's, more vulnerable feelings in the presence of high arousal. The result of taking this new risk—to be vulnerable in the face of anger—allows the family members to deal with the problems that have arisen between them, either current or historical, in a more constructive manner (Keiley, 2002a, 2002b).

The MFGI uses video, discussion, and role play. The videos illustrate common coercive interactional cycles between caregivers and adolescents. The discussion illuminates the typical interactional difficulties that the participants have encountered with each other in similar situations. The adolescents and caregivers then role-play these problematic situations as “worst-case” scenarios. The facilitators and remaining members of the MFGI group coach the role players, shaping their behavior by helping them use the steps to role-play the interaction using more functional affect regulation strategies, expressing their more vulnerable feelings. Caregivers always role-play adolescents and adolescents role-play caregivers to help them investigate what the other person's perspective might be (Keiley, 2002a, 2002b). This study reports on a series of MFGI groups that was conducted in Indiana juvenile correctional facilities.

## METHOD

### *Sample*

The sample for this MFGI clinical intervention and research study was drawn from two Indiana juvenile correctional facilities, one for males and one for females. These facilities are juvenile prisons under the Indiana State Correctional System. Juveniles from across the state who had committed criminal offenses (sex crimes, delinquency, drug trafficking, alcohol offenses, theft, assault, among others) were remanded to these facilities by the juvenile courts for periods of a few months to several years. Table 1 depicts the demographic statistics for this sample that included adolescents ( $n = 73$ ) and their caregivers ( $n = 67$ ; e.g., parents, grandparents, aunts/uncles, stepparents). The average age of the adolescents was 15½; 59% were male. The average age for the caregivers was about 44, 78% of whom were female. Approximately 53% of the adolescents and 62% of the caregivers identified as European American. Thirty-nine percent (39%) of the caregivers stated that they were currently married. This sample of adolescents is similar in age and ethnicity to the general population of adolescents in juvenile facilities (Gies, 2001).

### *Procedures*

Procedures for both male and female groups were identical. Adolescents who were admitted into the 8-week MFGI intervention at both institutions were approximately 2 months from their release. The MFGI program was mandatory for these adolescents prior to release; however, participation in the research was not. The adolescents submitted their informed research consents to an outside third party; thus, the facility personnel did not know which of the adolescents had agreed to take part in the research project. The caregivers of these adolescents were invited by letter to participate in the MFGI. All MFGI sessions were 1½ hours in length and facilitated by master's level family therapists who were supervised by the author. Each of the full 8-week MFGI interventions was conducted with 6–7 adolescents and their family members. The full 8-week MFGI program was conducted six times in the institution for males and 4

Table 1  
*Descriptive Statistics for the Respondents in the Research Sample*

	Adolescents ( <i>n</i> = 73)	Caregivers ( <i>n</i> = 67)
Age		
Mean (SD)	15.6 (1.45)	43.6 (10.4)
Range	13–18	25–85
Gender		
Female	41%	78%
Male	59%	22%
Ethnicity		
European American	53%	62%
African American	41%	35%
Other	6%	3%
Married	NA	39%

times in the institution for females. The research study utilized pre- and postintervention quantitative assessments and 6-month follow-up quantitative and qualitative assessments. For the current analyses, data from both males and females are combined, yielding a total sample of 140 respondents (73 adolescents, 67 caretakers). About 60% of the adolescents were located (*n* = 44) at the follow-up assessment. The self-report and other report instruments were administered independently to each family member in the study. Each family member received \$20 for his or her participation in the research study. The focus of this manuscript is the longitudinal analysis of the quantitative data over three time points.

### *Measures*

*Adolescent psychopathology.* The caregivers completed the Child Behavior Checklist (CBCL; Achenbach, 1991), a 112-item self-report scale on which they indicate if the 112 problem behaviors listed on the CBCL were observed by them “often” (2), “sometimes” (1), or “rarely/never” (0). In this study, the externalizing and internalizing scales were used from the preintervention, postintervention, and 6-month follow-up assessments to denote adolescent problem behaviors. The average internal reliability alphas across the three time periods were 0.90 for externalizing and 0.89 for internalizing. The youth completed the corresponding Youth Self-Report (YSR; Achenbach, 1991), a 112-item self-report scale designed to be used by adolescents aged 11–18 that is similar to the CBCL in terms of the response scale and the externalizing and internalizing behavior sub-scales. In this study, the average internal reliability alphas across the three time periods were 0.91 for externalizing and 0.89 for internalizing. In addition, at the 6-month follow-up interview, which occurred after the adolescent was released from prison, information about re-incarceration was collected from the adolescents, caregivers, and probation officers. All were asked whether the adolescent had re-offended or not. In addition, one item from the CBCL and the YSR was used to represent adolescent use of drugs and alcohol. This item asked how often he or she engaged in the use of these substances.

*Adolescent and adult affect regulation.* Both adolescents and caregivers completed the Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990) that contains 48 self-report items that measure emotion coping. Each item is rated by the respondent on a five-point Likert scale of how often each coping strategy is used (1 = not at all to 5 = very much). A total CISS score is calculated to denote total functional emotion coping. A score on the CISS that is below 3 indicates poor affect regulation; a score above 3 indicates good affect regulation. Over

the three time periods in the study, the average internal reliability alphas were 0.72 for adolescents and 0.81 for caregivers.

*Adolescent and adult attachment.* The adolescents completed the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979), consisting of 25 self-report items that are combined into an average scale score. This instrument is administered twice to each respondent in order to capture the respondent's childhood experiences with his or her father and mother. Over the three assessments, the average reliability alphas for experiences with the father over the three time periods was 0.77 and for experiences with the mother was 0.60. The adolescents also completed the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987), a 53-item instrument that assesses both affective and cognitive components of adolescents' attachment to caregivers and peers. Raters use a five-point Likert scale from 1 (Almost Never or Never use this Strategy) to 5 (Almost Always or Always use this Strategy). The estimated alpha reliability over the three assessments for the adolescents' total attachment to caregivers was 0.95 and for total attachment to peers was 0.91.

### *Analysis*

To determine if the adolescents in the MFGI demonstrated gains in functional affect regulation and in attachment to caregivers and fewer symptoms after the 6-month follow-up assessment, a series of growth models was fitted to the data. This data analytic technique of growth modeling (Keiley, Bates, Dodge, & Pettit, 2000; Keiley, Martin, Liu, & Dolbin-MacNab, 2005; Singer & Willett, 2003) allowed for the investigation of changes in the domains of adolescent problem behaviors, affect regulation, and attachment as rated by caregivers and by the adolescents themselves over the three assessment points, with time centered at pretreatment (Preintervention = 0 months, Postintervention = 2 months, 6-month follow-up = 8 months). To begin, the individual growth model ("within person" or "level-1" model) that best represented the change in these behaviors was estimated. Examination of the individual growth curves of a representative sample of respondents indicated that the individual growth trajectory for these domains was linear; that is, the best-fitting model of individual change in these domains was a straight line over time. Thus, the level-1 growth model for all of the domains contained two individual growth parameters: (a) an intercept parameter representing initial status, and (b) a slope parameter representing rate of change. Each adolescent's or caregiver's intercept and slope terms were then estimated for growth in each domain.

For each behavior domain, an unconditional growth model (with no predictors of intercept and slope) was fit to the data; time was centered at preintervention (intercept). All models were fit using Mplus, which allows for the inclusion of respondents with missing data by using full information maximum likelihood (FIML) estimation (Muthen & Muthen, 1998), drawing on the theory in Little and Rubin (1987). In FIML estimation with missing data, observations are sorted into missing data patterns, and each parameter is estimated using all available data for that particular parameter. Mplus estimates a covariance matrix from raw data and a coverage matrix that describes the extent of missing data. The percentage of missing data in adolescent and caregiver reports in the sample ranged from none to approximately 40%. No differences were found on available demographic, predictor, or outcome variables between respondents who were missing data and those who were not.

After assessing model fit, the next step was to determine whether the between-person variation in the growth parameters in the baseline models for each domain was related to variation in the control predictors, gender, ethnicity, and age. The hypothesized link between the individual growth parameters from "level-1" and the predictors of change provided the "between-person," or "level-2," statistical models. As predictors were added to the baseline model, one at a time, the significance of that predictor's effect on the growth parameters was determined by fitting a reduced model and conducting the appropriate  $\Delta\chi^2$ -test. A reduced model is formulated by constraining the parameters from the predictor to the growth parameters to zero (Keiley et al., 2005; Singer & Willett, 2003).

## RESULTS

The fit statistics and estimated slope and intercept parameters for each of the unconditional baseline growth models for adolescent behavior, attachment, and affect regulation as well as the growth model for caregivers' affect regulation are listed in Table 2. Table 3 contains the fit statistics and parameter estimates for the two models in which a control variable was a significant predictor.

Table 2 <i>Fit Statistics and Estimated Growth Parameters for Unconditional Models of Change for Each Behavioral Domain</i>					
Model	Intercept estimate, $\beta_0$	Slope estimate, $\beta_1$	$\chi^2$ -Statistic <sup>a</sup> ( <i>df</i> <sup>b</sup> , <i>p</i> -value)	CFI/TLI <sup>a</sup>	RMSEA <sup>a</sup> ( <i>p</i> -value)
Adolescent problem behaviors					
Externalizing (CBCL)					
Adolescent report	29.67***	-1.09***	1.38 (3, 0.71)	1.00/1.00	0.00 (0.75)
Caregiver report	23.93***	-0.55*	3.26 (3, 0.35)	0.99/0.99	0.05 (0.40)
Internalizing (CBCL)					
Adolescent report	24.89***	-0.91***	0.39 (3, 0.94)	1.00/1.00	0.00 (0.95)
Caregiver report	14.43***	-0.33~	4.15 (3, 0.25)	0.95/ 0.95	0.10 (0.28)
Alcohol/drug use (CBCL)					
Adolescent report	0.962***	-0.042*	0.24 (1, 0.62)	1.00/1.00	0.00 (0.64)
Caregiver report	0.636***	-0.005	3.13 (1, 0.08)	0.94/ 0.83	0.24 (0.09)
Adolescent attachment					
Bonding with father (PBI)					
Adolescent report	2.659***	0.008	4.05 (3, 0.25)	0.89/0.89	0.14 (0.28)
Bonding with mother (PBI)					
Adolescent report	2.826***	0.018**	1.87 (3, 0.60)	1.00/1.00	0.00 (0.49)
Bond with parents (IPPA)					
Adolescent report	3.309***	0.039***	4.97 (3, 0.17)	0.93/0.93	0.12 (0.22)
Bond with peers (IPPA)					
Adolescent report	3.547***	-0.002	0.55 (3, 0.91)	1.00/1.00	0.00 (0.92)
Adolescent affect regulation (CISS)					
Adolescent report	2.892***	0.010*	1.98 (1, 0.16)	0.97/0.90	0.12 (0.20)
Caregiver affect Regulation (CISS)					
Caregiver report	3.292***	0.024*	6.70 (1, 0.01)	0.86/0.60	0.31 (0.02)
~ $p < .10$ , * $p < .05$ , ** $p < .01$ , *** $p < .001$ .					
<sup>a</sup> A nonsignificant $\chi^2$ -Statistic, a Comparative Fit Index (CFI) and a Tucker-Lewis Index (TLI) greater than 0.90, and a nonsignificant root mean square error of approximation (RMSEA) that is close to zero each indicates good model fit.					
<sup>b</sup> The error variances of the outcome variables were constrained to be equal across the three time points in models with <i>df</i> of 3. In those models with <i>df</i> of 1, the error variances were not constrained to be equal.					



Table 3

*Fit Statistics and Estimated Growth Parameters for Conditional Models of Change for Adolescent-Reported Alcohol and Drug Use and Bonding with Mother*

Model	Intercept estimate, $\beta_0$	Slope estimate, $\beta_1$	$\chi^2$ -Statistic <sup>a</sup> ( $df^b$ , $p$ -value)	CFI/TLI <sup>a</sup>	RMSEA <sup>a</sup> ( $p$ -value)
Alcohol/drug use (CBCL)					
Adolescent report	0.558**	-0.030	2.77 (2, 0.25)	0.98/0.93	0.07 (0.31)
Effect of ethnicity	0.619*	-0.016			
Bonding with mother (PBI)					
Adolescent report	1.129~	0.018**	4.07 (6, 0.62)	1.00/1.00	0.00 (0.76)
Effect of age	0.105**	0.000			

~ $p < .10$ , \* $p < .05$ , \*\* $p < .01$ .  
<sup>a</sup> A nonsignificant P2 Statistic, a Comparative Fit Index (CFI) and a Tucker-Lewis Index (TLI) greater than .90, and a nonsignificant root mean square error of approximation (RMSEA) that is close to zero each indicates good model fit.  
<sup>b</sup> The error variances of the outcome variables were constrained to be equal across the three time points in models with  $df$  of 1, the error variances were not constrained to be equal.

### Adolescent Problem Behaviors

The models for adolescent externalizing behavior, both adolescent- (YSR) and mother- (CBCL) reported, fit the data well. On average, the adolescent-reported externalizing behavior trajectories began significantly above zero (29.67,  $p < .001$ ), as did the caregiver-reported externalizing trajectories (23.93,  $p < .001$ ). The adolescent-reported (-1.09,  $p < .001$ ) and caregiver-reported (-0.55,  $p < .05$ ) trajectories declined significantly over time. This average trend for externalizing behaviors can be illustrated by plotting the trajectory for a prototypical adolescent in the sample, using the intercept and slope parameter estimates and substituting into the fitted equation the values of time (0 months = pretreatment, 2 months = posttreatment, 8 months = 6-month follow-up). For example, the fitted equation for adolescent-reported externalizing behavior is (29.67-1.09\*Time). Substituting 0, 2, and 8 for time in months and plotting the results yields the fitted trajectory for an average adolescent (Figure 1). Both adolescent- and caregiver-reported externalizing behavior (bold trajectories) decline significantly over time, but the adolescent-reported trajectory declines more steeply than does the caregiver-reported trajectory. None of the control predictors (gender, ethnicity, or age) was significant in predicting variance in the growth parameters of adolescent- or caregiver-reported externalizing behavior. A nonsignificant effect for gender, ethnicity, and age indicates that the treatment outcome was not different across these three domains.

On average, the adolescent-reported internalizing behavior (YSR) trajectories began significantly above zero (24.89,  $p < .001$ ), as did the caregiver-reported internalizing (CBCL) trajectories (14.43,  $p < .001$ ). The adolescent-reported (-0.91,  $p < .001$ ) trajectories declined significantly over time, but the caregiver-reported trajectories declined only marginally (-0.3,  $p < .10$ ). The average trends for internalizing behaviors over time are also illustrated in Figure 1. Again, the adolescent- and caregiver-reported internalizing behaviors decline over time, but the adolescent-reported trajectory declines more steeply than does the caregiver-reported trajectory. None of the control predictors was significant in predicting variance in the growth parameters of adolescent- or caregiver-reported internalizing behavior. Of note is the fact that for both externalizing and internalizing problems, the adolescents consistently report a greater

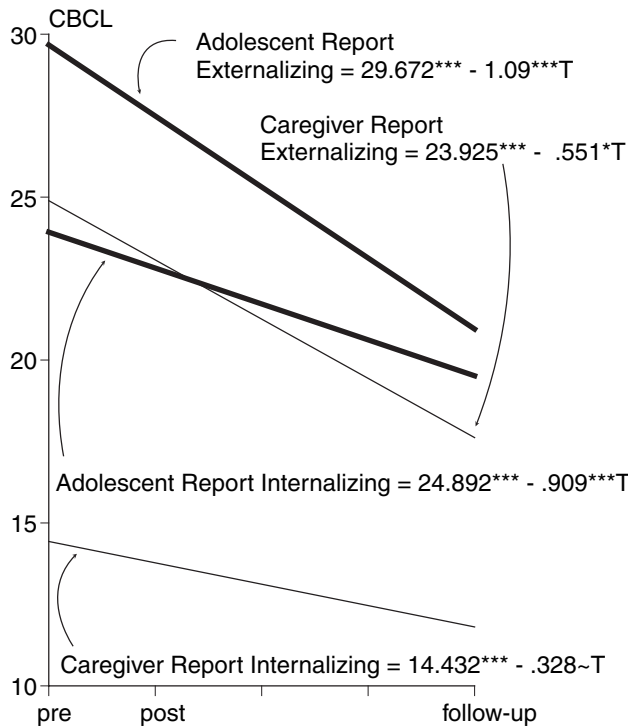


Figure 1. Fitted trajectories of child behavior checklist externalizing and internalizing behaviors as reported by adolescents and caregivers from pretreatment to 6-month follow-up for prototypical adolescents.

number of symptoms over time than do their caregivers, although both report declines over the three assessment periods indicating that the adolescent's behavior is improving. Also, within reports, more externalizing behavior is reported than is internalizing behavior across time.

On average, the adolescent-reported drug and alcohol use (CBCL) trajectories began significantly above zero ( $0.96, p < .001$ ), as did the caregiver-reported drug and alcohol use trajectories ( $0.64, p < .001$ ). The adolescent-reported ( $-0.04, p < .05$ ) trajectories declined significantly over time, but the caregiver-reported trajectories showed no change ( $-0.005, p = ns$ ). The average trends for drug and alcohol use over time are illustrated in Figure 2. Adolescent-reported alcohol and drug use declines over time, but the caregiver-reported trajectory declines only slightly. The adolescent reports of alcohol and drug use begin higher than those of caregivers, but over time, they decline to a level similar to that of their caregivers. As seen in Table 3, ethnicity was a significant predictor of adolescent reports of drug and alcohol use, but only on the intercept ( $0.62, p < .05$ ). Caucasian American adolescents reported using significantly more alcohol and drugs prior to treatment than did the other ethnic groups. Ethnicity had no effect ( $-0.02, p = ns$ ) on the slope of drug and alcohol use over time. Figure 3 shows the different trajectories of alcohol and drug use for typical Caucasian American and for African American/Other adolescents.

All the adolescents were released shortly after the MFGI was completed. Of the 44 adolescents who were interviewed 6 months after the intervention, 32 had not re-offended. About 29 could not be located. Assuming that these unlocated 29 adolescents had re-offended, the recidivism rate was 44% (32/73). The 6-month recidivism rate for adolescents released from correctional facilities in the United States hovers in the range of 65–85% (Gies, 2001; Santos et al., 1995).

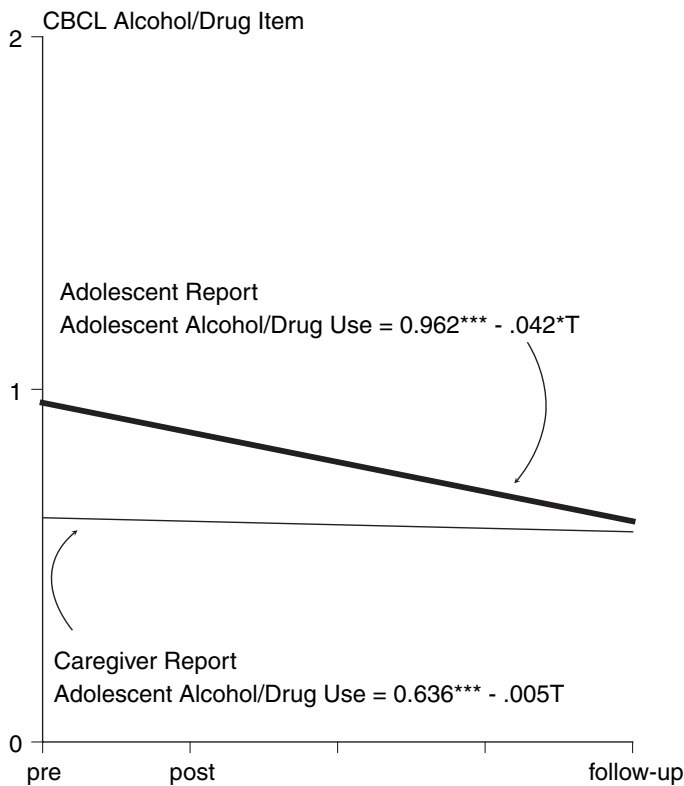


Figure 2. Fitted trajectories of child behavior checklist drug and alcohol use as reported by adolescents and caregivers from pretreatment to 6-month follow-up for prototypical adolescents.

#### Adolescent Attachment

The model for adolescent report of bond with father (PBI) and with mother (PBI) fit the data well. On average, the adolescent-reported bond trajectories with father began significantly above zero ( $2.66, p < .001$ ) and remained stable with a slope of zero ( $0.008, p = ns$ ) over time. The adolescent-reported bond with mother began significantly above zero ( $0.283, p < .001$ ) but increased significantly over time ( $0.02, p < .01$ ). These average trends for the fitted trajectories for an average adolescent's bond with his or her father and mother are shown in Figure 4. The bond with father begins lower than the bond with mother at pretreatment and remains fairly stable, but the bond with mother increases significantly over time. Age was the only predictor that was significant in predicting the PBI. Table 3 shows that older adolescents reported a stronger bond with their mothers at the beginning of treatment ( $0.11, p < .01$ ), but the rate of increase was the same across all adolescents. Figure 5 illustrates the impact of age on the trajectories of bonding with mother.

The models for the overall bond of the adolescents to their caregivers (IPPA) and to their peers (IPPA) fit the data well (Table 2). On average, the bond with caregivers prior to treatment was significantly greater than zero ( $3.31, p < .001$ ) and increased significantly over time ( $0.04, p < .001$ ). The bond with peers prior to treatment also was significantly greater than zero ( $3.55, p < .001$ ), but remained stable over time ( $-0.002, p = ns$ ). Figure 6 illustrates that the bond with peers is greater than the bond with caregivers at pretreatment, but

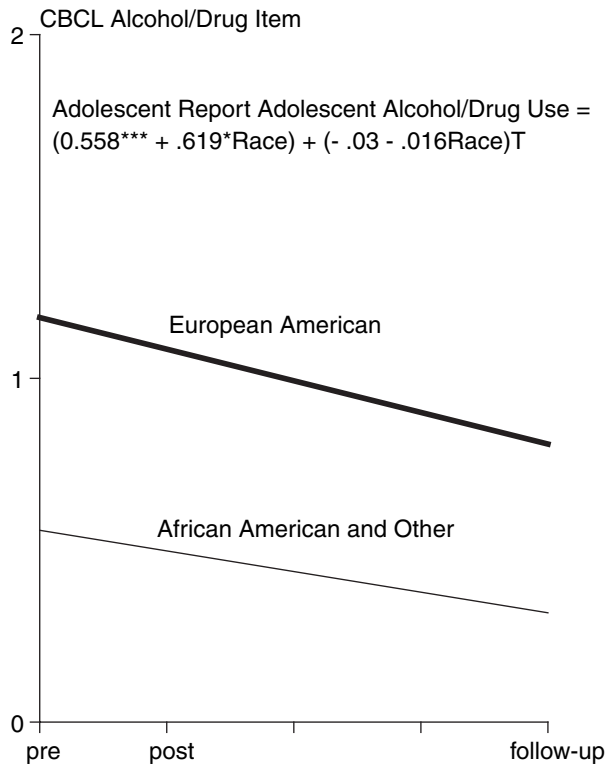


Figure 3. Fitted trajectories of child behavior checklist drug and alcohol use as reported by adolescents and caregivers from pretreatment to 6-month follow-up for prototypical Caucasian American and African American/Other adolescents.

by the 6-month follow-up, adolescents are more bonded with their caregivers than with peers.

#### *Adolescent and Caregiver Affect Regulation*

On average, the adolescent reports of their affect regulation (CISS) trajectories began significantly above zero (2.89,  $p < .001$ ), as did the caregiver reports of their affect regulation (CISS) trajectories (3.29,  $p < .001$ ). The adolescent report trajectories of affect regulation increased significantly over time (0.01,  $p < .05$ ) as did the caregiver report trajectories (0.02,  $p < .05$ ). The on-average trends for affect regulation over time are illustrated in Figure 7. Both adolescent and caregiver affect regulation increased over time, but the caregiver reports of their affect regulation began higher than did the adolescent assessment of their affect regulation. In addition, the caregivers reported a greater increase in affect regulation strategies over time than did the adolescents. None of the control predictors was significant in predicting variance in the growth parameters of adolescent- or caregiver-reported affect regulation behavior.

## DISCUSSION

The most noteworthy finding from this study was that adolescents in the MFGI psycho-educational intervention had a recidivism rate no greater than 44% at the 6-month follow-up

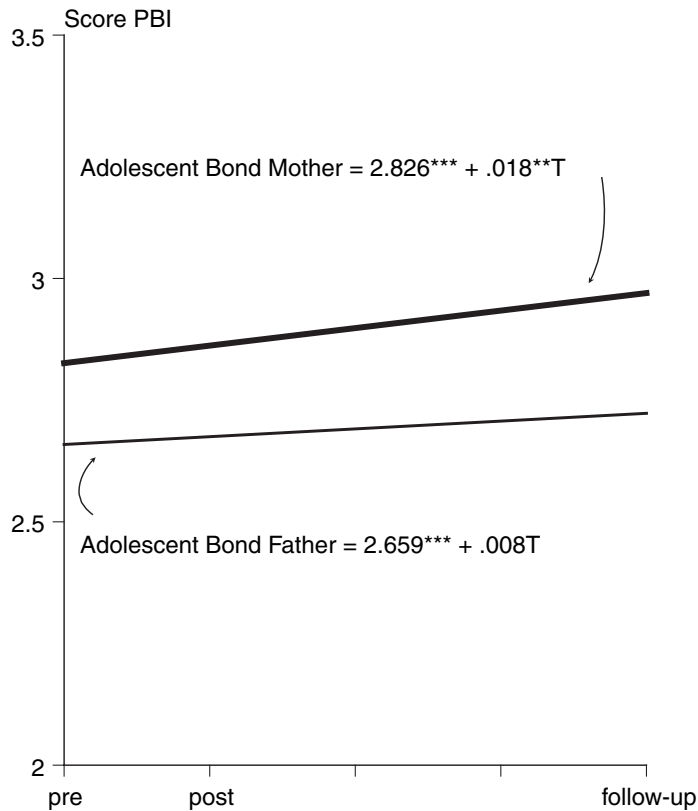


Figure 4. Fitted trajectories of parental bonding instrument bond with father and mother as reported by adolescents from pretreatment to 6-month follow-up for prototypical adolescents.

assessment. Compared to the national norm of 65–85%, this lower rate for the adolescents in the MFGI is encouraging. Given that very few incarcerated adolescents and their families currently are offered family treatment—effective or otherwise—while the adolescents are incarcerated, the MFGI may be an important addition to the possible treatments for this population. Corroborating the recidivism finding, adolescents and caregivers reported that adolescents’ externalizing behaviors significantly declined over time; most adolescents who are re-incarcerated after release are those who evidence these behaviors (Henggeler & Santos, 1997).

The trajectories for adolescent-reported internalizing symptoms as well as their alcohol and drug use significantly declined over the three time points. Adolescents reported that they felt less internal distress than prior to the intervention and used fewer substances to manage that distress. Interestingly, the caregiver reports of adolescent internalizing and alcohol/drug use were initially lower than the adolescent reports and showed no change over time. Several possible explanations may account for this finding. These adolescents may not have taken many opportunities in the throes of their difficulties with their caregivers prior to or after incarceration to display internalizing behaviors. Hence, the adolescents’ internal distress may not have been noted by their caregivers. Also, most of these caregivers have been dealing with the delinquent and externalizing problems of their adolescents for many years; they watch more closely for those “acting out” behaviors than they do depression and anxiety (Keiley et al., 2000). The finding that European American adolescents reported higher initial levels of alcohol and drug use at pretreatment assessment than the other ethnic groups supports the recent research that

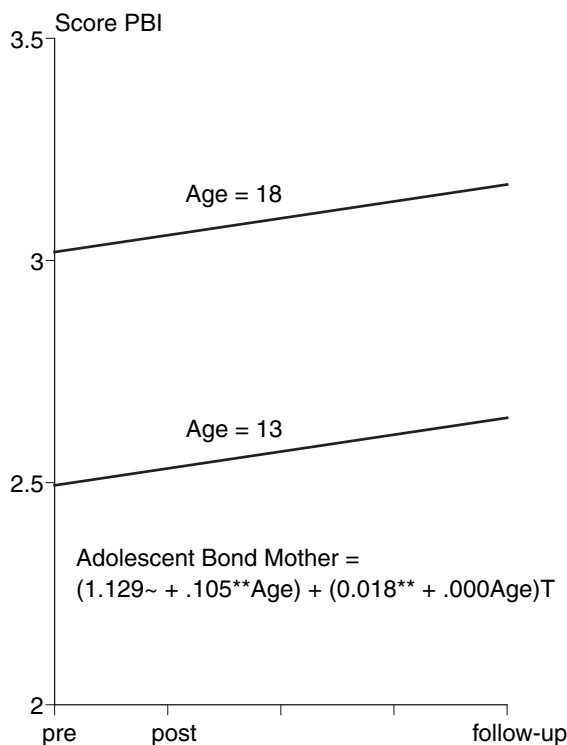


Figure 5. Fitted trajectories of parental bonding instrument bond with mother as reported by adolescents from pretreatment to 6-month follow-up for prototypical younger and older adolescents.

has been conducted on ethnic health disparities. This research has indicated that often non-Hispanic European American adolescents report higher drug use than other ethnic groups of adolescents (Vega & Gil, 1998; Volkow, 2005).

The adolescents reported that their bond with their mothers on the PBI was greater at preintervention than that with their fathers and that it increased over time. The bond with fathers did not change over time. On the IPPA, the bond with caregivers started lower than did the bond with peers but actually increased over time. Because most of the caregivers (78%) were female, this result is not surprising. The MFGI was conducted with more female caregivers than with male caregivers; we would expect to find that, on average, the adolescents reported being closer to their mothers after treatment and through the follow-up period. The finding that, on average, older adolescents felt closer to their mothers prior to treatment than did younger adolescents indicates the severe stress that being incarcerated entails when adolescents are young (Santos et al., 1995). To be taken away at the age of 13 or 14 and put in prison places considerable strain on the bond with the primary caregiver, who is often the one who reported the adolescent to authorities. These young adolescents may feel abandoned, alone, and angry with their caregivers. Perhaps older adolescents have a more realistic perspective on the fact that they are the ones who are actually responsible for their own incarceration.

One of the foci for most family treatments for nonincarcerated adolescents is to decrease adolescents' attachments to deviant peers (e.g., Dishion et al., 1994). In this study, the bond with peers began higher than that with caregivers at the start of treatment but over time did

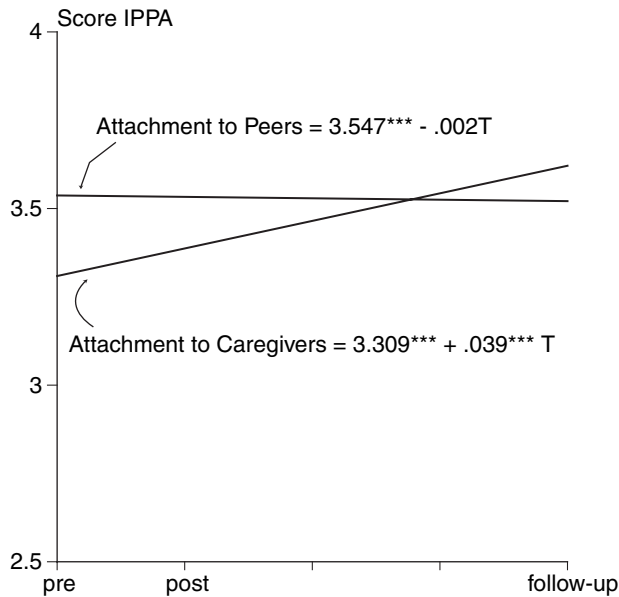


Figure 6. Fitted trajectories of inventory of parent and peer attachment bond with caregivers and peers as reported by adolescents from pretreatment to 6-month follow-up for prototypical adolescents.

not change. Instead, by the six-month follow-up, the bond with caregivers increased to a level higher than the bond with peers.

The quality of affect regulation improves for both caregivers and adolescents from pre-treatment to follow-up. The caregivers do have more effective strategies than do the adolescents, but the MFGI appears to be useful in helping all of the family members to gain some control over their coercive interactional cycles.

The level-2, between-person, conditional models that were fit provided evidence that although in two cases—bonding with the mother and alcohol/drug use—some pretreatment differences existed, the effects of the treatment were not different across gender, ethnicity, or age. This finding may indicate that the mechanisms involved in maintaining adolescent problem behaviors might be similar even across these important dimensions. In other words, interrupting coercive interactional cycles and reducing levels of negative affect allows for a de-escalation in externalizing and internalizing behaviors as well as alcohol and drug use, no matter whether the adolescent is Caucasian American, African American, male, female, older, or younger. What is called for in the next study is the inclusion of measures that assess the caregivers' problem behaviors in order to determine if the MFGI is useful in decreasing their psychopathology as well.

One of the limitations of this study is that the follow-up assessment is only 6 months after the end of the intervention. In general, research appears to support the findings of short-term (pre, post, 3-month), but not always long-term (1 year or more), effects for most of the standard treatments for adolescent delinquency (Offord & Bennett, 1994). Because the follow-up assessment is at 6 months, perhaps these findings are sustainable, but further outcome research is needed. In addition, no control group was used. The difficulty of gaining access to caregivers of incarcerated adolescents who are not receiving the intervention was insurmountable during this study. In addition, concerns were raised by the correctional facilities' personnel about the benefits to the "control" adolescents of completing questionnaires during three assessments

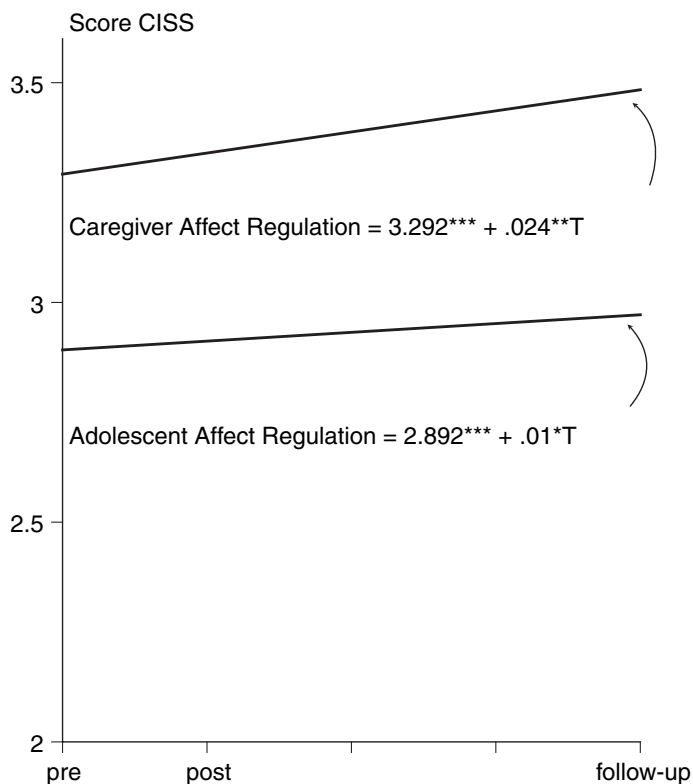


Figure 7. Fitted trajectories of coping inventory for stressful situations affect regulation for adolescents and caregivers from pretreatment to 6-month follow-up for prototypical adolescents and caregivers.

without receiving treatment. Well-funded clinical trials with both control and the experimental group should be conducted to ensure that the results of this study are not only because of the passage of time after incarceration.

A strength of this study is its longitudinal nature. Instead of merely a pre- and postdesign, this study included a 6-month follow-up assessment after adolescents were released from prison. Even though this population—previously incarcerated adolescents and their families—has been a notoriously difficult population to follow over time, we were able to gain access to approximately 60% of them for the 6-month follow-up assessment. In addition to providing longer term follow-up, this additional assessment allowed the use of growth modeling to examine the effects of the MFGI. Another strength was having multiple reporters of problem behaviors as well as assessment of re-offending at 6 months.

The MFGI has proven in this pilot study to be effective in reducing, by approximately 40% from the average state-reported norms, the recidivism rates of these male and female incarcerated adolescents over an 8-month period (6 months after release). Although an analysis of the economic costs and benefits of the MFGI was not conducted, this intervention is relatively inexpensive to mount. The major expenses are for clinical personnel to conduct the MFGI and research personnel to collect and analyze data. Within the environment of a university program that is training family clinicians, the MFGI represents also an opportunity to provide these students with experience in learning effective clinical and research skills. Providing family therapists who are in training with the clinical skills to conduct evidence-based treatment



and the research skills to evaluate intervention outcomes is essential in order to maintain the field of marriage and family therapy as a source of excellent treatment for the difficulties that under-served populations often encounter.

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## NOTE

<sup>1</sup>Very few studies have examined juvenile recidivism because most state juvenile correctional facilities and agencies do not collect these data. In fact, no consensus exists as to how to measure juvenile recidivism (Gies, 2001). In addition, no national juvenile recidivism rate is available because all studies of recidivism are conducted at the state and local level. The state and local recidivism rates that have been documented range from 65% to 85% (Gies, 2001; Wiebush, McNulty, & Le, 2000).